

Scientific Assembly of the International Association of Geodesy June 28 - July 2, 2021, Beijing, China

Programme Book



Organized by: International Association of Geodesy

Hosted by: Chinese Society for Geodesy, Photogrammetry and Cartography



Geodesy for a Sustainable Earth



www.iag2021.com



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IAG 2021 GEODESY FOR A SUSTAINABLE EARTH



Message from the IAG president - Zuheir Altamimi

The International Association of Geodesy (IAG) is one of the eight constituent associations of the International Union of Geodesy and Geophysics (IUGG) which was established in 1919. The activities of IUGG in the years following its creation have been dominated by geodesy, hence probably the precedence of the term "geodesy" to the term "geophysics" in the name of the Union. The roots of IAG go back to 1862 when the so called "Central European Arc Measurement" was created as the first international scientific organization. It was then expended to "European Arc Measurement" in 1867, and in 1886 to the Internationale Erdmessung (International Association of Geodesy, Association Géodésique Internationale). It became one of the five constituent sections of the Union, at the occasion of the first General Assembly of IUGG (Rome, 2-10 May 1922). It took its present name at the Stockholm General Assembly of IUGG (1930).

The advent of space geodesy since the early 1960s has revolutionized the role of geodesy and its contribution to Earth sciences and societal applications. Geodesy is therefore global by nature, and a science in its own right, serving to quantify and improve our knowledge of temporal variations of the three fundamental properties of the Earth: its shape, its gravity field and its orientation in space. A truly global geodetic reference frame has become not only achievable, but also the indispensable standard by which these temporal variations are quantified and thus easily interpreted.

IAG, through the work of its international services, provides unique and critical geodetic products for Earth science and positioning applications: satellite orbits, terrestrial and celestial reference frames, Earth orientation parameters, gravity fields, etc.

The current IAG structure includes the following components:

- Commission 1: Reference Frames
- Commission 2: Gravity Field
- Commission 3: Geodynamics and Earth Rotation
- Commission 4: Positioning and Applications
- Inter-commission Committee on Theory
- Inter-commission Committee on Climate Research
- Inter-commission Committee on Marine Geodesy
- A Planning Group on Novel Sensors and Quantum Technology for Geodesy
- Global Geodetic Observing System (GGOS)
- 12 International Scientific Services

The IAG Scientific Assembly 2021 is the first event in its kind that is held virtually in Beijing, China, due to the Coronavirus pandemic situation. It is also the first time ever in the history of the scientific assemblies of our association that the number of participants exceeds 1000

Zuheir Altamimi President International Association of Geodesy



Welcome Message

On behalf of the Chinese Society for Geodesy, Photogrammetry and Cartography (CSGPC) and the Local Organizing Committee of IAG Scientific Assembly 2021, we would like to invite you to attend the Scientific Assembly of the International Association of Geodesy (IAG) to be held in Beijing, China on June 28 - July 2, 2021.

Due to the ongoing COVID-19 pandemic, the Assembly will be organized as a virtual conference. However, the Assembly is still a unique opportunity for participants from around the world to share their science, vision and culture. We will make use of all necessary resources to ensure the success of the conference.

The theme of the Assembly is "Geodesy for a Sustainable Earth". A number of scientific symposiums are planned, which covers the reference frame, earth gravity field, earth rotation & geodynamics, navigation & positioning, geodetic observation system, marine geodesy and quantum technology for geodesy, etc. We are confident that the Assembly will be helpful to enhance scientific exchanges, develop friendships for our geodesy community and promote the development of geodesy and earth science.

On behalf of the Local Organizing Committee of IAG 2021, we sincerely welcome you to join us.

· KA

Prof. Zhenzhong Peng Prof. Lan Wu Chairs of the Local Organizing Committee of IAG 2021

Organization

Steering Committee

Chair

- Chaozhi Song, President of Chinese Society for Geodesy Photogrammetry and Cartography

Co-Chairs

- Qian Wang, Vice President of Chinese Society for Geodesy Photogrammetry and Cartography
- Qin Yan, President of Chinese Academy of Surveying and Mapping

Members

- Yuanxi Yang, Xi'an Institute of Surveying and Mapping
- Jiancheng Li, Vice President of Wuhan University
- Jun Xia, President of China National Committee for International Union of Geodesy and Geophysics
- Junyong Chen, Ministry of Natural Resources of China
- Houze Xu, Innovation Academy for Precision Measurement Science and Technology, Chinese Academy of Sciences
- Jingnan Liu, Wuhan University
- Ziging Wei, Xi'an Institute of Surveying and Mapping
- Shusen Tan, Beijing Satellite Navigation Center
- Pengfei Cheng, Ministry of Natural Resources of China
- Zhenzhong Peng, Secretary General of Chinese Society for Geodesy Photogrammetry and Cartography
- Lan Wu, Vice President of Chinese Academy of Surveying and Mapping
- Yamin Dang, Chairman of China National Committee for IAG, Chinese Academy of Surveying and Mapping

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- Heping Sun, Innovation Academy for Precision Measurement Science and Technology, Chinese Academy of Sciences

Organization

Scientific Organizing Committee

Chair

- Markku Poutanen, Secretary General of IAG

Members

- Christopher Kotsakis, Greece
- Mirko Reguzzoni, Italy
- Adrian Jäggi, Switzerland
- Janusz Bogusz, Poland
- Allison Kealy, Australia
- Basara Miyahara, Japan
- John LaBrecque, USA
- Allison Craddock, USA
- Pavel Novák, Czech Republic
- Annette Eicker, Germany
- Yuanxi Yang, China
- Jürgen Müller, Germany
- Yamin Dang, China

Local Organizing Committee

Chair

- Lan Wu, Vice President of Chinese Academy of Surveying and Mapping

Secretary General

- Yamin Dang, Chairman of China National Committee for IAG, Chinese Academy of Surveying and Mapping

Deputy Secretary General

- Liming Zhang, Chinese Academy of Surveying and Mapping
- Jian Tan, Chinese Society for Geodesy Photogrammetry and Cartography
- Yi Zang, Chinese Academy of Surveying and Mapping
- Tao Jiang, Chinese Academy of Surveying and Mapping

Members

- Yibin Yao, Wuhan University
- Junping Chen, Shanghai Astronomical Observatory, Chinese Academy of Sciences
- Weiping Jiang, Wuhan University
- Bofeng Li, Tongji University
- Nanshan Zheng, China University of Mining and Tech
- Aigong Xu, Liaoning Technical University
- Baoguo Yu, CETC54 State Key Laboratory of Satellite

- Zhenzhong Peng, Vice President and Secretary General of Chinese Society for Geodesy Photogrammetry and Cartography

- Yunbin Yuan, Innovation Academy for Precision Measurement Science and Technology, Chinese Academy of Sciences

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e Navigation System and Ec	quipment T	echnolog	ay			
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Organization

Members

- Zhicai Luo, Huazhong University of Science and Technology
- Jian Wang, Beijing University of Civil Engineering and Architecture
- Fanlin Yang, Shandong University of Science and Technology
- Chunxi Guo, Geodetic Data Processing Center, Ministry of Natural Resources of China
- Shuanggen Jin, Shanghai Astronomical Observatory, Chinese Academy of Sciences
- Junhuan Peng, China University of Geosciences (Beijing)
- Zhenhong Li, Chang'an University
- Zhiwei Li, School of Geosciences and Info-Physics of Central South University
- Xiao Cheng, Sun Yat-sen University
- Zishen Li, Aerospace Information Research Institute, Chinese Academy of Sciences
- Lilong Liu, Guilin University of Technology
- Yanping Zhao, CHC Navigation
- Yang Qi, Chinese Society for Geodesy Photogrammetry and Cartography
- Xu Wang, Chinese Society for Geodesy Photogrammetry and Cartography
- Lijuan Xie, Chinese Society for Geodesy Photogrammetry and Cartography

Organizer

- International Association of Geodesy

Local Organizer

- Chinese Society for Geodesy, Photogrammetry and Cartography

Co-organizers

- Chinese Academy of Surveying and Mapping
- Wuhan University
- Shanghai Astronomical Observatory
- Innovation Academy for Precision Measurement Science and Technology, Chinese Academy of Sciences
- Beijing University of Civil Engineering and Architecture
- China University of Mining and Technology
- State Key Laboratory of Satellite Navigation System and Equipment Technology
- Tongji University
- Central South University
- Huazhong University of Science and Technology
- Shandong University of Science and Technology
- Liaoning Technical University
- Aerospace Information Research Institute, Chinese Academy of Sciences
- Geodetic Data Processing Centre, Ministry of Natural Resources of China
- China University of Geosciences (Beijing)
- Guilin University of Technology
- Chang'an University
- Sun Yat-sen University
- Resources of China
- Beijing Key Laboratory of Urban Spatial Information Engineering



Program at a Glance

		Time Beijing (UTC)	Zoom1	Zoom2	Zoom3	Posters
		14:00-15:20 (06:00-07:20 UTC)	Openi	ng Ceremoni	es	
Monday		15:30-16:30 (07:30-08:30 UTC)	IAG Openi	ng Plenary S	ession	
	mo1	16:40-18:00 (08:40-10:00 UTC)	1.1, 1.2	2a.1	4.1(1)	1.3, 2a.3
	tu1	14:00-15:20 (06:00-07:20 UTC)	1.3	2a.3	4.1(2)	1.4, 1.5, 2a.4, 2a.7, 4.2
Tuesday	tu2	15:30-16:50 (07:30-08:50 UTC)	1.4	2a.3, 2a.4	4.1(3)	1.6, 2a.2, 4.1(1,2)
	tu3	17:00-18:20 (09:00-10:20 UTC)	1.5	2a.7, 2a.2, 1.6	Image: Series signer in the series signer	
	we1	14:00-15:20 (06:00-07:20 UTC)	6.2	2a.6, 2b.5	4.3(1)	
Wednesday	we2	15:30-16:50 (07:30-08:50 UTC)	6.2, 6.4	2b.1	4.3(2)	$\begin{array}{c} 6.4, 5.1, \\ 4.3(1) \\ \end{array}$
	we3	17:00-18:20 (09:00-10:20 UTC)	6.4, 6.3	5.1	4.3(3)	
	th1	14:00-15:20 (06:00-07:20 UTC)	6.1	5.2, 5.3	4.3(4)	
Thursday	th2	15:30-16:50 (07:30-08:50 UTC)	2b.3	5.4	4.3(5)	3.1, 3.2, 5.7
	th3	17:00-18:40 (09:00-10:40 UTC)	2a.5, 2b.4	5.5, 5.7	3.1, 3.2	
	fr1	14:00-15:20 (06:00-07:20 UTC)	2b.2(1)	5.7	3.2, 3.3	
Friday	fr2	15:30-16:50 (07:30-08:50 UTC)	2b.2(2), 2b6	5.6	3.3	
		17:00-18:20 (09:00-10:20 UTC)	IAG Closir	ng Plenary Se	ession	

Sessions	Orals	Posters
1.1	mo1/z1	tu3
1.2	mo1/z1	tu3
1.3	tu1/z1	mo1
1.4	tu2/z1	tu1
1.5	tu3/z1	tu1
1.6	tu3/z2	tu2
2a.1	mo1/z2	tu3
2a.2 + 1.6	tu3/z2	tu2
2a.3	tu1, tu2/z2	mo1
2a.4	tu2/z2	tu1
2a.5	th3/z1	fr1
2a.6+2b.5	we1/z2	we2
2a.7	tu3/z2	tu1
2b.1	we2/z2	we3
2b.2	fr1, fr2/z1	th3
2b.3	th2/z1	th1
2b.4+2a.5	th3/z1	fr1
2b.5	we1/z2	we2

Sessions	Orals	Posters
2b.6	fr2/z1	fr1
3.1	th3/z3	th2
3.2	th3, fr1/z3	th2
3.3	fr1, fr2/z3	th3
4.1	mo1, tu1, tu2/z3	tu2, tu3
4.2	tu3/z3	tu1
4.3	we1, we2, we3, th1, th2/z3	we1, we2, we3, th1
5.1	we3/z2	we1
5.2	th1/z2	th3
5.3	th1/z2	th3
5.4	th2/z2	fr1
5.5	th3/z2	th1
5.6	fr2/z2	fr1
5.7	fr1/z2	th2
6.1	th1/z1	we3
6.2	we1, we2 /z1	we3
6.3	we3/z1	we1
6.4	we2, we3/z1	we1

14:00 - 15:20

Opening Session

The Opening Session will begin with welcome addresses from Chinese government, IAG and LOC of the IAG 2021, and followed by thought-provoking keynote presentations from world renowned experts - Prof. Annette Eicker and Prof. Yuanxi Yang.

Chairperson:

- Prof. Qin Yan, President of Chinese Academy of Surveying and Mapping

Official Address

- Leader from Ministry of Natural Resources of China
- Zuheir Altamimi, President of International Association of Geodesy
- Qinglin Wang, Deputy Director General of Department of International Affairs, China Association for Science and Technology
- Chaozhi Song, President of Chinese Society for Geodesy Photogrammetry and Cartography

Global Keynote Presentation

- 01 Geodesy Contribution to Climate Research
 - Prof. Annette Eicker, President of the Inter-Commission Committee on Geodesy for Climate Research (ICCC)
- 02 Featured Services and Performances of BDS-3
 - Prof. Yuanxi Yang, Xi'an Institute of Surveying and Mapping



since 2021 since 2019 since 2016 2015/03-20 2014/05-20 2008

2002-2016



Dr. Yuanxi Yang is a professor of Geodesy and Navigation at Xi'an Research Institute of Surveying and Mapping, and a member of the Chinese Academy of Sciences. He is the vice chief designer of BeiDou Navigation Satellite System.

He has been for a long time engaged in geodesy and navigation. He proposed an innovative robust estimation theory for dependent observations, and established a novel adaptive dynamic navigation theory and technical architecture. He is the chief scientist of a series of major national projects of China, such as the Chinese Geodetic Coordinate System Project. He has published more than 300 peer reviewed papers including 60 SCI papers, and six academic books, which have been cited more than 10,000 times. In recent years, he has started his new research career in marine geodesy, undersea navigation and resilient poisoning, navigation and time (PNT).

	President of the Geodesy Division of the European
	Geosciences Union (EGU)
	President of IAG's Inter-Commission Committee on
	"Geodesy for Cliamte Research" (ICCC)
	Professsor for Geodesy and Adjusment Theory at
	HafenCiy University Hamburg, Germany
15/09	Research stay at NASA's Jet Propulsion Laboratory,
	Pasadena, USA
14/07	Research stay at the University of Rennes 1,
	Rennes, France
	PhD with a thesis on "Gravity field refinement by
	radial basis functions from in-situ satellite data"
	Research associate at the Institute of Geodesy and
	Geoinformation, Unversity of Bonn, Germany

He has been awarded the two second prizes of National Science and Technology Progress Awards, one grand prizes of provincial and ministerial science and technology awards, and six first prizes of provincial and ministerial science and technology awards. He also won the Qiushi Outstanding Youth Award, Heliang Heli Prize, and the Qian Xuesen Outstanding Contribution Award. He has been elected as the the IAG fellow in 2003, and ION fellow in 2018.

15:30 – 16:30 | IAG Opening Plenary Session

Chairperson:

- Markku Poutanen, Secretary General of International Association of Geodesy (IAG)

- 01 Welcome
 - Zuheir Altamimi, President of IAG
- 02 IAG activities 2019-2021 and perspectives 2021-2023 - Zuheir Altamimi, President of IAG
- 03 IAG administration report 2019-2021 - Markku Poutanen, Secretary General of IAG
- 04 Presentation of the IAG Young Authors Awards 2019 and 2020 - Zuheir Altamimi, President of IAG
- 05 Overview of the IAG Scientific Assembly programme - Markku Poutanen, Secretary General of IAG



16:40 - 18:00 **Parallel Sessions**

1.1 International Terrestrial Reference Frame	Zoom A
1.2 Advancements and open problems in global reference frame theory and methodology (Joint with ICCT)	Zoom A
2a.1 Terrestrial, Marine and Airborne Gravimetry (joint with QuGe)	Zoom B
4.1 Geodetic Remote Sensing (Joint with ICCC)	Zoom C
Posters	
1. O Terrestrial and ansas association for multi-technique combinations	

1.3 Terrestrial and space geodetic ties for multi-technique combinations

2a.3 Local and Regional Geoid and Gravity Modelling

16:40 - 18:00

Parallel Sessions (Oral)

1.1 International Terrestrial Reference Frame **Conveners:**

- Xavier Collilieux, Institut National de l'information Geographique et Forestiere, France
- Ryan Hippenstiel, National Geodetic Survey NOAA, USA
- Anthony Mémin, Université Nice Sophia Antipolis, France
- Zhiping Lu, Information Engineering University, China

1.2 Advancements and open problems in global reference frame theory and methodology (Joint with ICCT)

Conveners:

- Christopher Kotsakis, Aristotle University of Thessaloniki, Greece
- Mathis Blossfeld, TUM, Germany
- Junping Chen, Shanghai Astronomical Observatory, Chinese Academy of Sciences
- S1.1 01 New Developments on the IDS Contribution to the ITRF2020 Pascale Ferrage S1.1 02 The International Laser Ranging Service (ILRS) Contribution to the Development of the ITRF2020 Giuseppe Bianco S1.1 03 Combined IVS contribution to the ITRF2020 S1.1 04 Status of ITRF2020 analysis and early results
- Zuheir Altamimi, Paul Rebischung, Laurent Métivier, Xavier Collilieux, Kristel Chanard
- S1.1 05 Quality Evaluation of the Continental Water Storage models for correcting the Crustal Movement Observation Network of China height time series - Zhao Li, Weiping Jiang, Liansheng Deng, Tonie van Dam
- S1.2 06 Characteristics and Predictability of Postseismic Deformation in Reference Frame Models - Jeff Freymueller
- S1.2 07 Handling of tropospheric and range biases in Satellite Laser Ranging - Mateusz Drożdżewski, Krzysztof Sośnica, Dariusz Strugarek

Zoom A

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- Guilhem Moreaux, Frank Lemoine, Hugues Capdeville, Petr Štěpánek, Michiel Otten, Jérôme Saunier,

- Erricos Pavlis, Cinzia Luceri, Antonio Basoni, David Sarrocco, Magda Kuzmicz-Cieslak, Keith Evans,

- Hendrik Hellmers, Daniela Thaller, Mathis Bloßfeld, Manuela Seitz, John Gipson, Sadegh Modiri

16:40 – 18:00	Zoom B	16:40 -	18:00
 Parallel Sessions (Oral) 2a.1 Terrestrial, Marine and Airborne Gravimetry (joint with a Conveners: Derek van Westrum, National Oceanic and Atmospheric Administration Hartmut Wziontek, Federal Agency for Cartography and Geodesy (BKG Michel van Camp, Belgium Shuqing Wu, China National Measuring Science Research Institute 	(NOAA), USA	4.1 Geor Convene - Michael - Ehsan Fe - Ningbo V	Sessions (Oral) detic Remote Sensing (Joint with ICC ers: Schmidt, Technical University Munich (TUM), (orootan, Geodesy and Earth Observation Gro Wang, Academy of OPTO-Electronics, Chines acione, e-GEOS, Italy
S2a.1 01 Current status and future improvements of digital zenith can - Inese Varna, Ansis Zarins, Augusts Rubans		S4.1 01	- Ningbo Wang, Zishen Li, Yunbin Yuan, Manuel Hauschild, Alberto Garcia-Rigo, Andreas Gos
S2a.1 02 Recent results of strapdown dynamic gravimeter on differen - Kaidong Zhang		S4.1 02	Olivares, Kenji Nakayama, Libo Liu, Nicolas Wookyoung Lee, Xingliang Huo, Xiaodong Ren Near Real-Time Global Ionospheric Modeling
S2a.1 03 Recent Airborne Gravity Surveys in Denmark with Strapdow - Tim Jensen, René Forsberg	<i>i</i> n Technology		- Xulei Jin, Shuli Song
S2a.1 04 Results from a car-based 3D-strapdown gravimetry campai - Peter Schack, Roland Pail, Thomas Gruber	gn in the Bavarian Estergebirge	S4.1 03	Spatial-temporal evolutional behaviors of g September 2017 using the GNSS, SWARM - Wang Li, Dongsheng Zhao, Kefei Zhang
S2a.1 05 An approach to airborne vector gravimetry based on spheric - Vadim Vyazmin		S4.1 04	Extracting ionospheric phase scintillation ind - Dongsheng Zhao, Wang Li, Kefei Zhang
S2a.1 06 The convergence of gravity change rates from repeated abs - Mirjam Bilker-Koivula, Jaakko Mäkinen, Hannu Ruotsalainen, Jyri		S4.1 05	Detection of earthquake and tsunami sigr different observation techniques
S2a.1 07 Evaluation of the Muquans Absolute Quantum Gravimeter reference - Julian Glässel, Hartmut Wziontek, Axel Rülke	AQG-A02 against a precise gravity		- Michael Schmidt, Andreas Goss, Eren Erdoga Gregorczyk, Beata Milanowska, Manuel Herna Victoria Graffigna, Heng Yang, Anna Belehaki, I
		S4.1 06	Alternative ionospheric correction algorithm - M Mainul Hoque, Juan Andrés Cahuasquí
		S4.1 07	Analysis of the BDGIM Performance in BDS - Guangxing Wang, Zhihao Yin, Zhigang Hu, Yac

Zoom C

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Germany oup, Aalborg University, Denmark se Academy of Sciences

itoring and Modeling: Status during 2019-2021

l Hernández-Pajares, Alexis Blot, Andrzej Krankowski, Andre oss, Attila Komjathy, Cheng Wang, Eren Erdogan, German s Bergeot, Qile Zhao, Raul Orús, Reza Ghoddousi-Fard, n, Zhizhao Liu

Based on Multi-GNSS and Virtual Observation Stations

global ionospheric response to severe storms on 7-8 *I*, COSMIC and TIE-GCM techniques

dex from 1 Hz GNSS observations

natures in the ionosphere from the combination of

an, Wojciech Jarmołowski, Pawel Wielgosz, Anna Krypiaknández Pajares, Alberto García-Rigo, Enric Monte-Moreno, Ioanna Tsagouri, Evangelos Paouris, Roger Haagmans

n for Galileo single frequency users

S Single Point Positioning dong Bo

16:40 -	18:00	Posters	S	.3 P	9
1.3 Terre	Sessions (Poster) estrial and space geodetic ties for multi-technique comb	inations	S	.3 P	 Radosław Zajdel, Krzysztof Sośnica, Grzego Determination of Galileo and GLONASS of Grzegorz Bury, Krzysztof Sośnica, Radosław
- Krzyszto	ers: entobler, Technical University of Munich, Germany f Sośnica, Wroclaw University of Environmental and Life Sciences, P Jiang, WuHan University, China	oland	S	.3 P	 9 SLR station range bias and coordinate and GNSS-based precise orbits - Heike Peter, Daniel Arnold, Alexandre Couhe
_	al and Regional Geoid and Gravity Modelling		S	.3 P	 10 Combination of SLR observations to LEO - Dariusz Strugarek, Krzysztof Sośnica, Daniel
- Hussein	e rs: ly Hwang, National Chiao Tung University, China-Taipei Abd-Elmotaal, Minia University, Egypt Shen, WuHan University, China		Sź	a.3 P	 Examining the optimal depth of the c determination based on the Stokes-Helm Koji Matsuo
S1.3 P1	A Study on Differencing Approaches for SLR Observations - Iván Herrera Pinzón, Markus Rothacher		Sź	a.3 P	 Local gravity field modelling in spatial of Earth's surface: case study in Slovakia Robert Cunderlik, Marek Macák, Zuzana Mir
S1.3 P2	Assessment of Local VLBI Baselines: The Wettzell Case - Iván Herrera Pinzón, Markus Rothacher		Sź	a.3 P	 Gravimetric Geoid Modeling by Stokes Yogyakarta, Indonesia Brian Bramanto, Kosasih Prijatna, Muhamma
S1.3 P3	Close Range Photogrammetry for High Precise Reference Poin concept at Satellite Observing System Wettzell - Michael Lösler, Cornelia Eschelbach, Thomas Klügel	It Determination – A proof of	⊾ Sź	a.3 P	
S1.3 P4	Radar Corner Reflector installation at the OCA geodetic Observato - Xavier Collilieux, Clément Courde, Bénédicte Fruneau, Mourad Ain Delprat, Damien Pesce, Guy Wöppelmann		Sź	a.3 P	 Jin Wei, Chongyang Shen, Mingzhang Hu, Y Improved geoid models in Taiwan and its Huang Wenhsuan, Hwang Cheinway
S1.3 P5	Datum problem in terrestrial local ties - Ulla Kallio, Thomas Klügel, Simo Marila, Swetlana Mähler, Markku Poutan	en, Torben Schüler, Heli Suurmäki			
S1.3 P6	 Intra- and Inter-Technique Atmospheric Ties: Derivation, Implement Kyriakos Balidakis, Daniela Thaller, Mateusz Drożdżewski, Claudia I Heinkelmann, Chaiyaporn Kitpracha, Frank Lemoine, Lisa Lengert, Tob Puente, Marcelo Santos, Benedikt Soja, Krzysztof Sośnica, Jungang W Florian Zus, David Coulot 	Flohrer, Changyong He, Robert ias Nilsson, Arnaud Pollet, Víctor			

nates delivered from GPS, GLONASS, and Galileo prz Bury, Dariusz Strugarek, Mateusz Drożdżewski

orbits based on combined SLR and GNSS data v Zajdel, Dariusz Strugarek, Urs Hugentobler

determination using independent multi-LEO DORIS-

ert, Eléonore Saquet, Flavien Mercier, Oliver Montenbruck

), LAGEOS, LARES, and GNSS satellites Arnold, Adrian Jäggi, Grzegorz Bury, Radosław Zajdel

eondensed topographic masses for precise geoid ert scheme – A case study in Colorado

domain using the FEM approach on the discretized

narechová, Karol Mikula

es and Second Helmert's Condensation Method in

nad Syahrullah Fathulhuda, Arisauna Maulidyan Pahlevi

ution of tidal factors measured by recent continuous

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'ing Jiang, Ziwei Liu

offshore islands



- S2a.3 P6 Gravimetric quasigeoid modelling by the GGI method in the Colorado mountains area - Marek Trojanowicz, Magdalena Owczarek-Wesołowska, Yan Ming Wang, Olgierd Jamroz
- S2a.3 P7 On the computation of the complete geoid-quasigeoid separation term for the experiential geoid 2020

- Yanming Wang, Marc Veronneau, Jianliang Huang, Kevin Ahlgren, Xiaopeng Li, Jordan Krcmaric, Ryan Hardy, David Avalos

- S2a.3 P8 A new model of the quasigeoid for the Baltic Sea area - Adam Łyszkowicz, Adam Łyszkowicz, Janusz Zieliński, Monika Biryło
- S2a.3 P9 The improvement of global earth's gravity field model with airborne gravity data: case study in Maowusu - Wei Liang, Xinyu Xu, Jiancheng Li
- S2a.3 P10 Assessments on Terrestrial Gravity Data Grid Densification and Its Effects on Local Geoid Modeling Accuracy
 - Muhammed Raşit Çevikalp, Serdar Erol, Bihter Erol
- S2a.3 P11 Gravimetric Geoid Modelling Using the Least Squares Modification of Hotine Integral in Turkey - Mustafa Serkan Işık, Bihter Erol, Fatıma Feyza Sakil, Muhammed Raşit Çevikalp, Serdar Erol
- S2a.3 P12 Filtering and downward continuation of GOCE SGG data for regional geoid improvement - Dimitrios Natsiopoulos, Elisavet Mamagiannou, Eleftherios Pitenis, Georgios Vergos, Ilias Tziavos
- S2a.3 P13 An oral rebuttal to "the shape of the quasigeoid" - Marcelo Santos, Robert Kingdon, Petr Vaníček, Zdeněk Martinec, Ismael Foroughi



Parallel Sessions 14:00 - 15:20

1.3 Terrestrial and space geodetic ties for multi-technique combinations	Zoom A
2a.3 Local and Regional Geoid and Gravity Modelling	Zoom B
4.1 Geodetic Remote Sensing (Joint with ICCC)	Zoom C
Posters	
1.4 Regional reference frames and networks	
1.5 Comparison and combination of space geodesy techniques	
2a.4 Global Gravity Field Modelling	
2a.7 Topography and Bathymetry Gravity Modelling (joint w. ICCT)	
4.2 Next Generation Positioning	

14:00 - 15:20

Parallel Sessions (Oral) 1.3 Terrestrial and space geodetic ties for multi-technique combinations **Conveners:** - Urs Hugentobler, Technical University of Munich, Germany - Krzysztof Sośnica, Wroclaw University of Environmental and Life Sciences, Poland - Weiping Jiang, WuHan University, China S1.3 01 Multi-technique combinations using a closure in time - Jan Kodet, Ulrich Schreiber, Thomas Klügel S1.3 02 Large-scale dimensional metrology for geodesy-first results from the European GeoMetre Project - Florian Pollinger, Clément Courde, Cornelia Eschelbach, Luis Garcia-Asenjo, Joffray Guillory, Per Olof Hedekvist, Ulla Kallio, Thomas Klügel, Pavel Neyezhmakov, Damien Pesce, Marco Pisani, Jeremias Seppä, Robin Underwood, Kinga Wezka, Mariusz Wiśniewski, for the GeoMetre Consortium S1.3 03 Demonstration of 1 mm Precision for Kilometer Co-location Ties at McDonald Geodetic Observatory - Jullian Rivera, Srinivas Bettadpur, John Griffin S1.3 04 Reference frame realization using co-location in space onboard Galileo satellites - Grzegorz Bury, Krzysztof Sośnica, Radosław Zajdel, Dariusz Strugarek, Urs Hugentobler S1.3 05 Dilution of Precision (DOP) factors for evaluating observations to Galileo satellites with VLBI - Helene Wolf, Johannes Böhm, Matthias Schartner, Urs Hugentobler S1.3 06 On DORIS and SLR simulation studies to single-satellite space-ties to achieve the Global Geodetic Observing System goals - Patrick Schreiner, Nicat Mammadaliyev, Susanne Glaser, Rolf Koenig, Karl Hans Neumayer, Harald Schuh S1.3 07 Towards tropospheric ties in the computation of terrestrial reference frames - Changyong He, Arnaud Pollet, David Coulot

Zoom A

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14:00 -	15:20	Zoom B	14:00 -	15:20
	Sessions (Oral)		Paralle	Sessions (Oral)
2a.3 Loca	al and Regional Geoid and Gravity Modelling		4.1 Geo	detic Remote Sensing (Joint with ICCC
Convene			Conven	
2	Hwang, National Chiao Tung University, China-Taipei			Schmidt, Technical University Munich (TUM), G
	Abd-Elmotaal, Minia University, Egypt			orootan, Geodesy and Earth Observation Grou
- Wenbin S	chen, WuHan University, China		0	Wang, Academy of OPTO-Electronics, Chinese
S2a.3 01	Iterative refinement of regional marine geoid models by using sea surface height an	d dynamic	- Kosa Pa	icione, e-GEOS, Italy
020.0 01	topography datasets	a aynamio	S4.1 08	Multi-GNSS Meteorology: Computation of tro
	- Sander Varbla, Artu Ellmann			- Karina Wilgan, Galina Dick, Florian Zus, Jens Wi
S2a.3 02	On the Optimum DHM Resolution for the Window Remove-Restore Technique: Cas	e Study for	S4.1 09	Application of the Total Variation Method in n
	Africa			- Zohreh Adavi, Robert Weber
	- Hussein Abd-Elmotaal, Norbert Kühtreiber		S4.1 10	Evaluation of shipborne GNSS precipitable
S2a.3 03	Integrating NGS GRAV-D gravity observations into high-resolution global models		0	datasets
	- Philipp Zingerle, Xiaopeng Li, Martin Willberg, Roland Pail, Daniel R. Roman			- Zhilu Wu, Cuixian Lu, Yuxin Zheng, Yang Liu, Ya
S2a.3 04	Regularization parameter determination in case of combining different types of grav	ity data for	S4.1 11	Determination of water vapor content using l
	regional gravity field refinement			- Tomasz Hadas, Grzegorz Marut, Jan Kapłon, W
	- Qing Liu, Michael Schmidt		S4.1 12	TropNet: A deep spatio-temporal model for t
S2a.3 05	Application of 3-dimensional least-squares collocation for free-air vertical gravit	v gradient		- Yuxin Zheng, Cuixian Lu, Zhilu Wu
	modelling			
	- Yunus Aytaç Akdoğan, Gonca Okay Ahi, Hasan Yildiz		S4.1 13	Tomographic fusion strategies for the recons
S2a.3 06	Modernization of the Danish Gravity Network in Preparation of the New 5 mm Danisl	n Geoid		- Gregor Moeller, Chi Ao, Zohreh Adavi, Riccardo Hanna, Chaiyaporn Kitpracha, Eric Pottiaux, V
	- Hergeir Teitsson, René Forsberg, Gabriel Strykowski, Tim Enzlberger Jensen, Adolfient	je Kasenda		Wang, Karina Wilgan, Wenyuan Zhang, Kefei Zh
	Olesen, Kristian Keller		S4.1 14	Improving the global estimation of zenith
S2a.3 07	Seamless Processing for Shipborne Gravity Data			machine/deep learning methods
	- Baogui Ke, Jinzhong Mi, Chuanyin Zhang, Yamin Dang, Hanjiang Wen			- Zhangyu Sun, Bao Zhang, Yibin Yao

Zoom C

27

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Germany oup, Aalborg University, Denmark se Academy of Sciences

tropospheric delays and gradients at GFZ Potsdam Wickert

near real-time GNSS Tropospheric Tomography

ole water vapor from six cruises based on multiple

Yanxiong Liu, Qiuhua Tang

g low-cost dual-frequency GNSS receivers Witold Rohm

r tropospheric parameters forecasting

nstruction of atmospheric water vapor

do Biondi, Hugues Brenot, André Sá, George Hajj, Natalia , Witold Rohm, Endrit Shehaj, Estera Trzcina, Kuo-Nung Zhang

h wet delay and weighted mean temperature with

14:00 – 15:20	Posters	S1.4 P1	Towards an European Deformation Model - Elmar Brockmann, Simon Lutz
Parallel Sessions (Poster)			
1.4 Regional reference frames and networks		S1.4 P2	ADELA: Analysis of DEformation beyond
Conveners:			static to kinematic in any geodetic reference
- Carine Bruyninx, Royal Observatory of Belgium			 José Antonio Tarrío Mosquera, Jesarella Inz Cristian Mardones
- Richard Stanaway, School of Civil and Environmental Engineering, UNSW, Australia			
- Hu Wang, Chinese Academy of Surveying and Mapping		S1.4 P3	A three-dimensional crustal velocity field in - Zhicai Li, Kaihua Ding, Peng Zhang
1.5 Comparison and combination of space geodesy techniques		S1.4 P4	Crustal block modelling using a combi
Conveners:			velocities in Greece
- Robert Heinkelmann, Helmholtz Centre Potsdam GFZ, Germany			- Stylianos Bitharis, Christos Pikridas, Aristeidis
- Zinovy Malkin, Pulkovo Observatory, Russia		S1.4 P5	Geodetic datume transformation with the
- Manuela Seitz, Technical University of Munich, Germany		31.4 FU	in IRAQ
- Chengli Huang, Shanghai Astronomical Observatory, Chinese Academy of Sciences			- Yasir Ammar Abed Al-husseinawi, Imzahim Al
2a.4 Global Gravity Field Modelling		S1.4 P6	Frame accuracy of daily/weekly combined
Conveners:			- Miltiadis Chatzinikos, Christopher Kotsakis
- Roland Pail, Technical University of Munich, Germany		S1.4 P7	ITRF densification in Cyprus
- Daniel Barnes, National Geospatial-Intelligence Agency (NGA), USA		01.4 17	- Chris Danezis, Miltiadis Chatzinikos, Christop
- Xinyu Xu, WuHan University, China			
		S1.4 P8	BEV DC 2.0
2a.7 Topography and Bathymetry Gravity Modelling (joint w. ICCT)			- David Mayer, Philipp Mitterschiffthaler
Conveners:		S1.4 P9	Extraction of common mode error of GNS
- René Forsberg, Technical University of Denmark, Denmark			component analysis
- Sten Claessens, Curtin University, Australia			- Chuanjin Lei, Guanjun Wei, Maoning Gao, Pei
- Baogui Ke, Chinese Academy of Surveying and Mapping			
		S1.5 P1	Astronomy VLBA campaign MOJAVE used
4.2 Next Generation Positioning			- Hana Krasna, Leonid Petrov
Conveners:			
- Laura Ruotsalainen, University of Helsinki			
- Guenther Retscher, TU Wien			

Los Andes (2009-2021). The urgency to change from ce frame for Chile

zunza, Fernando Isla, Marcelo Caverlotti, Catalina Cáceres,

mainland China from denser permanent GPS networks

ination of Euler pole and cluster analysis of GNSS

Fotiou, Dimitrios Rossikopoulos

minimum curvature surface interpolation apprroach

bdul Al-Kareem, Ghydaa Abdul-Rehman

EPN solutions

er Kotsakis	L			
			1	
S coordinate time series in Xinjiang	with independent			
Zhang				
in geodesy				
		29		



- Junjun Yang, Zhicai Luo, Liangcheng Tu

S1.5 P2	analysis algorithm	S2a.7	P2	The omission error modelling of global grav - Martin Pitonak, Matej Varga, Michal Sprlak
S1.5 P3	- Jin Zhang, Lizhen Lian, Chengli Huang The NTSC geodetic VLBI system and its application of UT1 measurements - Yuanwei Wu	S2a.7	P3	Marine Gravimetry, Ship Sounding and C western Coastal Area of the Baltic Sea - Biao Lu, Chuang Xu, Jinbo Li, Bo Zhong, Mar
S1.5 P4	Estimation of Earth rotation parameter UT from Lunar Laser Ranging observations - Liliane Biskupek, Vishwa Vijay Singh, Juergen Mueller, Mingyue Zhang	S4.2	P1	Multipath Characterization using Ray-Traci - Lucy Icking, Fabian Ruwisch, Steffen Schön
S1.5 P5	Geodetic VLBI observations in single-frequency mode with 30-meter Warkworth radio telescope - Oleg Titov, Alexei Melnikov, Sergey Gulyaev, Stuart Weston Weston, Tim Natusch, Fengchun Shu, Bo Xia, Mikhail Kharinov	S4.2	P2	Analysis of BDS Two-way Time Synchroniz - Bin Wang, Jie Cui, Junping Chen, Binghao Wa
S1.6 P6	Estimation of vertical datum parameters of Hong Kong using the GBVP approach based on combined global geopotential models	S4.2	P3	GNSS positioning accuracy of smartphone - Piotr Patynowski, Marcin Mikoś, Krzysztof Sc
	- Panpan Zhang, Lifeng Bao, Lin Wu, Qianqian Li, Hui Liu	S4.2	P4	Vision based navigation in indoor environmen - Fickrie Muhammad, Reiner Jäger
S1.6 P7	Using kriging interpolation for local geoid construction: accuracy evaluation in dependence of point density - Emanuele Alcaras, Pier Paolo Amoroso, Ugo Falchi, Claudio Parente	S4.2	P5	Geomatics and Soft Computing technique - Antonino Fotia, Vincenzo Barrile
S2a.4 P1	Numerical Algorithm and Realization of Ellipsoidal Harmonic Expansion of the Earth Gravity Field - Cong Liu, Zhengtao Wang, Yang Xiao, Yonggang Zhang	S4.2	P6	Fusion of GNSS/INS and Maps for lane-lev - Emerson Cavalheri, Marcelo Santos
S2a.4 P2	On the Fast Computation of Model Gravity Gradient Tensor - Zhibin Xing, Shanshan Li, Yao Meng, Na Yang, Qian Li, Jianchen Shan	S4.2	P7	Robust constrained Kalman filter with GNS - Meng Zhang, Cheng Yang, Yan Liu, Xingyu Lo
S2a.4 P3	Analysis of the potential contribution of the Tianwen-1 extended mission to the solution of Mars' low-order gravity field - Shanhong Liu, Jianguo Yan	S4.2	P8	A State-Domain Robust Fault Detection Al - Zhangjun Yu, Qiuzhao Zhang, Nanshan Zheng
S2a.4 P4	Reconstruction of mathematical foundations for satellite gravimetry from tracking: solutions to problems incorrectly solved for 100 years - Peiliang Xu			
S2a.7 P1	Bathymetry of northeast Greenland revealed by Oceans Melting Greenland (OMG) airborne gravity			

avity field models using different digital terrain models

Ocean Bottom Topography Estimation in the South-

ark van der Meijde

cing in Urban Trenches

ization Vang

nes and sports watches Bośnica, Kamil Kaźmierski

ent: evaluation of performance using smartphone sensor

es for road infrastructure monitoring: a case study

evel vehicle navigation

SS/INS vehicle tightly coulpled navigation application.

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Algorithm for GNSS/INS Integration Positioning

15:30 – 16:50 | Parallel Sessions

1.4 Regional reference frames and networks	Zoom A
2a.3 Local and Regional Geoid and Gravity Modelling	Zoom B
2a.4 Global Gravity Field Modelling	Zoom B
4.1 Geodetic Remote Sensing (Joint with ICCC)	Zoom C

Posters

2a.2, 1.6 Vertical Reference Systems: methodologies, realization, and new technologies (joint w. s5, ICCT, QuGe)

4.1 Geodetic Remote Sensing (Joint with ICCC)

15:30 - 16:50

- Carine Bi - Richard S	onal reference frames and networks ers: ruyninx, Royal Observatory of Belgium Stanaway, School of Civil and Environmental g, Chinese Academy of Surveying and Mapp
S1.4 01	Scientific goals and strategic actions of EU - Martin Lidberg, Carine Bruyninx, Elmar Broc Legrand, Tomas Liwosz, Rosa Pacione, Ma Altamimi, Alessandro Caporali, Markku Pouta
S1.4 02	Recent achievements and current challe frame of the Americas - José Antonio Tarrío, Laura Sánchez, Sonia A Alejandro Martínez, Óscar Rodriguez, Emilio A
S1.4 03	The North American Terrestrial Reference F - Dru Smith, Mike Craymer, Daniel Roman
S1.4 04	Research on the realization of the regional - Fan Wang, Danan Dong
S1.4 05	 GIANT-REGAIN: A comprehensive analy geodetic and geodynamic applications - Eric Buchta, Mirko Scheinert, Peter Busch, M Demián Gómez, Michael Bevis, Martin Horwa
S1.4 06	Approaches to time-dependent transforma - Richard Stanaway
S1.4 07	On the impact of individual PCC errors on r - Tobias Kersten, Grzegorz Krzan, Karol Dawido

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JREF in a changing landscape

ckmann, Rolf Dach, Ambrus Kenyeres, Karin Kollo, Juliette Iartina Sacher, Wolfgang Söhne, Christof Völksen, Zuheir anen

enges in the maintenance of the geodetic reference

Alves, Alberto Silva, Jesarella Inzunza, Gustavo Caubarrere, Aleuy, Hernán Guagni, Guido González

Frame of 2022: Its Definition and Plans for Adoption

l reference frame

ysis of geodetic GNSS recordings in Antarctica for

Matt A. King, Terry Wilson, Christoph Knöfel, Eric Kendrick, ath

ations between reference frames in deforming regions

regional networks using different processing strategies owicz, Steffen Schön

15:30 – 16:50	Zoom B 15:30 – 16:50
Parallel Sessions (Oral)	Parallel Sessions (Oral)
2a.3 Local and Regional Geoid and Gravity Modelling	4.1 Geodetic Remote Sensing (Joint with IC
Conveners:	Conveners:
- Cheinway Hwang, National Chiao Tung University, China-Taipei	- Michael Schmidt, Technical University Munich (TUM)
- Hussein Abd-Elmotaal, Minia University, Egypt	- Ehsan Forootan, Geodesy and Earth Observation G
- Wenbin Shen, WuHan University, China	- Ningbo Wang, Academy of OPTO-Electronics, Chin - Rosa Pacione, e-GEOS, Italy
2a.4 Global Gravity Field Modelling	
Conveners:	S4.1 15 Current status of the IAG working group 4
- Roland Pail, Technical University of Munich, Germany	- Sajad Tabibi, Felipe Geremia-Nievinski, Niko Chew, Rüdiger Haas, Thomas Hobiger, C
- Daniel Barnes, National Geospatial-Intelligence Agency (NGA), USA - Xinyu Xu, WuHan University, China	Neira, Jihye Park, Dave Purnell, Joerg F Shah, Kegen Yu, Jens Wickert, Simon Willi
S2a.3 08 A 3-Dimensional Realization of Molodensky Heights	S4.1 16 From spaceborne to ground-based pol
- Robert Kingdon, Ismael Foroughi, Marcelo Santos	GNSS reflected signals?
S2a.3 09 An improved regional gravity field solution for Antarctica for geodetic	- Milad Asgarimehr, Mostafa Hoseini, Maximili nd geophysical applications Nahavandchi, Rüdiger Haas, Jens Wickert
- Mirko Scheinert, Philipp Zingerle, Theresa Schaller, Roland Pail, Martin V	S4.1 17 Feasibility of GNSS-R Altimetry Using CyC
S2a.3 10 Indian gravimetric geoid model: IndGG-CUT2021 - Ropesh Goyal, Will Featherstone, Sten Claessens, Onkar Dikshit, Nagar	- C K Shum, Yuchan Yi, Weiqiang Li, Yihang Din Lee, Estel Cardellach, Yuanyuan Jia, Yixin Xiao
······································	S4.1 18 Further evaluation of a GNSS-R synthetic
S2a.4 01 DTU21 Global high resolution gravity field - first evaluation	- Mauricio Yamawaki, Felipe Geremia-Nievinsk
- Ole Baltazar Andersen, Adil Abulaitijiang, Shengjun Zhang	
S2a.4 02 XGM202x: The impact of extending the dense modelling to d/o 14	S4.1 19 Mitigating Long Wavelength Ocean Tide Lo
- Philipp Zingerle, Roland Pail, Thomas Gruber	- Chen Yu, Nigel Penna, Zhenhong Li
	S4.1 20 Soil moisture retrieved using multi-conste
S2a.4 03 Establishment of the global geoid model 2021 (GGM2021)	- Nikolaos Antonoglou, Jens Wickert, Bodo Bo
- Wenbin Shen, Youchao Xie, Jiancheng Han, Jiancheng Li	
S2a.4 04 Joint modelling of the lithospheric and deep Earth gravity field to s	udy the density structure of S4.1 21 Comparison of the Effective Isotropic Rac
the lithosphere	1 data and its impact on soil moisture est
- Bart Root, Javier Fullea, Zdenek Martinec, Jörg Ebbing, Sergei Lebede	- Paulo de Tarso SETTI JUNIOR, Tonie VAN D

Zoom C

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UM), Germany on Group, Aalborg University, Denmark Chinese Academy of Sciences

up 4.3.7 on geodetic GNSS-R

Nikolaos Antonoglou, Karen Boniface, Estel Cardellach, Clara er, Chung-Yen Kuo, Kristine Larson, Wei Liu, Manuel Martínrg Reinking, Ole Roggenbuck, Maximilian Semmling, Rashmi Williams

polarimetric observations: Is precipitation detectable in

ximilian Semmling, Markus Ramatschi, Adriano Camps, Hossein

CyGNSS 8-Satellite Constellation Mission Data

Ding, Haibo Ge, Maorong Ge, Yu Zhang, Chungyen Kuo, Chi-Ming Xiao, Xiaochun Wang

netic vertical array for high-rate water level altimetry

e Loading Effects on InSAR Observations Over Wide Regions

nstellation and multi-frequency GNSS signals do Bookhagen

Radiate Power parameter in CYGNSS v2.1 and v3.0 level estimation

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15:30 -	16:50	Posters	S2a.2	P5	Geopotential number for the IHRF established
Parallel	Sessions (Poster)				 Valeria Silva, Gabriel do Nascimento Guin Matos, Iuri Bjorkstrom
· · · · ·	Vertical Reference Systems: methodologies, realization, and new teo s5, ICCT, QuGe)	hnologies	S1.6	P6	Estimation of vertical datum parameters combined global geopotential models
Convene	r s: /ergos, Aristotle University of Thessaloniki, Greece				- Panpan Zhang, Lifeng Bao, Lin Wu, Qianqia
- Laura Sá	nchez, Technical University of Munich, Deutsches Geodätisches Forschungsinstitut (D ner Kotsakis, Aristotle University of Thessaloniki, Greece	GFI), Germany	S1.6	P7	Using kriging interpolation for local geoid point density
- Jianliang	Huang, Natural Resources Canada (NRC), Canada				- Emanuele Alcaras, Pier Paolo Amoroso, Ugo
	ury, Leibniz Universität Hannover, Germany g, Chinese Academy of Surveying and Mapping		S4.1	P1	Recent activities of the JWG 4.3.4 - Va resolution applications - Anna Krypiak-Gregorczyk, Attila Komjathy,
Convene	letic Remote Sensing (Joint with ICCC) ers: Schmidt, Technical University Munich (TUM), Germany				Qi Liu, Haixia Lyu, Manuel Hernández-Paja Hoque, Gu Shengfeng, Reza Ghoddousi-F Shuanggen Jin, Yunbin Yuan, Heather Nicho
	prootan, Geodesy and Earth Observation Group, Aalborg University, Denmark		S4.1	P2	Near Real-time Regional Ionospheric Mod
	Vang, Academy of OPTO-Electronics, Chinese Academy of Sciences				- Chunyuan Zhou, Ling Yang, Bofeng Li, Xiaor
-	cione, e-GEOS, Italy		S4.1	P3	ASHAK: Adjusted Spherical Harmonic
S2a.2 P1	Can the Earth Gravitational Model augmented by the Topographic Gravity Field the International Height Reference System accurately?	Model realize			Modeling - Ang Liu, Zishen Li, Ningbo Wang, Yan Zhang
	- Jianliang Huang, Marc Véronneau, John W. Crowley, Bianca D'Aoust, Goran Pavlic		S4.1	P4	BDS/GNSS Atmospheric Monitoring
S2a.2 P2					- Zishen Li, Ningbo Wang, Liang Wang, Kai Zh
	- Gabriel do Nascimento Guimarães, Ana Cristina Oliveira Cancoro de Matos, Ayelen F Darío Antokoletz, José Luis Carrión Sánchez, Laura Sánchez, SIRGAS WG III Team	ereira, Ezequiel	S4.1	P5	A New Method of Predicting the Global Ic - Yan ZHANG, Ningbo WANG, Zishen Ll
S2a.2 P4	An Investigation on the Geoid-Quasigeoid Separation with the Case Study in Col	orado, U.S.			המוצראות, הווקטט שאותם, בואופר בו
	- Mustafa Serkan Işık, Bihter Erol, Muhammed Raşit Çevikalp, Serdar Erol		S4.1	P6	An improved method for real-time troposy - Hongxing Zhang, Yunbin Yuan

shment in brazil narães, Denizar Blitzkow, Ana Cristina Oliveira Cancoro de

s of Hong Kong using the GBVP approach based on

an Li, Hui Liu

id construction: accuracy evaluation in dependence of

Falchi, Claudio Parente

alidation of VTEC models for high-precision and high

Beata Milanowska, Wojciech Jarmołowski, Paweł Wielgosz, ares, Andreas Goss, Eren Erdogan, Michael Schmidt, Mainul Fard, Raul Orus-Perez, Bruno Nava, Dieter Bilitza, Tam Dao, olson

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And Retrieval Terminal (BDSMART): Progress and

hou, Hong Yuan

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oheric delay modeling with a regional GNSS network

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- S4.1 P7 An operational GNSS processing system for near-real-time tropospheric ZTD and IWV monitoring in South America: breaking the 2-hour lateness barrier! - Juan Manuel Aragón Paz, Luciano Pedro Oscar Mendoza, Laura Isabel Fernández
- S4.1 P8 High-precision SLR tropospheric zenith delay prediction - Haoyue Zhang
- S4.1 P9 The inversion, characterization and assessment of 3-D water vapor using tomography during typhoon weather over Hong Kong - Laga Tong, Kefei Zhang
- S4.1 P10 Estimation of 4D Atmospheric Water Vapor from GNSS and Infrared Sensor Data: A Combined Tomography Approach - Wenyuan Zhang, Nanshan Zheng, Gregor Moeller, Nan Ding, Shubi Zhang
- S4.1 P11 Sensitivity of ship-borne GNSS troposphere retrieval to processing parameters - Aurélie Panetier, Pierre Bosser, Ali Khenchaf
- S4.1 P12 Development of the next-generation GNSS-Meteo stations - Matthias Aichinger-Rosenberger, Alexander Wolf, Philippe Limpach, Gregor Moeller
- S4.1 P13 Bounding the Residual Tropospheric Error by Interval Analysis - Jingyao Su, Steffen Schön
- S4.1 P14 An enhanced atmospheric model of integrating GNSS CORS network and ERA5 for augmenting PPP-RTK
 - Yaxin Zhong, Cuixian Lv, Xingxing Li, Zhilu Wu, Yuxin Zheng, Bo Wang
- S4.1 P15 Analysis of tropospheric estimates from multi-frequency low-cost GNSS receivers - Katarzyna Stępniak, Jacek Paziewski, Radosław Baryła
- S4.1 P16 A global latitude zone weighted mean temperature (Tm) augment method for empirical Tm model
 - Fei Yang, Di Zhang, Ming Chen, Jiming Guo, Xiaolin Meng

- Regions Using COSMIC-2 Radio Occultation Data - Jiagi Shi, Kefei Zhang
- S4.1 P18 An empirical zenith wet delay model using piecewise height functions based on a sliding window algorithm for China
 - Ge Zhu, Liangke Huang, Lilong Liu, Si Xiong, Junyu Li, Chao Ren
- Nazi Wang, Tianhe Xu, Fan Gao
- high elevation angle satellites
 - Manuella Fagundes, Felipe Geremia-Nievinski
- S4.1 P21 Multi-mode multi-frequency GNSS-IR combination method for water level retrieval - Xiaolei Wang, Xiufeng He
- S4.1 P22 GNSS-R monitoring of St. John river water levels: implementation and first results - Alexandrer Turner, Marcelo Santos, Thalia Nikolaidou, Felipe Nievinski
- function

S4.1 P17 Spatial-Temporal Characteristics of the Tropopause Height over Global Tropical and Subtropical

S4.1 P19 Sea level estimation using signal strength indicator data based on GNSS multipath reflectometry

S4.1 P20 GNSS-R coastal sea level altimetry with an open-source low-cost sensor: initial evaluation of

S4.1 P23 InSAR modeling and deformation estimation for drilling soluble rock salt mine based on CT-PIM



17:00 – 18:20 | Parallel Sessions

1.5 Comparison and combination of space geodesy techniques	Zoom A
2a.7 Topography and Bathymetry Gravity Modelling (joint w. ICCT)	Zoom B
2a.2, 1.6 Vertical Reference Systems: methodologies, realization, and new technologies (joint w. s5, ICCT, QuGe)	Zoom B
4.2 Next Generation Positioning	Zoom C
Posters	
1.1 International Terrestrial Reference Frame	
1.2 (Joint with ICCT) Advancements and open problems in global reference frame theory and methodology	
2a.1 Terrestrial, Marine and Airborne Gravimetry (joint with QuGe)	
4.1 Geodetic Remote Sensing (Joint with ICCC)	

17:00 - 18:20

	el Sessions (Oral)
-	mparison and combination of space g
- Zinovy - Manu	Heinkelmann, Helmholtz Centre Potsdam GF Malkin, Pulkovo Observatory, Russia la Seitz, Technical University of Munich, Germ i Huang, Shanghai Astronomical Observatory,
S1.5 (Multi-technique Integrated Processing on TRF, CRF and EOPs - Jungang Wang, Maorong Ge, Susanne Glase
S1.5 (Weekly Terrestrial Reference Frame realiza the parameter level Lizhen Lian, Chengli Huang, Jin Zhang
S1.5 (Combination of the VLBI, GNSS and LLR Svetlana Mironova, Sergei Kurdubov, Iskande
S1.5 (Combination of GNSS and VLBI data for c - Lisa Lengert, Daniela Thaller, Claudia Flohrer,
S1.5 (Inter- and intra-technique evaluation of U⁻ their combination with co-located GNSS. Periklis-Konstantinos Diamantidis, Rüdiger Harris
S1.5 (Earth rotation parameters estimation using satellites Hongmin Zhang, Yongqiang Yuan, Qian Zhang
S1.5 (Identify the Multi-technology systematic en telescope pointing calibration and VLBI ob - Zhibin Zhang, Xiaohui Ma, Zhongmiao Sun, A

Zoom A

eodesy techniques

Z, Germany

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the Observation Level for Consistent Determination of

er, Robert Heinkelmann, Harald Schuh

ation from a combination of GNSS/SLR/VLBI/DORIS at

station coordinates using SINCOM software er Gayazov

consistent estimation of Earth Orientation Parameters Hendrik Hellmers, Anastasiia Girdiuk

T1-UTC estimates using Legacy S/X VLBI, VGOS and A case study comparing INT1 to VGOS-B sessions laas, Eskil Varenius, Matthias Schartner, Saho Matsumoto

ng satellite laser ranging measurements to multiple LEO

ng, Jiaqi Wu, Wei Zhang, Yujie Qin, Xingxing Li

rors: the relations among reference point determination,

Ni Zhang, Yuan Ye, Zhengxiong Sun

17:00 – 18:20 Zoom B			17:00 –	18:20
2a.7 Topo Convene - René Fors - Sten Clae	Sessions (Oral) ography and Bathymetry Gravity Modelling (joint w. ICCT) rs: sberg, Technical University of Denmark, Denmark essens, Curtin University, Australia e, Chinese Academy of Surveying and Mapping		4.2 Next Convene - Laura Ru	Sessions (Oral) Generation Positioning ers: lotsalainen, University of Helsinki r Retscher, TU Wien
2a.2, 1.6 (joint w. s	<i>Vertical Reference Systems: methodologies, realization, and new tecl</i> s5, ICCT, QuGe)	nologies	S4.2 01	Kinematic determination of state-space rep solutions - Yanming Feng, Wenzong Gao
-	rs: iergos, Aristotle University of Thessaloniki, Greece nchez, Technical University of Munich, Deutsches Geodätisches Forschungsinstitut (DGFI	, Germany	S4.2 02	Investigation of the informativeness of the g - Dmitry Bobrov
- Jianliang	ier Kotsakis, Aristotle University of Thessaloniki, Greece Huang, Natural Resources Canada (NRC), Canada ıry, Leibniz Universität Hannover, Germany		S4.2 03	Facial Feature Recognition Based on Deep - Yihan Yang, Wei Sun
	, Chinese Academy of Surveying and Mapping		S4.2 04	A 3D map based place recognition solution - Liu Jingbin, Dong Xu, Yifan Liang, Hongyu Qiu
S2a.7 01 S2a.7 02 S2a.2 01	- E. Sinem Ince, Christoph Foerste, Oleh Abrykosov, Frank Flechtner Status of the International Height Reference Frame (IHRF)		S4.2 05	Towards collaborative positioning of pedes and IMU data - Andrea Masiero, Paolo Dabove, Vincenzo Di Perakis, Jelena Gabela, Laura Ruotsalainen
S1.6 02	 - Laura Sanchez, on behalf of the IHRF Computation Team Geodetic SAR for Height System Unification and Sea Level Research - Observa and Results in the Baltic Sea - Thomas Gruber, Jonas Ågren, Detlef Angermann, Artu Ellmann, Christoph Gisinger, Jonarkku Poutanen, Marius Schlaak, Faramarz Nilfouroushan, Sander Varbla, Ryszard Z Marila, Andreas Engfeldt, Timo Saari, Anna Świątek6, Xanthi Oikonomidou 	lanta Nastula,	S4.2 06 S4.2 07	A cloud platform and hybrid positioning me - Jinzhong Bei, Dehai Li Decentralized information filter with delayed - Zhenqiang Du, Hongzhou Chai, Xiao Yin, Minz
S1.6 03	Chronometric Height: a genuine general relativistic definition of height measures - Dennis Philipp, Hu Wu, Eva Hackmann, Claus Laemmerzahl, Juergen Mueller			
S2a.2 04	First attempt to establish connection between the Russian height system and the Height Reference System (IHRS) - Ilya Oshchepkov, Maria Gridchina	International		
S2a.2 05	Realization of the International Height Reference System in the region of Mount Qomolang - Tao Jiang, Yamin Dang, Chunxi Guo, Chuanyin Zhang	na (Everest)		

Zoom C

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presentation corrections for unified RTK and PPP-RTK

gravity field for indoor navigation

Neural Network

n for underground positioning using laser scanning

strian and UAS platforms by integrating vision, UWB,

Pietra, Antonio Vettore, Charles Toth, Vassilis Gikas, Harris

ethod for Indoor location service

d states for cooperative location of UUVs zhi Xiang, Fan Zhang

17:00 – 18:20 F	Posters	S1.1 P1	The 2021 Local Ties Campaign at GRAZ - Helmut Titz, Jürgen Fredriksson
Parallel Sessions (Poster)		Q1 1 D2	Local Ties at SLR station Riga
1.1 International Terrestrial Reference Frame		01.1 12	 Kalvis Salmins, Viesturs Sproģis, Imants Biļinski
Conveners:			
- Xavier Collilieux, Institut National de l' information Geographique et Forestiere, France		S1.1 P3	Shimosato co-location of the SLR and GNS
- Ryan Hippenstiel, National Geodetic Survey NOAA, USA			- Yuto Nakamura, Shun-ichi Watanabe, Yusuke Y
- Anthony Mémin, Université Nice Sophia Antipolis, France		S1.1 P4	Evaluation of the IGS contribution to ITRF20
- Zhiping Lu, Information Engineering University, China			- Paul Rebischung
1.2 (Joint with ICCT) Advancements and open problems in global reference frame the and methodology	heory	S1.1 P5	Geodetic VLBI data processing of the specif - Anastasiia Girdiuk, Gerald Engelhardt, Dieter Ul
Conveners:		S1.1 P6	The impact of the EOT20 global ocean tide
- Christopher Kotsakis, Aristotle University of Thessaloniki, Greece			orbits and derived geodetic parameters
- Mathis Blossfeld, TUM, Germany			- Mathis Blossfeld, Mike Hart-Davis, Matthias Glo
- Junping Chen, Shanghai Astronomical Observatory, Chinese Academy of Sciences		01 1 07	Assessing delty and sub delty assess tide
		51.1 P7	Assessing daily and sub-daily ocean tida GLONASS observations
2a.1 Terrestrial, Marine and Airborne Gravimetry (joint with QuGe)			- Hanane Ait-Lakbir, Alvaro Santamaria, Félix Per
Conveners:			
- Derek van Westrum, National Oceanic and Atmospheric Administration (NOAA), USA		S1.1 P8	Densification of the VLBI network in the So
 Hartmut Wziontek, Federal Agency for Cartography and Geodesy (BKG), Germany Michel van Camp, Belgium 			antenna on Tahiti
- Shuqing Wu, China National Measuring Science Research Institute			- Vladimir Schott Guilmault, David Coulot, Sébas Bizouard, Richard Biancale
		▶ S1.2 P1	Modelling and prediction of GPS time series
4.1 Geodetic Remote Sensing (Joint with ICCC) Conveners:			- Wenzong Gao, Yanming Feng
- Michael Schmidt, Technical University Munich (TUM), Germany		S1.2 P2	Denoising method of elevation time series ba
- Ehsan Forootan, Geodesy and Earth Observation Group, Aalborg University, Denmark			permutation entropy
- Ningbo Wang, Academy of OPTO-Electronics, Chinese Academy of Sciences			- Peixian Wang, Haoran Li
- Rosa Pacione, e-GEOS, Italy		S1.2 P3	The cross-correlations of the Helmert transfe
		01.2 F0	for Terrestrial Reference Frames assessment
			- Dimitrios Ampatzidis, Daniela Thaller, Lin Wang
			- Dimitrios Ampatziuis, Damiela malier, Lin Wang

iļinskis, Jorge del Pino **GNSS** stations ike Yokota, Akira Suzuki, Haruka Ueshiba, Noritsune Seo F2020 pecific experiments er Ullrich, Hendrik Hellmers, Daniela Thaller tide model on space geodetic measurements, satellite s Glomsda, Denise Dettmering tidal loading displacements using GPS, Galileo, and Perosanz Southern hemisphere: advanced simulation for a VLBI ébastien Lambert, Arnaud Pollet, Jean-Yves Richard, Christian eries with machine learning approaches es based on CEEMD algorithm and time-lapse multi-scale ansformation parameters as an additional diagnostic tool ment

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- S1.2 P4 Observation density method for selecting independent baselines in GNSS network - Tong Liu, Guochang Xu, Zhiping Lv, Yujun Du, Jian Liu
- S1.2 P5 A Refined Global GNSS Velocity Field Modeling Station Seismic Deformation based on Constrained Nonlinear Optimization - Yingying Ren, Hu Wang, Jiexian Wang, Yangfei Hou, Pengyuan Li
- S1.2 P6 Periods Extraction of GNSS Coordinate Time Series Based on Significance Level - Yanfeng Jia, Xinhui Zhu, Fuping Sun
- S2a.1 P1 A Magnetic Field Calibration Approach to Mitigate Accelerometer Errors in Strapdown Gravimetry - Felix Johann, David Becker, Matthias Becker, Matthias Hoss, Alexander Löwer, Christoph Förste
- S2a.1 P2 Strapdown airborne gravimetry: postprocessing algorithms and some results - Vadim Vyazmin, Andrey Golovan, Yuri Bolotin
- S2a.1 P3 Moving base gravimetry on a land vehicle: The first results from a short traverse drive in central Turkey - İlyas AKPINAR, Mehmet SİMAV, Kamil TEKE, Yunus Aytaç AKDOĞAN, Hasan YILDIZ, Murat DURMAZ
- S2a.1 P4 Determination Of The Vertical Gravity Gradient At A Few Sites Of The Absolute Gravity Network Of Algeria

- Rabah HAMIDI, Mohamed HAMOUDI

- S2a.1 P5 Validation of the Hellenic gravity network in the frame of the ModernGravNet project - Vassilios Grigoriadis, Vassilios Andritsanos, Dimitrios Natsiopoulos
- S2a.1 P6 Preliminary Results of a Gravity Observing experiment at 848m under the earth surface - Xiaodong Chen, Miaomiao Zhang, Heping Sun, Jianqiao Xu, Jiangcun Zhou, Xiaoming Cui
- S2a.1 P7 Extracting Long-Period Surface Waves Using Ambient Noise Data Recorded by Superconducting Gravimeters

- Hang Li, Xiaodong Chen, Jianqiao Xu, Heping Sun, Jiangcun Zhou, Qingchao Liu, Miaomiao Zhang, Lingyun Zhang

S2a.1 P8 The Airborne Gravity Measurement for Development of a New Precise Gravimetric Geoid Model in Japan

> - MASAHIRO NAKASHIMA, Kento lio, Yasuhiro litsuka, Shinobu Kurihara, Kumikazu Ochi, Shuichi Omori, Tokuro Kodama, Masato Kuroyanagi, Masami Handa, Hiroaki Yamamoto, Takashi Toyofuku, Chiaki Kato, Koji Matsuo

- S2a.1 P9 Gravity anomalies of large lakes from ICESAT-2 laser altimetry. - Ole Baltazar Andersen, Nielsen Karina, Forsberg Rene
- S4.1 P24 Using the spaceborne GNSS-R coherent signals to detect the flood of South Asia - Qi Liu, Shuangcheng Zhang
- S4.1 P25 Sea-ice signatures in coherently reflected GNSS signals: Findings from the MOSAiC expedition
- S4.1 P27 Detection of snow depth on the Tibetan Plateau by satellite-based GNSS-R - Wenxiao Ma, Xuerui Wu
- River Basin in 2020 using CYGNSS data - Wenxiao Ma, Xuerui Wu
- S4.1 P29 Remote Sensing of Soil Moisture using Spaceborne GNSS Relectometry Measurements - Mina Rahmani, Jamal Asgari, Milad Asgarimehr
- S4.1 P30 Cross-polarization Correction for Soil Moisture Retrieval Using GNSS SNR data - Mutian Han, Dongkai Yang, Bo Zhang, Xuebao Hong
- the GPS network and tide models - Wei Peng
- Lei Zhang, Hongyu Liang
- Damage Trend Mountain Deformation in Jinsha River Basin - Guohua Xiong, Chengsheng Yang, Sen Lv, Jihong Dong, Guoqiang He
- mechanism of the Ms6.4 Jiashi earthquake in Xinjiang in 2020 - Ting Wang, Chengsheng Yang

- Maximilian Semmling, Jens Wickert, Frederik Kreß, Mainul Hoque, Dmitry Divine, Sebastian Gerland

S4.1 P26 Fast Snow Water Equivalent estimation with GPS interferometric reflectometry (GPS-IR) snow depth - Jiatong Wang, Yufeng Hu, Zhenhong Li, Chenglong Zhang, Miaomiao Zhang, Jing Yang, Wandong Jiang

S4.1 P28 Satellite-based GNSS-R: A New Tool for Flood Monitoring -- Flood monitoring of the Yangtze

S4.1 P31 The gridded tide corrections of the long-strip differential InSAR measurements estimated using

S4.1 P32 An alternative MTInSAR framework for deformation retrieval over areas with heavey decorrelation

S4.1 P33 Based on InSAR Monitoring and Discrete Element Numerical Simulation Research on the

S4.1 P35 Based on Sentinel-1A images revealing the co-seismic and post-seismic deformation

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- S4.1 P36 The Study of the Coupling relationship between Land subsidence and Resources and Environmental carrying capacity in Plain area of Beijing - Rui Liu
- S4.2 P37 Landslide Detection and Segmentation Using Mask R-CNN with Simulated Hard Samples - Wandong Jiang, Jiangbo Xi, Xinyu Dou, Ligong Yang
- S4.3 P38 Land subsidence monitoring in Tongzhou and Three Northern Counties of Langfang based on time series InSAR Technology
 - Guangtong Sun
- S4.4 P39 Research on segmented fitting ranging model based on multiple filter - Minmin Wang, Deng Yang, Jian Wang





14:00 – 15:20 | Parallel Sessions

6.2 ICCC 2a.6, 2b.5 Gravity Inversion for Solid Earth (joint ICCT) 4.3 Techniques and Applications in High Precision GNSS Posters 4.3 Techniques and Applications in High Precision GNSS 5.1 Geodetic infrastructure for Earth System Monitoring 6.4 QuGe

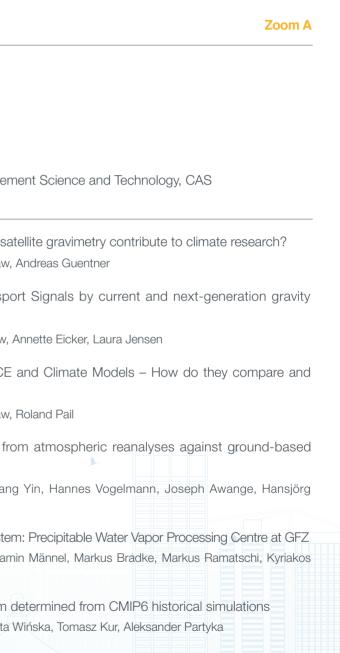
14:00 - 15:20

Zoom A

Zoom B

Zoom C

- Carr - Wei	ette E nen E Feng	rs: Eicker, HafenCity University Böning, Jet Propulsion Laboratory I, Innovation Academy for Precision Measure Santos, University of New Brunswick
S6.2	01	What can long-term trend estimates from sa - Andreas Kvas, Eva Boergens, Henryk Dobslaw
S6.2	02	Recovering Climate-Related Mass Transp missions - Marius Schlaak, Roland Pail, Henryk Dobslaw,
S6.2	03	Land Water Storage Variabilities in GRACE which future changes can we expect? - Laura Jensen, Annette Eicker, Henryk Dobslaw
S6.2	04	Assessments of integrated water vapor fr GPS over Europe - Peng Yuan, Roeland Van Malderen, Xungar Kutterer
S6.2	05	GNSS for the Global Climate Observing Syste - Galina Dick, Florian Zus, Jens Wickert, Benjar Balidakis, Karina Wilgan, Harald Schuh
S6.2	06	Evaluating hydrological angular momentum - Jolanta Nastula, Justyna Śliwińska, Małgorzata
S6.2	07	Investigating the relationship between Le method - Shrishail Raut, Sadegh Modiri, Robert Heink Kitpracha, Harald Schuh



ength of Day and El-Nino using wavelet coherence

kelmann, Kyriakos Balidakis, Santiago Belda, Chaiyaporn

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14:00 – 15:20 Zoom B			14:0	0 – 1	5:20
Parallel Sessions (Oral) 2a.6, 2b.5 Gravity Inversion for Solid Earth (joint ICCT) Conveners: - Mirko Reguzzoni, Politecnico di Milano, Italy - Robert Tenzer, Hong Kong Polytechnic University, Hong Kong, China			4.3 T Conv - Paw	echn venei el Wie	Sessions (Oral) <i>iques and Applications in High Preci</i> elgosz, University of Warmia and Mazury in O thoy, RMIT University, Australia
	Bettadpur, University of Texas, Austin, USA un, Chinese Academy of Sciences		S4.3	01	Precise positioning using low-cost dual-free - Tomasz Hadas, Natalia Wielgocka, Adrian Kad
S2a.6 01	Mapping the upper mantle thermochemical heterogeneity from coupled geophysical-p inversion of seismic waveforms, heat flow, surface elevation and gravity satellite data - Javier Fullea, Sergei Lebedev, Zdenek Martinec, Nicolas Celli	etrological	S4.3	02	Performance Analysis of a Low-cost MAR Vehicle Attitude Estimation - Wei Ding, Yang Gao
S2a.6 02	Improving the GEMMA inversion algorithm towards a new release of the GOCE-based crus - Lorenzo Rossi, Mirko Reguzzoni, Biao Lu, Islam Fadel, Daniele Sampietro, Mark van der Mei		S4.3	03	How much does the price matter? Real-tim - Roland Hohensinn, Raphael Stauffer, Reto S
S2a.6 03	The contribution of gravity to crust and upper mantle structure modeling – an example in Tik - Jiakuan Wan, Zhicai Luo	et Plateau	S4.3	04	Moeller, Markus Rothacher Ambiguity-fixed relative positioning with GN
S2a.6 04	Crustal configuration of the West and Central African Rift System from gravity and sei analysis	smic data			smartphones - Weikai Miao
	- Franck Eitel Kemgang Ghomsi, Robert Tenzer, Rebekka Steffen, Emmanuel Njinju		S4.3	05	An enhanced foot-mounted PDR method
S2a.6 05	Crustal geological provinces seen by gravity field data: an automatic Bayesian approach the Central Eastern Mediterranean area	applied to			seamless pedestrian navigation - Xianlu Tao, Xianlu Tao, Feng Zhu, Xiaohong Zh
	- Martina Capponi, Daniele Sampietro		S4.3	06	Network RTK performance analysis on mo
S2b.5 06	 Data-driven separation of past and present-day surface loading from GRACE a observations Yann Ziegler, Bramha Dutt Vishwakarma, Aoibheann Brady, Stephen Chuter, Sam Royston Rougier, Richard Westaway, Jonathan Bamber 		S4.3	07	 Ali Karimidoona, Steffen Schön Integer-estimable FDMA model as an enab Baocheng Zhang
S2b.5 07	Comparison of GRACE and GNSS seasonal load displacements considering regional and discrete points	averages			
	- Lan Zhang, He Tang, Wenke Sun				

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cision GNSS

Olsztyn, Poland

equency GNSS receivers aczmarek, Grzegorz Marut

ARG Sensor/Single-antenna GNSS System for Land

ime geohazard monitoring with low-cost GNSS Spannagel, Yara Rossi, Iván Dario Herrera Pinzón, Gregor

GNSS dual-frequency observations of Huawei Mate20

od with adaptive ZUPT and multi-sensors fusion for

Zhang

oving vehicle in challenging environments

abler of GLONASS PPP-RTK

14:00 -	15:20	Posters	S4.3 P4	BDSBAS-B1C Service Performance Evaluation
Parallel	Sessions (Poster)			
	niques and Applications in High Precision GNSS		S4.3 P5	A New Underwater Positioning Model Based
Convene	ers:			- Yixu Liu, Shengli Wang, Shuqiang Xue, Xiushan L
- Pawel W	ielgosz, University of Warmia and Mazury in Olsztyn, Poland		S4.3 P6	The evaluation of position and attitude accura
- Suelynn (Choy, RMIT University, Australia			- Chenglong Zhang, Wen Chen, Danan Dong
5 1 Geor	letic infrastructure for Earth System Monitoring		S4.3 P7	BDS-3 SISRE assessment as well as comparis
Convene				and B-CNAV3) navigation messages
	Pearlman, Harvard-Smithsonian Center for Astrophysics			- Zhenghua Dong, Songlin Zhang
			S4.3 P8	The estimation of inter-receiver pseudorange
 Jian Li, Nanjing University of Information Science and Technology Toshimichi Otsubo, Hitotsubashi University 				precise orbit determination - Ran Li, Ningbo Wang, Jiatong Wu, Zishen Li, Ka
6.4 QuG	9		S4.3 P9	Assessments on multi-GNSS real-time precis
Conveners:				- Ruohua Lan, Jie Lv, Junyao Kan, Zhouzheng Gao
- Jürgen N	lüller, Leibniz University Hannover			
- Jakob Flu	ury, Leibniz University Hannover		S4.3 P10	On the Limits of State-of-the-art GNSS Recei
- Michel va	an Camp, Royal Observatory of Belgium			- Thomas Krawinkel, Steffen Schön
- Bob Spe	ro, Jet Propulsion Laboratory		S4.3 P11	Precise orbit determination for FY3D satellite
- Wenbin S	Shen, WuHan University			orbit forecast accuracy analysis
				- Mingming Liu, Yunbin Yuan
S4.3 P1	Virtual Reference Station Technology in Geological Hazard Monitoring		S4.3 P12	Optimal kernel functions of Gaussian process
	- Qinglan Zhang, Ming Chen, Junli Wu, Chaoqian Xu, Fan Wang			region
S4.3 P2	Adaptive Stochastic Model Based on LS-VCE for GNSS Kinematic Precise Poin	It Positioning		- Nhung Le Thi, Benjamin Männel, Pierre Sakic, T
	- Qieqie Zhang, Long Zhao, Bin Wang			
			S5.1 P1	The importance of geodetic infrastructure and
S4.3 P3	Accuracy analysis of GNSS multi-system pseudorange single point positionin	g algorithm with		- Martin Lidberg, Rudiger Haas
	different cut-off height angles		S5.1 P2	GGOS Bureau of Networks and Observations
	- Yinguan Peng, Meng Gao		00.112	 Michael Pearlman, Dirk Behrend, Allison Craddo Riccardo Barzaghi, Daniela Thaller, Benjamin Nicholas Brown, Claudia Carabajal

ation Model and Experimental Analysis , Shiming Gu, Dezhi Zhang

ed on Average Sound Speed in Lu

uracy for MS GNSS receiver with SD algorithm

arison between D1 and B-CNAV (B-CNAV1, B-CNAV2

ge biases and its impact on the BDS-2 GEO satellite

Kai Li, Yang Li

cise point positioning Gao

ceivers in Frequency Transfer

te using onboard BDS and GPS observation data and

ess regression for TEC prediction on the Ring of Fire

c, Thai Chinh Nguyen, Hoa Thi Pham, Harald Schuh

and its connection to the UN 2030 Agenda

ons: Network Status and Related Activities Idock, Erricos Pavlis, Jérôme Saunier, Elizabeth Bradshaw, iin Maennel, Ryan Hippenstiel, Roland Pail, C.K. Shum,

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- S5.1 P3 ILRS: Recent Progress and Plans
 - Ulrich Schreiber, Michael Pearlman, Erricos Pavlis, Claudia Carabaial, Jean-Marie Torre, Toshimichi Obsubo, Michael Steindorfer
- S5.1 P4 Status of the future GGOS core site Metsähovi, Finland - Jyri Näränen, Hannu Koivula, Markku Poutanen, Arttu Raja-Halli, Joona Eskelinen, Mirjam Bilker-Koivula, Nataliya Zubko, Ulla Kallio
- S5.1 P5 VLBI-GNSS co-location at the Ishioka Geodetic Observing Station - Saho Matsumoto, Haruka Ueshiba, Tomokazu Nakakuki, Yu Takagi, Kyonosuke Hayashi, Katsuhiro Mori, Toru Yutsudo, Tomokazu Kobayashi, Yudai Sato
- S5.1 P6 Determination of the Earth's mantle structure based on a joint analysis of gravimetric and seismometric earthquake recordings at the Borowa Gora Geodetic-Geophysical Observatory - Kamila Karkowska, Monika Wilde-Piórko, Przemysław Dykowski, Tomasz Olszak, Marcin Sękowski, Marcin Polkowski
- S5.1 P7 New Daily Coordinates of GNSS CORS in Japan Based on the GEONET 5th Analysis Strategy - Naofumi Takamatsu, Hiroki Muramatsu, Naohiro Tada, Keitaro Ohno, Satoshi Abe, Satoshi Kawamoto
- S5.1 P8 Interoperability of the GGOS-PL infrastructure in the framework of EPOS-PL+
 - Krzysztof Sośnica, Jerzy Nawrocki, Jolanta Nastula, Mateusz Drożdżewski, Radosław Zajdel, Jan Kapłon, Dariusz Strugarek, Kamil Kaźmierski, Piotr Patynowski, Marcin Mikoś, Przemysław Dykowski, Jan Kryński, Witold Rohm, Dorota Olszewska, Grzegorz Mutke, Adam Lurka
- S5.1 P9 Development of Wideband Receiver for Novel Ground-based Microwave Radiometer -field experiments of the new 20-60 GHz wide-band receiver and its implications to new development of the wide-band VLBI receiver-

- Ryuichi ICHIKAWA, Hideki UJIHARA, Shinsuke SATOH, Yusaku OHTA, Basara MIYAHARA, Hiroshi MUNEKANE, Tomokazu KOBAYASHI, Takeshi NAGASAKI, Osamu TAJIMA, Kentaro ARAKI, Takuya TAJIRI, Takeshi MATSUSHIMA, Hiroshi TAKIGUCHI, Nobuo MATSUSHIMA, Tatsuya MOMOTANI, Kenji UTSUNOMIYA, Mamoru SEKIDO, Takaaki JIKE, Tomoaki OYAMA, Hiroshi TAKEUCHI, Hiroshi IMAI

S5.1 P10 Two-dimensional mining surface deformation monitoring and accuracy analysis of ascending and descending SBAS and MSBAS InSAR

- Yu Han, Qiuxiang Tao, Guolin Liu, Anye Hou, Zaijie Guo, Fengyun Wang

- gravimeter - Lishuang Mou, Jinyang Feng, Shuging Wu
- S5.1 P12 Four Achievable Control Schemes for Inertial Reference System in Space
 - Chunyu Xiao, Yun Ma, Hongyin Li, Zebing Zhou
- Model in Geodetic Measurement - Chen Tao, Leyang Wang
- S6.4 P1 Novel Sensors and Quantum Technology for Geodesy (QuGe) - Jürgen Müller, Marcelo Santos
- S6.4 P2 The MOCAST+ study: proposal of a guantum gravimetry mission integrating atomic clocks and cold atom gradiometers
- S6.4 P3 A Simplified Comparison Between Two Proposed Designs for a Future Earth Gravity Mission - Peter Bender
- Future Satellite Gravity Missions
- S6.4 P5 Gravity data acquisition with the transportable absolute Quantum Gravimeter QG-1
- S6.4 P6 Status of gravimetric measurements and modelling along a 10m atom interferometer Christian Schubert, Ernst M. Rasel, Jürgen Müller
- S6.4 P7 Improved evaluation of the transportable strontium lattice clock at PTB for chronometric leveling

S5.1 P11 Accuracy evaluation of gravity continuous observation at key comparison site of absolute

S5.1 P13 The SUT Method for Precision Estimation of Mixed Additive and Multiplicative Random Error

- Federica Migliaccio, Carla Braitenberg, Sergio Mottini, Gabriele Rosi, Mirko Reguzzoni, Fiodor Sorrentino, Guglielmo Maria Tino, Khulan Batsukh, Öykü Koç, Alberto Pastorutti, Tommaso Pivetta, Lorenzo Rossi

With and Without Strongly Reduced Non-Gravitational Acceleration Noise Level Requirements

S6.4 P4 Kalman-filter Based Hybridization of Classic and Cold Atom Interferometry Accelerometers for

- Alireza HosseiniArani, Benjamin Tennstedt, Manuel Schilling, Annike Knabe, Hu Wu, Jürgen Müller, Steffen Schön

- Nina Heine, Marat Musakaev, Sven Abend, Ludger Timmen, Waldemar Herr, Jürgen Müller, Ernst M. Rasel

- Manuel Schilling, Étienne Wodey, Ludger Timmen, Dorothee Tell, Klaus H. Zipfel, Dennis Schlippert,

- Ingo Nosske, Chetan Vishwakarma, Sofia Herbers, Roman Schwarz, Sören Dörscher, Christian Lisdat

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- S6.4 P8 A geodetic determination of the gravitational potential difference toward a 100-km-scale clock frequency comparison in a plate subduction zone
 Yoshiyuki Tanaka, Yosuke Aoki
- S6.4 P9 Determination of the geopotential difference and orthometric height difference based on the two-way satellite time transfer observations
 An Ning, Wenbin Shen, Ziyu Shen, Chenghui Cai, Wei Xu, Lihong Li
- S6.4 P10 Geopotential difference determination by TWSTFT - Peng Cheng, Wenbin Shen
- S6.4 P11 Unifying the world height system based on gravity frequency shift equation via optic fibers - Anh The Hoang, Wenbin Shen
- S6.4 P12 Higher order ionospheric effects on microwave frequency transfer between spacecraft and ground station
 - Pengfei Zhang, Wenbin Shen, Chenxiang Wang, Ziyu Shen, Rui Xu, Chenghui Cai, Wei Xu, Abdelrahim Ruby, Mostafa Ashry





15:30 – 16:50	Parallel Sessions	
	6.2 ICCC	Zoom A
	6.4 QuGe	Zoom A
	2b.1 Analysis Techniques	Zoom B
	4.3 Techniques and Applications in High Precision GNSS	Zoom C
	Posters	
	2a.6, 2b.5 Gravity Inversion for Solid Earth (joint ICCT)	
	4.3 Techniques and Applications in High Precision GNSS	
	6.3 ICCM	

15:30 - 16:50

Parallel	Sessions (Oral)
6.2 ICCC	;
Convene	ers:
- Annette I	Eicker, HafenCity University
- Carmen	Böning, Jet Propulsion Laboratory
- Wei Feng	g, Innovation Academy for Precision Measurement Science and Tec
- Marcelo	Santos, University of New Brunswick
6.4 QuG	e
Convene	ers:
- Jürgen N	1üller, Leibniz University Hannover
- Jakob Fl	ury, Leibniz University Hannover
	an Camp, Royal Observatory of Belgium
	ro, Jet Propulsion Laboratory
-	Shen, WuHan University, China
S6.2 08	Solid Earth Deformation Sensing Using Multi-Decadal Satellite Alt - C K Shum, Ting-Yi Yang, Chungyen Kuo, Vibhor Agarwal, Orhan Al Yuanyuan Jia, Jianliang Nie, Metehan Uz, Xuechen Yang, Yuchan Yi
S6.2 09	Contribution of glacier mass loss to river runoff in the source region of th - Lin Liu, Liming Jiang, Hansheng Wang
S6.4 01	High-Performance Clock Networks and Their Application in Geoc - Hu Wu, Dennis Philipp, Eva Hackmann, Jürgen Müller, Claus Lämmerz
S6.4 02	Towards a transportable aluminum ion quantum logic optical cloc - Stephan Hannig, Benjamin Kraus, Constantin Nauk, Johannes Kran Nicolas Spethmann, Piet Schmidt
S6.4 03	 Towards high-precision International Height Reference System Time Transfer Link Abdelrahim Ruby, Wenbin Shen, Ahmed Shaker, Ziyu Shen, Pengf Mostafa Ashry, An Ning, Lei Wang, Lihong Li
S6.4 04	Defining a unified height system for Egypt using the ACES microv - Mostafa Ashry, Wenbin Shen, Abdelreheem Ruby, Hussein Abd-Elmota
S6.4 05	ESA Activities and Perspectives on Quantum Space Gravimetry

Zoom A

ement Science and Technology, CAS

ulti-Decadal Satellite Altimetry ibhor Agarwal, Orhan Akyilmaz, Lifeng Bao, Chunxi Guo, echen Yang, Yuchan Yi

in the source region of the Yangtze River during 2000-2018

eir Application in Geodesy en Müller, Claus Lämmerzahl

ntum logic optical clock for relativistic geodesy in Nauk, Johannes Kramer, Fabian Dawel, Lennart Pelzer,

ght Reference System Using Two-Way Space Laser

naker, Ziyu Shen, Pengfei Zhang, Chenghui Cai, Wei Xu,

using the ACES microwave links uby, Hussein Abd-Elmotaal

- Olivier Carraz, Luca Massotti, Ilias Daras, Roger Haagmans, Pierluigi Silvestrin

15:30 – 16:50 Zoom B			15:30 –	16:50
	Sessions (Oral) Iysis Techniques			Sessions (Oral) niques and Applications in High Prec
Convene - Adrian Jä	rs: ggi, University of Bern, Switzerland		- Pawel W	ers: /ielgosz, University of Warmia and Mazury in C
	Kvas, Graz University of Technology, Austria			Choy, RMIT University, Australia
- Yunzhong	g Shen, Tongji University		<u> </u>	Quality control of outlier dataction identified
S2b.1 01			54.3 06	Quality control of outlier detection, identifica - Ling Yang, Yunzhong Shen, Bofeng Li
	- Hao Zhou, Zhicai Luo, Lijun Zheng, Yaozong Li, Kang Wang		S4.3 10	INS/Visual Odometry aided GNSS data gap
S2b.1 02	Combination Service for Time-variable Gravity fields (COST-G): operations developments	and new		- Tianxia Liu, Bofeng Li, Ling Yang
	- Ulrich Meyer, Martin Lasser, Adrian Jäggi, Frank Flechtner, Christoph Dahle, Eva Boergens Förste, Torsten Mayer-Gürr, Andreas Kvas, Saniya Behzadpour, Jean-Michel Lemoine	Stephane	S4.3 11	Robust RTK method for short baselines with - Zhiteng Zhang, Bofeng Li
	Bourgogne, Igor Koch, Jakob Flury, Andreas Groh, Annette Eicker, Benoit Meyssignac, In João de Teixeira da Encarnação, Heike Peter, Hao Zhou, Zhengwen Yan, Qiujie Chen, Xian Feng, Changqing Wang		S4.3 12	atmospheric effect control
S2b.1 03	Combined gravity solution from SLR and GRACE/GRACE-FO			- Yunbin Yuan
	- Zhigui Kang, John Ries, Srinivas Bettadpur, Himanshu Save		S4.3 13	High-rate hourly ultra-rapid multi-GNSS pre - Guoqiang Jiao, Shuli Song, Qinming Chen
S2b.1 04	On the combination of gravity field time series derived from kinematic positions of	Low Earth	► S4.3 14	Study on the stability of GNSS ISB
	Orbiting satellites - Thomas Grombein, Martin Lasser, Daniel Arnold, Ulrich Meyer, Adrian Jäggi		34.3 14	- Shuli Song, Hanyu Wang, Weili Zhou, Guoqian
S2b.1 05	Data-Driven Self-De-Aliasing approach for monthly GRACE and GRACE-FO gravity r - Michael Murböck, Petro Abrykosov, Christoph Dahle, Frank Flechtner, Roland Pail	etrieval		
S2b.1 06	Time-variable Gravity Signals in Reprocessed GOCE Gradient Data			
	- Betty Heller, Frank Siegismund, Roland Pail, Thomas Gruber, Roger Haagmans			
S2b.1 07	On Validating the Swarm Data to Fill-in the GRACE/GRACE-FO Gap Employing Artifi Networks Applied to Africa	cial Neural		
	- Hussein Mohasseb, Wenbin Shen, Mostafa Ashry, Hussein Abd-Elmotaal			

Zoom C

cision GNSS

Olsztyn, Poland

ation and adaptation in GNSS positioning

o repairmen in urban environment

th high sample rate

e BeiDou/GNSS precise cloud positioning and space

ecise clock estimation



15:30 – 16:50	Posters	S2b.5		on Analysis with GNSS
Parallel Sessions (Poster)			Component Analy - Tengfei Feng, Yunz	sis zhong Shen, Qiujie Chen
2a.6, 2b.5 Gravity Inversion for Solid Earth (joint ICCT)		S2b.5	P6 Horizontal deform	ation of GNSS on the in
Conveners:				n Li, Jianli Chen, Pengfei V
- Mirko Reguzzoni, Politecnico di Milano, Italy				
- Robert Tenzer, Hong Kong Polytechnic University, Hong Kong, China		S2b.5	0 ,	changes of the Wenchu
- Srinivas Bettadpur, University of Texas, Austin, USA			- Hongtao Hao, Min	zhang Hu
- Wenke Sun, Chinese Academy of Sciences		S2b.5	P8 Time-Space Cha Different Rheology	racteristics of Viscoela Models
4.3 Techniques and Applications in High Precision GNSS			- He Tang, Wenke S	
Conveners:				
- Pawel Wielgosz, University of Warmia and Mazury in Olsztyn, Poland		S4.3	P13 Disturbance analy	sis of underwater loca
- Suelynn Choy, RMIT University, Australia			weight function - Xinpu Wang, Shuq	iang Xue, Guoqing Qu, Yix
6.3 ICCM		S4.3	P14 Integrity monitoring	of precise satellite orbit a
Conveners:			- Jiaojiao Zhao, Zish	en Li, Ningbo Wang
- Yuanxi Yang, Xi'an Institute of Surveying and Mapping		S4 0	D15 A Madified Interne	Jatian Mathad for Dagia
- Heidrun Kopp, GEOMAR Research Center for Marine Geosciences, Germany		S4.3	P15 A Modified Interpo	÷
S2a.6 P1 A Method of Determining Moho Topography from On-orbit GOCE Gravity Grad	ients: A Case	S4.3	P16 Measurement of	Dynamic Structural P
Study in Tibetan Plateau			Beidou-3 System	
- Chuang Xu			- Xuece Miao, Keliar	ng Ding, Qijie Luo, Tianzon
S2a.6 P2 Research on the basement depth of Sichuan basin with real gravity data		S4.3	P17 PPP with raw GNS	SS observation data of s
- Menglong Xu, Yabin Yang, Chengye Sun, Liang Chen, Gengen Qiu		e ne		ner, Klaus Gutlederer, Robe
S2a.6 P3 Correlation between gravitational and magnetic anomalies and crustal susceptibilit	ty in the Three	S4.3	P18 A de-noising me	thod of landslide defo
Gorges area, China			enhanced multi-so	cale permutation entropy
- Yi Zhang, Yunlong Wu, Chao Chen, Kai Sun, Jiapei Wang			- Hao Xu, Li Wang, I	Bao Shu, Chen Yi, Yunqing
S2a.6 P4 Possible Deep Structure and Composition of Venus with Respect to the Currer	nt Knowledge			
from Geodetic Data				
- Chi Xiao, Fei Li, Jianguo Yan, Michel Gregoire, Weifeng Hao, Harada Yuji, Mao Ye, Jean-Pi	erre Barriot			

and GRACE Data in North China Using Independent

- nprovement of mass load inversion Vang
- uan earthquake observed by surface gravimetry
- elastic Post-Seismic Deformations Corresponding to
- ating sound line and design of piecewise exponential
- ixu Liu, Wenlong Yang
- and clock products for real-time precise point positioning
- onal Tropospheric Delay Modeling in Network RTK
- Parameters of Super High-rise Buildings Based on
- ng Xue
- smartphones
- ert Weber
- ormation monitoring data based on CEEMDAN and

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ng Tian

- S4.3 P19 Methods and assessments on the integration of inter-satellite differential BDS PPP and INS - Yu Min, Jie Lv, Qiaozhuang Xu, Zhouzheng Gao
- S4.3 P20 A DIA Method based on Maximum A Posteriori Estimate for Multiple Outliers - Yangkang Yu, Yang Ling, Yunzhong Shen
- S4.3 P21 Antarctic GNSS station of the National Geographic Institute of Spain. Geodetic purposes - Esther Azcue, Unai Quintana, Sergio Calvo, Víctor Puente
- S4.3 P22 The mean dynamic topography model MDTVN2020 on Vietnam sea surface - Thanh Thach Luong, An Dinh Nguyen, Van Hai Tran, Dinh Thanh Nguyen, Nhung Le Thi
- S4.3 P23 Precise Orbit Determination of Low, Middle and High Satellite Network Based on Regional **Ground Stations** - Xuewen Gong, Jizhang Sang, Fuhong Wang, Xingxing Li
- S4.3 P24 A method to compensate for the missing of real time phase biase products from CNES - Shi Du, Guanwen Huang, Yulong Ge, Bao Shu
- S4.3 P25 Triple-frequency ambiguity resolution of BDS/Galileo precise point position with raw GNSS data - Jin Wang, Shengli Wang
- S6.3 P1 Geoscientific contributions of the GNSS-A Seafloor Geodetic Observation array (SGO-A) in the subduction zones around Japan, operated by the Japan Coast Guard - Yusuke Yokota, Tadashi Ishikawa, Shun-ichi Watanabe, Yuto Nakamura
- S6.3 P2 Robust adaptive Kalman filter for underwater acoustic navigation with systematic error model correction - Junting Wang, Tianhe Xu, Yangfan Liu, Dapeng Mu
- S6.3 P3 BATHYMETRIC DATA FITTING BASED ON LINEAR-COMPLEMENTARY FOURIER SERIES OF **B-SPLINE FUNCTION** - Ruichen Zhang, Shaofeng Bian, Bing Ji
- S6.3 P4 High Precision Positioning in Coastal Areas via GNSS/INS Equipped Buoys: A Case Study from the Bass Strait Altimeter Validation Site
 - Boye Zhou, Christopher Watson, Matt King, Jack Beardsley, Benoit Legresy

- S6.3 P5 Comparative analysis of construction methods of regional marine three-dimensional sound velocity field
 - Chaoyi Wu, Fanlin Yang, Mingzhen Xin, Jinjin Wei, Xiaofei Zhang
- Autonomous Underwater Vehicle
 - Xiaofei Zhang, Mingzhen Xin, Fanlin Yang, Jinjin Wei, Chaoyi Wu
- gradient estimation
 - Yang Liu, Yanxiong Liu, Guanxu Chen, Menghao Li
- S6.3 P8 Multi-beam underwater topography distortion correction based on SVP inversion - Yangfan Liu, Tianhe Xu, Junting Wang, Dapeng Mu
- Yingcai Kuang, Zhiping Lu, Fangchao Wang
- on Prototype Tank

- Yunyue Chen, Anmin Zhang, Yufen Cao, Yicheng Liu, Minming Zhang

S6.3 P6 Analysis of Interactive Multiple Model Kalman Filter Algorithm for Ultra Short Baseline Tracking

S6.3 P7 Seafloor single point positioning using GNSS-Acoustic technique with horizontal sound speed

S6.3 P9 A Nonlinear Gauss-Helmert Model and Its Robust Solution for Seafloor Control Point Positioning

S6.3 P10 Research on the Method of Establishing Calibration System for Marine Sonar Equipment Based



17:00 – 18:20

Wednesday, 30 June 2021

Parallel Sessions

6.4 QuGe	Zoom A
6.3 ICCM	Zoom A
5.1 Geodetic infrastructure for Earth System Monitoring	Zoom B
4.3 Techniques and Applications in High Precision GNSS	Zoom C
Posters	
2b.1 Analysis Techniques	
4.3 Techniques and Applications in High Precision GNSS	
6.1 ICCT Geodetic Theory	
6.2 ICCC	

17:00 - 18:20

Parallel Sessions (Oral) 6.4 QuGe				
	_		-	
Conveners: - Jürgen Müller, Leibniz University Hannover - Jakob Flury, Leibniz University Hannover - Michel van Camp, Royal Observatory of Belgium				
	- Bob	Spe	ro, Jet Propulsion Laboratory	
	- Wer	nbin S	Shen, WuHan University, China	
	6.3 I	ССМ	1	
	Conv	vene	ers:	
			ang, Xi'an Institute of Surveying and Mappin Kopp, GEOMAR Research Center for Marine	
	S6.4	06	The Benefit of Accelerometers based on Colo - Annike Knabe, Manuel Schilling, Hu Wu, Alire Quentin Beaufils	
	S6.4	07	Gravimetry by nanoscale parametric am modulation - Fabrizio Pinto	
	S6.4	08	The Application Sagnac Interferometry in t - Ulrich Schreiber, Jan Kodet, Alexander Veliko	
	S6.4	09	Characteristics of Novel Differential Luna Ranging - Mingyue Zhang, Jürgen Müller, Liliane Biskup	
	S6.3	01	Overview of the GNSS-A Seafloor Geodet around Japan, operated by the Japan Coa - Shun-ichi Watanabe, Tadashi Ishikawa, Yuto I	
	S6.3	02	Further evaluation of the impact of Earth's based GNSS Reflectometry - Vitor Hugo Almeida Junior, Felipe Geremia-Ni	
	S6.3	03	Outlier Detection Based on Epoch-differential f - Shuqiang Xue	



ng ne Geosciences, Germany

old Atom Interferometry for Future Satellite Gravity Missions reza HosseiniArani, Jürgen Müller, Franck Pereira dos Santos,

mplifiers driven by radiation-induced dispersion force

the Geosciences oseltsev, Thomas Kluegel ar Laser Ranging Compared to Classical Lunar Laser upek, Vishwa Vijay Singh etic Observation Array (SGO-A) in the subduction zones oast Guard o Nakamura, Yusuke Yokota 's curvature on coastal sea level altimetry with groundvievinski I for Seafloor Geodetic Positioning

Wednesday, 30 June 2021

 17:00 – 18:20 Parallel Sessions (Oral) 5.1 Geodetic infrastructure for Earth System Monitoring Conveners: Michael Pearlman, Harvard-Smithsonian Center for Astrophysics Jian Li, Nanjing University of Information Science and Technology, China Toshimichi Otsubo, Hitotsubashi University 		Zoom B	17:00 -	- 18:20
			4.3 Tech Convert - Pawel V	Parallel Sessions (Oral) <i>4.3 Techniques and Applications in High Preci</i> Conveners: - Pawel Wielgosz, University of Warmia and Mazury in O - Suelynn Choy, RMIT University, Australia
S5.1 01	Coordinating global geodesy in Japan: GGOS Japan		S4.3 15	Non-isotropy of the troposphere and its effect - Lei Li, Ying Xu, Xin Chen, Guolin Liu
S5.1 02	 Toshimichi Otsubo, Basara Miyahara, Shinobu Kurihara, Yusuke Yokota, Yu Takagi, Shun-ichi Hiroshi Takiguchi, Yuichi Aoyama, Koji Matsuo RAEGE: a Spanish-Portuguese infraestructure of geodetic stations 	Natanabe,	S4.3 16	thresholds of predictors derived from GNSS-F
55.1 02	- Jose A. Lopez-Perez		S4.3 17	- Haobo Li, Xiaoming Wang, Kefei Zhang, Suqin An improved tropospheric mapping function
S5.1 03	Probing a southern hemisphere VLBI intensive baseline configuration for dUT1 determin - Sigrid Böhm, Jakob Gruber, Lisa Kern, Jamie McCallum, Lucia McCallum, Jonathan Quick			- Yaozong Zhou, Yidong Lou, Weixing Zhang, Jin
S5.1 04	Schartner Systematic errors in SLR observation residuals to Swarm satellites		S4.3 18	GNSS real-time troposphere monitoring - Jan Douša, Pavel Václavovic
	 Dariusz Strugarek, Krzysztof Sośnica, Daniel Arnold, Adrian Jäggi, Mateusz Drożdżewski, Grze Radosław Zajdel 	gorz Bury,	S4.3 19	A modified global tropospheric delay model - Guolin Liu, Lei Li, Xin Chen, Ying Xu
S5.1 05	The development of spaceborne interferometric synthetic aperture radar missions in China - Junli Chen, Yanyang Liu		S4.3 20	Multi-GNSS code biases: from the perspecti - Fei Guo, Yuanfan Deng, Xiaohong Zhang
S5.1 06	Absolute Positioning of Active Radar Transponders from Sentinel-1 Observations — Ex and Results	oeriences	► S4.3 21	A new strategy of tropospheric gradient estir - Di Zhang, Fei Yang, Lv Zhou, Jiming Guo
	- Marius Schlaak, Christoph Gisinger, Thomas Gruber			
S5.1 07	Optimizing GNSS RTK Infrastructure from the perspective of tropospheric effects - Zhenhong Li, Chen Yu, Nigel Penna			

cision GNSS

Olsztyn, Poland

ect on the long-rang RTK

ecipitation detection using optimal anomaly-based -PWV

n Wu, Jinglei Zhang, Cong Qiu

n modeling method for space geodetic techniques ingna Bai, Zhenyi Zhang

el considering diurnal variation

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ctives of DCB and	d OSB			*	
stimation and its a	pplication in G	INSS PPP			
				b	

Wednesday, 30 June 2021

17:00 – 1	8:20	Posters	S2b.1	P4	High-precision Light Time Correction Mode
Parallel	Sessions (Poster)				- Yihao Yan, Vitali Müller, Changqing Wang, Min
	ysis Techniques		S2b.1	P5	Determination of Terrestrial Water Storage w
Convener	· ·				- Hussein Abd-Elmotaal, Ayman Hassan, Mostal
- Adrian Jä	ggi, University of Bern, Switzerland		S2b.1	P6	Angular velocity recovery method based of
- Andreas K	ívas, Graz University of Technology, Austria				quaternion joint of astrometry
- Yunzhong	Shen, Tongji University, China				- Yunlong Wu
4 3 Techn	iques and Applications in High Precision GNSS		S2b.1	P7	Monthly low-degree gravity field models from
-					 Joao Encarnacao, Daniel Arnold, Ales Bezdek Jaeggi, Jaroslav Klokocnik, Sandro Krauss, To
- Pawel Wie	s. Igosz, University of Warmia and Mazury in Olsztyn, Poland				Pieter Visser, Yu Zhang
	hoy, RMIT University, Australia		006 1		Louis docurs area it field actionation from the
Guolynin G			S2b.1	Pð	Low-degree gravity field estimation from the - Linda Geisser, Ulrich Meyer, Thomas Grombeir
6.1 ICCT	Geodetic Theory		04.0		Intervention of IQL a and DDQ Q Orthit Disarra
Convener	s:		S4.3	P26	Improvement of ISLs on BDS-3 Orbit Dterm - Xia Ren, Yufei Yang
- Pavel Nov	ák, University of West Bohemia				- Ala Heri, rulei falig
- Mattia Cre	spi, University of Rome		S4.3	P27	Precise Orbit Determination of CubeSasts U
					- Amir Allahvirdizadeh, Ahmed El-Mowafy
6.2 ICCC			S4.3	P28	Comprehensive assessment Precise position
Convener					over long baselines
	cker, HafenCity University				- Min Li, Tianhe Xu
	öning, Jet Propulsion Laboratory		S4.3	D00	An ADOP-based integrating multi-GNSS alo
0.	Innovation Academy for Precision Measurement Science and Technology, CAS		04.0	F29	- Xin Liu, Shubi Zhang, Qiuzhao Zhang
	antos, University of New Brunswick				
S2b.1 P1	Evaluating the regional reanalysis COSMO REA6 vs ERA Interim for dealiasing analys	sis of the	S4.3	P30	Performance Analysis of Multi-GNSS Real-1
OLDIT T	GRACE/GRACE-FO Datasets				- Baoqi Sun, Jiawei Liu, Xiaosong Dong, Zhe Zh
	- Shashi Dixit, Petra Freidrichs, Andreas Hense		S4.3	P31	Comparison of the RAIM availability perform
					maximum eigenvalue method under the cor
S2b.1 P2	HUST-ERA5: A new 1-hourly atmosphere de-aliasing product for satellite gravity mission	1			- Xiaping Ma, Qinzhen Li, Ershen Wang, Xiaoxir
	- Fan Yang, Zhicai Luo				
S2b.1 P3	Treatment of ocean tide background model errors in GRACE/GRACE-FO data processi	ng			
	- Petro Abrykosov, Roman Sulzbach, Roland Pail				

del in GRACE and GRACE Follow-On Mission in Zhong, Wei Feng, Lei Liang

without Stripes using Grace-Like Geopotential Models tafa Abd-Elbaky

d on satellite gravity gradient measurement based on

rom Swarm GPS data for the last 7 years ek, Christoph Dahle, Junyi Guo, Jose van den IJssel, Adrian Torsten Mayer-Guerr, Ulrich Meyer, Josef Sebera, CK Shum,

he SLR data processing of spherical satellites ein, Daniel Arnold, Adrian Jäggi

rmination and Time Sychronization

s Using a Proposed Observations Weight Model

ition and velocity determination for airborne gravimetry

algorithm for fast and high-precision positioning

ıl-Time Kinematic Timing Zhang, Haiyan Yang, Xuhai Yang

ormance of the maximum value method and the matrix condition of double-satellite faults

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Wednesday, 30 June 2021

- S4.3 P32 BDS2/BDS3/GPS Multi-Frequency and Multi-System Fusion Long-Baseline Relative Positioning Analysis
 - Xiaoting Lei, Huizhong Zhu, Jingfa Zhang
- S4.3 P33 A deformation monitoring system based on BDS-2/BDS-3 PPP with optimal stochastic model - Chenhao Ouyang, Junbo Shi, Jiming Guo
- S4.3 P34 Characteristics analysis of raw multi-GNSS measurement from Huawei P30 and positioning performance - Chen Yi, Li Wang, Bao Shu, Hao Xu, Yunqing Tian
- S4.3 P35 High-precision deeply-coupled GNSS/INS positioning technology and its application for survey vehicle - Baoguo Yu, Cailun Wu, Teng Long, Song Xie, Yixiong Sun
- S4.3 P36 Positioning performance with low-cost GNSS receivers - Kamil Kazmierski, Kamil Dominiak, Krzysztof Sośnica, Tomasz Hadas
- S4.3 P37 Multi-GNSS satellite inter-frequency clock bias estimation based on IGS clock datum in the multi-frequency context - Lei Fan, Chuang Shi
- S6.1 P1 Impact of accelerometers calibration and empirical forces modelling on GRACE precise orbit determination
 - Thomas Papanikolaou, Dimitrios Tsoulis
- S6.1 P2 Tensor calculus and functional analysis in the iteration solution of the geodetic boundary value problem - Petr Holota, Otakar Nesvadba
- S6.1 P3 On determination of the geoid from measured gradients of the Earth's gravity field potential - Pavel Novak, Michal Šprlák, Martin Pitoňák
- S6.1 P4 An quality assessment of the official GOCE Level 2 GRD SPW 2 products over Norway, Czechia, and Slovakia - Martin Pitonak, Michal Sprlak, Vegard Ophaug, Ove C. D. Omang, Pavel Novak
- S6.1 P5 The general rule of potential field parameters especially for Laplace's equation - Xiaole Deng, Wenbin Shen, Meng Yang, Jiangjun Ran

- uncertainty characterisation
- S6.2 P2 River discharge estimation from high-resolution altimetry - Luciana Fenoglio, Elena Zakharova, Quang Duong, Salvatore Dinardo, Jürgen Kusche, Matthias Gärtner, Hakan Ahmet, Jerome Benveniste, Bahtiyor Zohidov
- S6.2 P3 Using satellite geodesy for carbon cycle research - Alexandra Klemme, Thorsten Warneke, Heinrich Bovensmann, Matthias Weigelt, Jürgen Müller, Justus Notholt, Claus Lämmerzahl
- control factors related with climate warming - Xi Lu
- S6.2 P5 Meteorological and Tidal Effects on GNSS Reflected Signal in Mediterranean Coasts of Turkey - Cansu Beşel, Emine Tanır Kayıkçı
- S6.2 P6 Innovative methodology for downscaling GRACE observations for the purpose of groundwater storage determination
 - Monika Birylo, Zofia Rzepecka, Justyna Śliwińska, Jolanta Nastula
- S6.2 P7 Preliminary results of the third IGS TIGA Reprocessing at GFZ - Benjamin Männel, Tilo Schöne, Markus Bradke, Harald Schuh
- Hadi Amin, Mohammad Bagherbandi, Lars Sjöberg
- S6.2 P9 The initial process of post-fire ground deformation in Northeastern Siberian permafrost areas detected by L-band and C-band InSAR - Kazuki Yanagiya, Masato Furuya, Go Iwahana, Petr Danilov
- S6.2 P10 Determination of the velocity field of the African plate from GNSS - Saturday Ehisemhen Usifoh, Benjamin Männel, Pierre Sakic, Joseph Dodo, Harald Schuh

S6.2 P1 Closure of global sea-level and ocean-mass budgets: progress and prospects with a focus on

- Martin Horwath, Benjamin D. Gutknecht, Anny Cazenave, Hindumathi Kulaiappan Palanisamy, Florence Marti, Ben Marzeion, Frank Paul, Ravmond Le Bris, Anna E. Hogg, Inès Otosaka, Andrew Shepherd, Petra Döll, Denise Cáceres, Hannes Müller Schmied, Johnny A. Johannessen, Jan Even Øie Nilsen, Roshin P. Raj, René Forsberg, Louise Sandberg Sørensen, Valentina R. Barletta, Sebastian B. Simonsen, Per Knudsen, Ole Baltazar Andersen, Heidi Randall , Stine K. Rose, Christopher J. Merchant, Claire R. Macintosh, Karina von Schuckmann, Kristin Novotny, Andreas Groh, Marco Restano, Jérôme Benveniste

S6.2 P4 Spatial-temporal variations in ice velocity of the Northeast Greenland Ice Stream and their

S6.2 P8 Quantifying barystatic sea-level change from satellite altimetry, GRACE and Argo observations

14:00 – 15:20 | Parallel Sessions

6.1 ICCT Geodetic Theory	Zoom A
5.2 Gravity observations and networks in the framework of GGOS (Joint 2a.1, 2b.6, QuGe)	Zoom B
5.3 Standardized geodetic products for a reliable System Earth observation	Zoom B
4.3 Techniques and Applications in High Precision GNSS	Zoom C
Posters	
2b.3 (joint with ICCC) Cryospheric changes from gravity data	
4.3 Techniques and Applications in High Precision GNSS	
5.5 Assimilation of geodetic observations in the modelling of the Atmosphere, Cryosphere and Hydrosphere (Joint ICCC)	

14:00 - 15:20

Parallel Sessions (Oral) 6.1 ICCT Geodetic Theory Conveners: - Pavel Novák, University of West Bohemia - Mattia Crespi, University of Rome							
S6.1 01	A CFD-based gravitational field modeling exploration - Zhi Yin, Nico Sneeuw						
S6.1 02	Crustal density and forward global gravitat and LOLA satellite data - Michal Šprlák, Shin-Chan Han, Will Feathersto						
S6.1 03	Sensitivity of GNSS orbits to General Relat - Krzysztof Sośnica, Grzegorz Bury, Radosław 2						
S6.1 04	Inclusion of data uncertainty in machine lea - Mostafa Kiani Shahvandi, Benedikt Soja						
S6.1 05	Adaptive Quasi-Monte Carlo Algorithm for - Xinlei Luo, Leyang Wang						
S6.1 06	Bayesian modelling of discontinuities and vertical land motion estimates - Julius Oelsmann, Marcello Passaro, Laura Sa						
S6.1 07	A new robust estimation algorithm for t Accurate Detection - Hailu Chen, Wei Qu, Qin Zhang, Yuan Gao, S						



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method and its potential applications in deep space

tional field model on the Moon determined from GRAIL

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tivistic effects

Zajdel, Javier Ventura-Traveset, Luis Mendes

arning and its application in geodetic data science

r Covariance Propagation of GNSS Baseline Vector

nd piecewise trends (trend changes) improves coastal

anchez, Denise Dettmering, Christian Schwatke, Florian Seitz

the superstrong breakdown point based on Quasi-

Shichuan Liang

14:00 -	15:20	Zoom B	14:00 -	15:20
 Parallel Sessions (Oral) <i>5.2 Gravity observations and networks in the framework of GGOS (Joint 2a.1, 2b.6)</i> Conveners: Riccardo Barzaghi, Politecnico di Milano Shuanggen Jin, Nanjing University of Information Science & Technology, China 		QuGe)	4.3 Tech Conven - Pawel V	I Sessions (Oral) Iniques and Applications in High Preci ers: Vielgosz, University of Warmia and Mazury in (Choy, RMIT University, Australia
	Wziontek, Federal Agency for Cartography and Geodesy /lüller, Leibniz Universität Hannover, Institut für Erdmessung		S4.3 22	ADDTID: An Efficient Tool for Characterizing - Heng Yang, Enrique Monte-Moreno, Manuel H
Convene - Detlef Ar	dardized geodetic products for a reliable System Earth observation ers: ngermann, DGFI-TUM Heki, Hokkaido University		S4.3 23	Estimation of the ionospheric VTEC and multi-layer mapping function - Ke Su, Shuanggen Jin
	National Geomatics Center of China Progress of International Gravity Reference System and Frame		S4.3 24	Estimation and Validation of Codepha Decomposition - Yannick Breva, Johannes Kröger, Tobias Kerst
S5.2 02	 Hartmut Wziontek, Sylvain Bonvalot, Reinhard Falk, Germinal Gabalda, Jaakko Mäkinen Pálinkáš, Axel Rülke, Leonid Vitushkin The pole tide in terrestrial gravimetry 	Vojtech	S4.3 25	
S5.2 02	 Jaakko Mäkinen Evaluation of the gravity reference function at the Borowa Gora Observatory Przemyslaw Dykowski, Jan Krynski, Marcin Sekowski, Monika Wilde-Piorko, Tomasz Olszak 		S4.3 26	Characteristics of BDS-3 multipath effect a - Ran Lu, Wen Chen, Danan Dong, Lei Li, Luyac
S5.3 01	New GGOS Website-An Extensive Information Platform about Geodetic Products, Obse and Services - Martin Sehnal, Detlef Angermann, Laura Sánchez, Kosuke Heki	rvations	S4.3 27	Recognition of periodic signals in coordir Precise Point Positioning - Radosław Zajdel, Kamil Kaźmierski, Krzysztof
S5.3 02	Defining Essential Geodetic Variables - Richard Gross		S4.3 28	Research on LEO constellations enhand
S5.3 03	On the Earth dynamical ellipticity - Alberto Escapa, Tomas Baenas, Jose Manuel Ferrandiz			- Junjun Yuan, Shanshi Zhou, Xiaogong Hu, Kai
S5.3 04	 Geodetic Analyses at the National Geographic Institute of Spain. Current and future projects José Carlos Rodríguez, Esther Azcue, Víctor Puente, José Antonio López Fernández, José López-Pérez, José Antonio Sánchez Sobrino, Marcelino Valdés Pérez, Beatriz Vaquero, Pablo De 	Antonio		

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cision GNSS

o Olsztyn, Poland

g Travelling Ionospheric Disturbance	S
lernández-Pajares	

d satellite DCB from BDS single-frequency PPP with

nase Center Correction using the Empirical Mode

rsten, Steffen Schön

cs for Comparing Phase Center Corrections Breva, Steffen Schön

t and its mitigation methods in precise point positioning yao Huang

dinate time series from GPS, GLONASS, and Galileo

of Sośnica

ancing GNSS orbit determination and precise point

Kai Li, Min Liao

14:00 – 1	5:20	Posters	S2b.3	P4	Performance of Tongji-RegGrace2019 Sc - Wei Wang, Yunzhong Shen, Qiujie Chen
	Sessions (Poster) t with ICCC) Cryospheric changes from gravity data s:		S2b.3	P5	Low Degree Spherical Harmonic Influer GRACE/GRACE-FO Gravimetry - Xiaoli Su, Junyi Guo, C.K. Shum, Zhicai Luo
- Isabella Ve	aroh, Technische Universität Dresden, Germany elicogna, University of California, Irvine / Jet Propulsion Laboratory, USA ers, Utrecht University / Delft University of Technology, The Netherlands		S4.3	P38	BDS-3 multi-frequency PPP-RTK for veh - Bo Wang, Xin Li, Jiaxin Huang, Hongbo Lv,
- Jiangjun R	an, Southern University of Science and Technology, China		S4.3	P39	A Real-time lonospheric Estimation Meth Point Positioning
4.3 Techn	iques and Applications in High Precision GNSS				- Changxin Chen, Xu Lin, Wei Li, Lin Cheng, H
	s: Igosz, University of Warmia and Mazury in Olsztyn, Poland hoy, RMIT University, Australia		S4.3	P40	Optimization of GNSS PDOP assessment a - Zhitao Wang, Shuli Song
	ilation of geodetic observations in the modelling of the Atmosphere, are and Hydrosphere (Joint ICCC)		S4.3	P41	Assessment of the Galileo System C Correction Services in the Antarctic Regio - Serdar Erol, Bilal Mutlu, Bihter Erol
	s: n, Center for Space Research University of Texas at Austin Xie, Institute of Atmospheric Physics of Chinese Academy of Sciences		S4.3	P42	Continuous multipath and partial obstruc - Marco Mendonca, Marcelo C. Santos
- Di Long, T	singhua University aki, University of Newcastle, UK		S4.3	P43	Study on crustal movement characteristics - Zhiguo Zhu
S2b.3 P1	Mass Variations of the Greenland Ice Sheet based on GRACE/GARCE Follow Gravimetry and Mass Budget Method	-On Satellite	S4.3	P44	High order ionospheric delay characterist - Xiangyu Tian, Hongzhou Chai, Xiao Yin
	- Peisi Shang, Xiaoli Su, Zhicai Luo		S4.3	P45	Refinement of BeiDou Satellite Antenna
S2b.3 P2	Extraction of GRACE/GRACE-FO Observed Mass Change Patterns across A Independent Component Analysis (ICA)	ntarctica via			Precision Orbit Determination and Positic - Xingyuan Yan, Qin Zhang, Guanwen Huang
	- Tianyan Shi, Yoichi Fukuda, Koichiro Doi, Jun'ichi Okuno		S4.3	P46	CAS Real-time SSR Corrections in suppo
S2b.3 P3	An Investigation on the Ice Mass Loss in Antarctica Using Different Geosensors Da	ita			- Yunbin Yuan, Zishen Li, Wenwu Ding, Ningb
	- Bilal Mutlu, Serdar Erol, Bihter Erol		S4.3	P47	A Comparative Study of BDS Triple-freque - Yangyang Lu, Huizhong Zhu

olution over Major Mountain Glaciers

nces on Polar Ice Sheet Mass Change Derived from

, Lin Liu

icle navigation in urban environments Guolong Feng, Xingxing Li

nod Based on Undifferenced and Uncombined Precise

Hongyue Wang, Qingqing Zhang

and monitoring algorithm based on equal-area grid models

contribution on RT-PPP Using Different Real-Time on

tion monitoring in high-precision GNSS base stations

before Yutian MS6.4 earthquake in 2020 based on GNSS

tics and its influence on uncombined PPP

Phase Center Correction Model and Its Impact on ning , Shichao Xie , Yu Cao

ort of High Accuracy GNSS Applications

ency Ambiguity Fixation Algorithm for RTK Positioning



- S4.3 P48 The RINEX Ina-CORS Data Download System Enhancement for One Map Policy Implementation Convenient in Indonesia - Isnaini Annuriah Mundakir, Ossy Maulita Budiawati, Wilma Fitri, Akhmad Yulianto Basuki
- S4.3 P49 Smart-PPP: Towards Real-Time GNSS Precise Point Positioning for Low-cost Smart Devices - Liang Wang, Zishen Li, Ningbo Wang, Zhiyu Wang
- S4.3 P50 Characteristic analysis of the GNSS satellite clock error - Haojun Li, Jinxing Xiao
- S4.3 P51 Stochastic Model Real-Time Adjustment of Ionospheric Delay in Long-Range RTK Positioning - Jun Li, Huizhong Zhu, Yangyang Lu
- S4.3 P52 An evaluation of solar radiation pressure models during eclipse seasons for GPS satellite - Longjiang Tang, Aigong Xu, Huizhong Zhu, Maorong Ge
- S4.3 P53 An experimental combination of IGS repro3 campaign's orbit and clock products using a variance component estimation strategy - Pierre Sakic, Benjamin Männel, Gustavo Mansur, Andreas Brack, Harald Schuh
- S4.3 P54 An analysis of inter-system biases in BDS/GPS combination kinematic precise point positioning - Nannan Yang, Zongqiu Xu, Yantian Xu, Longjiang Tang, Aigong Xu, Bo Cheng
- S4.3 P55 A combined GNSS and UWB locationing algorithm for indoor and outdoor mixed scenario - Siyuan Wang
- S4.3 P56 Kinematic positioning through multi-GNSS android pseudoranges: Preliminary tests and results - Amarildo Haxhi, Harris Perakis, Vangelis Zacharis, George Piniotis, Vassilis Gikas
- S5.5 P1 Development of synergized method to determine accurate sea level using satellite altimetry and high-resolution geoid model - Vahidreza Jahanmard, Nicole Delpeche-Ellmann, Artu Ellmann
- S5.5 P2 Investigation of the influence factors on ionospheric scintillation monitoring with conventional geodetic receiver and performance evaluation - Wei Li, Shuli Song

- S5.5 P3 A Tropospheric Delay Model of Multi-source Data Considering System Deviation Correction - Yongchao Ma, Bing Zhang, Guochang Xu, Zhiping LV
- and GNSS Data - Shuaimin Wang, Tianhe Xu
- Areas: The Tahiti
 - Fangzhao Zhang, Jean-Pierre Barriot, Peng Feng, Guochang Xu

S5.5 P4 Evaluation of Precipitable Water Vapor from COSMIC-2 Radio Occultation using Radiosonde

S5.5 P5 A Metrological Assessment of the Zenith Total Delays from GPS Data Processing in Tropical



15:30 – 16:50 | Parallel Sessions

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2b.3 (joint with ICCC) Cryospheric changes from gravity data	Zoom A
5.4 Geodetic space weather research	Zoom B
4.3 Techniques and Applications in High Precision GNSS	Zoom C
Posters	
3.1 Earth rotation, low-degree gravitational change and mass transport in geophysical fluids (Joint with ICCC)	
3.2 Observations and modeling of deformation related to changing ice loads	

5.7 Advances in Geodesy for Geohazard Monitoring and Disaster Risk Reduction (Joint ICCC)

15:30 - 16:50

2b.3 () Conve - Andre - Isabe - Bert V	Parallel Sessions (Oral) 2b.3 (joint with ICCC) Cryospheric changes fr Conveners: - Andreas Groh, Technische Universität Dresden, Germ - Isabella Velicogna, University of California, Irvine / Jet - Bert Wouters, Utrecht University / Delft University of Te - Jiangjun Ran, Southern University of Science and Tec			
S2b.3	01	Advanced estimation of regional ice mass - Linyang XIN, Jiangjun RAN		
S2b.3	02	Inter-annual variability in the Antarctic ice s - Athul Kaitheri, Anthony Mémin, Frédérique Re		
S2b.3	03	Antarctica Ice-Mass Variations on Intras Dipole and Eastward Circumpolar Wave - Zhen Li, Benjamin Fong Chao, Hansheng Wa		
S2b.3	04	Filling the data gaps within GRACE missio - Shuang Yi, Nico Sneeuw		
S2b.3	05	Bridging the data gap between GRACE and - Bao Zhang, Yulin He, Yibin Yao		
S2b.3	06	Two decades of Antarctic surface elevation gravimetry - Lianzhe Yue, Nengfang Chao, Shuai Wang, Y		
S2b.3	07	New Constrains on Glacier Mass Balance - Qiuyu Wang, Shuang Yi, Wenke Sun		

Zoom A

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from gravity data

nany t Propulsion Laboratory, USA

Technology, The Netherlands

chnology, China

s losses in Greenland from GRACE data

sheets using multi-technique geodesy and modeling Rémy

seasonal-Interannual Timescale: East-West Coastal

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ons using Singular Spectrum Analysis

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nd GRACE-FO using artificial neural network in Greenland

tion changes from multi-mission satellite altimetry and

Ying Hu, Yanze Zhang

e on High Mountain Asia

Thursday, 1 July 2021

15:30 – 16:50 Zoom B		15:30 -	16:50
5.4 Geo Conven - Michael - Ehsan Fe	Schmidt, Technical University Munich (TUM), Germany prootan, Geodesy and Earth Observation Group Aalborg University	4.3 Tech Conven - Pawel W	I Sessions (Oral) Inniques and Applications in High Preders: Vielgosz, University of Warmia and Mazury in Choy, RMIT University, Australia
	ui Xu, Chinese Academy of Surveying and Mapping	S4.3 29	0,
S5.4 01	Ground and spaced based GNSS for Space Weather Monitoring at GFZ: Overview and Recent		- Xingyu Zhou, Hua Chen, Weiping Jiang, Yan C
	Results - Jens Wickert, Christina Arras, Andreas Brack, Galina Dick, Ankur Kepkar, Benjamin Männel, Chinh Nguyen Thai, Temitope Oluwadare, Torsten Schmidt, Florian Zus, Harald Schuh	S4.3 30	A simplified reduced dynamic orbit determic - Shoujian Zhang, Jiancheng Li, Geng Gao, Ke
S5.4 02	An enhanced mapping function for spaceborne TEC conversion based on the plasmaspheric scale height	S4.3 31	LEO's Contribution on Ambiguity and Posit - Yanning Zheng, Bofeng Li, Haibo Ge
	- Mengjie Wu, Peng Guo, Xiaogong Hu	S4.3 32	, 0
S5.4 03	Detection of ionospheric disturbances by modelling the electron density as three-dimensional		- Xing Su, Hanlin Chen, Qiang Li, Zhimin Liu
	 B-spline expansions: a simulation study Andreas Goss, Michael Schmidt, Eren Erdogan, Denise Dettmering, Florian Seitz, Jennifer Müller, Ernst Lexen, Barbara Görres, Wilhelm F. Kersten 	S4.3 33	Rapid earthquake rupture process inversion - Jianfei Zang, Caijun Xu
S5.4 04	SWEETS – forecast of satellite orbit decay using L1 interplanetary magnetic field measurements and thermospheric density estimates. - Sandro Krauss, Sofia Kroisz, Lukas Drescher, Manuela Temmer, Barbara Suesser Rechberger, Saniya	S4.3 34	Rupture process variations analysis of Earthquake using high-rate GPS, InSAR ar - Guisen Wen, Xingxing Li, Yingwen Zhao, Guar
	Behzadpour, Torsten Mayer-Guerr	S4.3 35	Validation and Evaluation of BDS-3 PPP-B
S5.4 05	Forecasting Global Thermospheric Neutral Density through Calibration and Data Assimilation of GRACE Measurements into the NRLMSISE-00 model		- Haibo Ge, Bofeng Li, Yuhang Bu, Yanning Zhe
	- Mona Kosary, Ehsan Forootan, Saeed Farzaneh, Kristin Vielberg, Timothy Kodikara, Maike Schumacher		
S5.4 06	Ensemble Machine Learning for Geodetic Space Weather Forecasting - Randa Natras, Michael Schmidt		
S5.4 07	Deep Learning for Global Ionospheric TEC Forecasting: Different Approaches and Validation - Xiaodong Ren, Pengxin Yang, Jun Chen, Xiaohong Zhang		

Zoom C

cision GNSS

Olsztyn, Poland

ngle-receiver LEO precise orbit determination Chen, Tianjun Liu, Mingyuan Zhang

nination for LEOs with orbit variation constraints emin Zhu, Hui Wei

itioning Convergence in Urban Canyons

ed by LEO Constellation

with real-time high-rate GPS displacements



Parallel Sessions (Poster) Partyla 3.1 Earth rotation, low-degree gravitational change and mass transport in geophysical fluids (Joint with ICCC) Si.1 P2 Characterization of a noise level of hydrolog from GRACE and GRACE Follow-On data - Justy Stwinks, Magorzata Winksk, Johnta - José Fernándz, University of Taxas at Austin, USA Si.1 P3 Oceanic mass-related excitation of polar mission satelite attimetry - José Fernándz, University of Rom, Germany - Standard Crass, NASA's Jet Propulsion Laboratory, USA Si.1 P3 Oceanic mass-related excitation of polar mission satelite attimetry - Honyk Dobalaw, GFZ, Germany - Franziska Gdift, Dharrani Jyothi Nandagopa Statuate, Foun Balz Si.1 P4 On improved pracossion - nutation models - Jin L, Shanghai Astronomical Observatory, Chinese Academy of Sciences Si.1 P5 Internal Oceanic mass-related excitation of dolar mission satellite attimetry - Jin L, Shanghai Stato University, East Lansing, Michigan, USA Si.1 P5 Internal Crossion - nutation models - Jeff Freymueller, Michigan State University, Mortreal, Quebec, Canada Si.1 P5 Internal Crossienic displacament and strain - Franzika Gdift, Material Schnder Si.1 P6 Influence of core-mantile topographic couplit - Jeff Freymueller, Michigan State University, East Lansing, Michigan, USA Si.1 P6 Influence of core-mantile topographic couplit - Fransika Gdift, Material Schnder Si.2 P1 <th>15:30 – 16:50</th> <th>Posters</th> <th>S3.1 P1</th> <th>Preparations for a Second Earth Orientation</th>	15:30 – 16:50	Posters	S3.1 P1	Preparations for a Second Earth Orientation
fulds (Joint with ICCC) For RACE and GRACE Follow-On data Conveners: - Justin Chen, University of Nacante, Spain - Idea Chen, University of Nacante, Spain S3.1 P3 - Michael Schrideldegger, University of Born, Germany - Formatika Grass, NASK1 sldt Propulsion Laboratory, USA - Henryk Doblaw, GFZ, Germany - Justin Chen, University of Sciences - Just J, Shanghai Astronomical Observatory, Chinese Academy of Sciences S3.1 P4 - Just J, Shanghai Astronomical Observatory, Chinese Academy of Sciences S3.1 P4 - Just K, Richard M, Mohigan State University, Test Lansing, Michigan, USA - Juster, Stand Madeling of deformation related to changing ice loads Conveners: - Just Phymoson Modeling of deformation related to changing ice loads Conveners: - Just Phymoson Modeling of teleformia Institute of Technology, Pasadena, USA - Heinkelmerin, Alberto Escept, Heraid Schuth - Heinkelmerin, Mohigan State University Unrocht, Neitherlands/Delt University of Technology, CAS - Heinkelmerin, Landrador Measurement Science and Technology, CAS - Justing Grang, University of Ascores in Geodesy for Geohazard Monitoring and Disaster Risk Reduction (Joint Institute of Technology, CAS - Allaion Cradock, USA - Justin Nacendig Landrador Bernerin Change around Greentia - Justich I Grand, Linda - Juschich I Linversity of Ascores in Geodesy for	Parallel Sessions (Poster)			- Jolanta Nastula, Henryk Dobslaw, Justyna Ś Partyka
fluids (Joint with ICCC) from GRACE and GRACE Follow-On data Conveners: - Justiph Shwinks, Megorzata Winks, Johns - José Ferrándiz, University of Texas at Austin, USA Sala Propulsion Laboratory, USA - Michael Schlindegogr, University of Bonn, Germany Franziska Gatt, Dharan Jyothi Nandagopa - Michael Schlindegogr, University of Bonn, Germany Schweite, Florien Setz - Justiph Shwinks, Jate Propulsion Laboratory, USA Schweite, Florien Setz - Justiph Shwinks, Jate Propulsion Laboratory, USA Schweite, Florien Setz - Justiph Shwinks, Jate Propulsion Laboratory, USA Schweite, Florien Setz - Justiph Shanghal Astronomical Observatory, Chinese Academy of Sciences Sci. P4 - Justiph Shwinks, Jate University, Montheal, Outlese, Canada Sci. P5 - Justiph Shwinks, Wohtheal, Outlese, Canada Sci. P5 - Hatalya Garm, Michigan State University, Montheal, Outlese, Canada Sci. P6 - Flexible K Kins, Jet Propulsion Lab., California Institute of Technology, Pasadena, USA Influence of core-manife topographic ocupilitie - Heinkelman, Noteria Institute, Galve, Sweden Sci. P1 - Bet Woutes: Uncent, University, Uncent, Netherlands/Delfit University of Technology, CAS Sci. P1 - Flambale K Galve, Inversity of Aconates of Geodesy for Geohazard Monitoring and Disaster Risk Reduction <t< td=""><td>3.1 Earth rotation, low-degree gravitational change and mass trai</td><td>nsport in geophysical</td><td>S3.1 P2</td><td>Characterization of a noise level of hydrolog</td></t<>	3.1 Earth rotation, low-degree gravitational change and mass trai	nsport in geophysical	S3.1 P2	Characterization of a noise level of hydrolog
Conveners: - Justify of Exas at Austin, USA - Justyna Silviniska, Maigorzata Wirksa, Johana J - Joint Chen, University of Alcante, Spain S3.1 P3 Ceencic mass-related exotation of polar mission satellife attimetry - Richard Gross, NASA's Jet Propulsion Laboratory, USA - Braniska Gottin, Germany - Braniska Gottin, Germany - Jin L, Shanghai Astronomical Observatory, Chinese Academy of Sciences S3.1 P4 On improved procession-nutation models - Joint J, Shanghai Astronomical Observatory, Chinese Academy of Sciences S3.1 P4 On improved procession-nutation models - Justyna Silvinika, Justyna Silvika, Justyna Silvinika, Justyna Silvinika, Justyna Silvinika, Justy	fluids (Joint with ICCC)			, ,
- Jari Chen, University of Tioxas at Austin, USA - José Ferrándiz, University of Tioxas at Austin, USA - José Ferrándiz, University of Tioxas at Austin, USA - José Ferrándiz, University of Alcante, Spain - Inchard Gross, NASY's Jet Propulsion Laboratory, USA - Michael Schindelegger, University of Bonn, Germany - Jin Li, Shanghai Astronomical Observatory, Chinese Academy of Sciences - Jose M. Ferrandiz, Mguel A. Juárez, San - Heinkidmann, Alborto Escape, Harald Schuin Conveners: - Jeff Feynweller, Michigan State University, East Lansing, Michigan, USA - Natalya Gomez, McGill University, Montreal, Ouebec, Canada - Pathology, Pasadena, USA - Hensheing Wang, Innovation Academy for Precision Measurement Science and Technology, CAS - Hensheing Wang, Innovation Academy for Precision Measurement Science and Technology, CAS - Aluson Craddock, USA - Aluson Craddock, USA - Aluson Craddock, USA - Aluson Craddock, USA - José Astronautics - José	Conveners:			
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- Franziska Götti, Dharani Jyothi Nandagopa Schwatte, Franziska Götti, Schwatte, Franziska Götti, Schwatter, Franziska Götti, Schwa	- José Ferrándiz, University of Alicante, Spain		S3.1 P3	
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3.2 Observations and modeling of deformation related to changing ice loads - Jose M, Ferrandiz, Miguel A, Juárez, San Heinkelmann, Alberto Escapa, Harald Schuh 3.2 Observations and modeling of deformation related to changing ice loads S3.1 P5 Internal co-seismic displacement and strain - Jie Dong, Penglei Cheng, Hanjiang Wen, Weni - Jeff Freymueller, Michigan State University, Bast Lansing, Michigan, USA S3.1 P5 Internal co-seismic displacement and strain - Jie Dong, Penglei Cheng, Hanjiang Wen, Weni - Rick R. Wins, Jet Propulsion Lab., California Institute of Technology, Pasadena, USA Febbeka Steffen, Lantmäteriet, Gävle, Sweden S3.1 P6 Influence of core-mantle topographic couplit - Huifeng Zhang, Wenbin Shen - Betr Wouters, Utrecht University, Utrecht, Netherlands/Delft University of Technology, CAS S3.2 P1 GNSS observations and GIA modelling of ve East Antarctica - Junichi Okuno, Aklhisa Hattori, Takeshige Ishiw 5.7 Advances in Geodesy for Geohazard Monitoring and Disaster Risk Reduction (Joint ICCC) S3.2 P2 Dependence of upper mantle viscosity profil - Voshiya Irie, Junichi Okuno, Takeshige Ishiw, J. - Allison Craddock, USA - Sali Devaraju, India S3.2 P3 A study of sea level change around Greenlaa - Jachun An, Baguin Zhang, Zemi Wang, Song - Carsten Bjere Ludwigsen, Ole Baltazar Anders - Janghui Geng, China - Janghui Geng, China S3.2 P5 Quantitative Analysis of Arctic lee Flow Accee	- Henryk Dobslaw, GFZ, Germany			Scriwalke, Fioriari Seitz
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Conveners: S3.1 P5 Internal co-seismic displacement and strain - Jeff Freymueller, Michigan State University, Kast Lansing, Michigan, USA - Jie Dong, Penglei Cheng, Hanjiang Wen, Wend - Natalya Gomez, McGill University, Montreal, Quebec, Canada S3.1 P6 Influence of core-mantle topographic couplit - Fik R. Nins, Jet Propulsion Lab., California Institute of Technology, Pasadena, USA S3.1 P6 Influence of core-mantle topographic couplit - Rebbeka Steffen, Lantmäteriet, Gävle, Sweden S3.1 P6 Influence of core-mantle topographic couplit - Hansheng Wang, Innovation Academy for Precision Measurement Science and Technology, CAS S3.2 P1 GNSS observations and GIA modelling of ve 5.7 Advances in Geodesy for Geohazard Monitoring and Disaster Risk Reduction (Joint ICCC) S3.2 P2 Dependence of upper mantle viscosity profil - Allison Craddock, USA S3.2 P3 A study of sea level change around Greenlai - Alliano Craddock, USA S3.2 P3 A study of sea level change around Greenlai - Jiachun An, Baojun Zhang, Zemin Wang, Song - Jiachun An, Baojun Zhang, Zemin Wang, Song S3.2 P3 - Jianghui Geng, China S3.2 P5 Ouantitative Analysis of Arctic lee Flow Acces	3.2 Observations and modeling of deformation related to changing	ng ice loads		-
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 - Rebbeka Steffen, Lantmäteriet, Gävle, Sweden - Huifeng Zhang, Wenbin Shen - Bert Wouters, Utrecht University, Utrecht, Netherlands/Delft University of Technology, Delft, Netherlands - Hansheng Wang, Innovation Academy for Precision Measurement Science and Technology, CAS - Junichi Okuno, Akihisa Hattori, Takeshige Ishiw. - Junichi Okuno, Akihisa Hattori, Takeshige Ishiw. - Junichi Okuno, Takeshige Ishiw. - Allison Craddock, USA - Balaji Devaraju, India - Chuang Shi, BeiJing University of Aeronautics & Astronautics - Jianghui Geng, China - Jianghui Geng, China 		USA	S3.1 P6	Influence of core-mantle topographic couplin
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 Hansheng Wang, Innovation Academy for Precision Measurement Science and Technology, CAS 5.7 Advances in Geodesy for Geohazard Monitoring and Disaster Risk Reduction (Joint ICCC) Conveners: Allison Craddock, USA Balaji Devaraju, India Chuang Shi, BeiJing University of Aeronautics & Astronautics Janghui Geng, China S3.2 P3 A study of sea level change around Greenlau - Jiachun An, Baojun Zhang, Zemin Wang, Song - Carsten Bjerre Ludwigsen, Ole Baltazar Anders 		nology Delft Netherlands	S3.2 P1	GNISS observations and GIA modelling of ve
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				- Carsten Bjerre Ludwigsen, Ole Baltazar Anders
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vertical crustal motion in the Lützow-Holm Bay region, wa, Yoshiya Irie, Yuichi Aoyama, Koichiro Doi, Yoichi Fukuda

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and based on multi-source data gtao Ai, Yu Feng, Hong Geng

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celeration with Increasing Temperature nén, Jiachun An, Hongmei Ma

- S3.2 P6 Monitoring glacier mass balance of the West Kunlun Mountains over the past 20 years by ICESat-2 altimetry and bistatic InSAR - Tao Li, Liming Jiang
- S3.2 P7 Glacier velocity monitoring and the potential points of geological hazards monitoring in A'nyemagen Glacier - Zhaoxia Miao, Lin Bai, Zhenhong Li, Longyan Wang, Chenglong Zhang
- S5.7 P1 Estimating 3D Mining Displacements from Multi-Track InSAR by Incorporating with a Prior Deformation Model - Zefa Yang, Jianjun Zhu, Zhiwei Li, Lixin Wu
- S5.7 P2 Multi-sensor geodetic approach to deformation monitoring - Ashutosh Tiwari, Avadh Bihari Narayan, Onkar Dikshit
- S5.7 P3 Numerical Simulation of Storm Surge in the Sea Near Long Island, New York Based on MIKE21 - Chengcai Ren, Fanlin Yang, Zejie Tu, Ruijie Shen, Dianpeng Su
- S5.7 P4 Mornitoring Ground Deformation of Subway Area Using PS-InSAR in Suzhou - Lina Zhang, Jicang Wu, Ruiqing Song, Ming Yuan, Jinwei Qiu
- S5.7 P5 Identification of Potential Landslide in Ya'an-Linzhi Section of Sichuan-Tibet Railway Based on InSAR Technology
 - Jinmin Zhang, Wu Zhu
- S5.7 P6 Scientific infrastructure for monitoring of safety pillars in underground coal mines Polish study case within EPOS-PL+ project

- Jan Kapłon, Maya Ilieva, Krzysztof Sośnica, Grzegorz Jóźków, Kamila Pawłuszek-Filipiak, Kamil Kaźmierski, Przemysław Tymków, Paweł Bogusławski, Jan Sierny, Adrian Kaczmarek, Natalia Wielgocka, Krzysztof Stasch, Grzegorz Marut, Marcin Mikoś, Piotr Patynowski, Adam Pałecki, Mateusz Drożdżewski

S5.7 P7 Active geohazards along the Jinsha River Corridor revealed by Sentinel-1 SAR pixel offsets and InSAR observations

- Chenglong Zhang, Zhenhong Li, Bo Chen, Jing Yang, Zhenjiang Liu

S5.7 P8 Landslide susceptibility assessment using Conv-LSTM model along the Sichuan-Tibet railway - Wubiao Huang, Mingtao Ding, Zhenhong Li, Jianqi Zhuang

- delay over the Kanto Plain using statistical metrics - Guanggi Jiao, Yu Sun
- S5.7 P10 Attention guided U-Net model for landslide detection - Xuerong Chen, Chaoying Zhao, Zhong Lu
- S5.7 P11 Structural dynamic displacements detecting through robust integrated model using GNSS and accelerometers - Xu Liu, Jian Wang, Houzeng Han
- S5.7 P12 An Improved Two-tier Network for Robust PSI Parameter Estimation and Its Application on Deformation Monitoring of Urban Area - Wenging Wu, Jun Hu
- **GNSS** Observations - Keke Xu
- S5.7 P14 Differential Interferometric Synthetic Aperture Radar data for more accurate earthquake catalogs - Chuanhua Zhu, Chisheng Wang, Bochen Zhang, Xiaogiong Qin, Xinjian Shan
- S5.7 P15 Monitoring and analysis of geological hazards based on loading impact change - Wei Wang, Yamin Dang, Chuanyin Zhang, Qiang Yang
- S5.7 P16 Retrieving complete 3-D ice velocities from multi-baseline and multi-aperture InSAR measurements - Wanji Zheng, Jun Hu
- S5.7 P17 A Strain-Model Based InSAR Time Series Method for Geohazards Deformation Monitoring - Jihong Liu, Jun Hu, Roland Burgmann, Zhiwei Li, Qian Sun, Zhangfeng Ma
- S5.7 P18 Different gradient deformation monitoring of the landslide based on Intermittent SBAS (ISBAS) InSAR and SAR offset-tracking methods - Liquan Chen, Chaoying Zhao, Ya Kang, Xiaojie Liu

S5.7 P9 Evaluating the performance of global atmospheric models in correcting InSAR tropospheric

S5.7 P13 Multi-scale Crustal Deformation around the Southeastern Margin of the Tibetan Plateau from



- S5.7 P19 An approach based on coherence matrix decomposition to improve small baseline processing for land subsidence monitoring
 - Qian He
- S5.7 P20 The landslide susceptibility mapping based on machine learning methods and InSAR-derived deformation: a case study on the upper reaches of the Jinsha River Zhuo Jiang, Chaoying Zhao, Xiaojie Liu
- S5.7 P21 Metrological support of laser coordinate measuring systems - ANDREY MAZURKEVICH
- S5.7 P22 Adjustment of Measurements With Multiplicative Random Errors and Trends - Yun Shi, Peliang Xu
- S5.7 P23 Real-time multi-GNSS solutions for earthquake monitoring in Spain - Víctor Puente
- S5.7 P24 An Improved Adaptive Method on Mitigating Differential Tropospheric Delays in Time-series InSAR

- Mengyao Shi, Junhuan Peng, Honglei Yang, Yuhan Su

- S5.7 P25 Improved multi-baseline maximum likelihood estimation algorithm for InSAR phase unwrapping - Shenke Xiao
- S5.7 P26 Time series InSAR for stability analysis of Ankang airport with expansive soil before operation - Jinzhao Si, Shuangcheng Zhang, Yufen Niu



17:00 - 18:40 **Parallel Sessions**

2a.5, 2b.4 Satellite Altimetry and Oceanography (joint with ICCC)	Zoom A
5.5 Assimilation of geodetic observations in the modelling of the Atmosphere, Cryosphere and Hydrosphere (Joint ICCC)	Zoom B
5.7 Advances in Geodesy for Geohazard Monitoring and Disaster Risk Reduction (Joint ICCC)	Zoom B
3.1 Earth rotation, low-degree gravitational change and mass transport in geophysical fluids (Joint with ICCC)	Zoom C
3.2 Observations and modeling of deformation related to changing ice loads	Zoom C
Posters	
2b.2 Spaceborne and terrestrial gravimetry for hydrology (joint with ICCC)	
3.3 Geodetic observations in volcanic and tectonically active areas	
5.2 Gravity observations and networks in the framework of GGOS (Joint 2a.1, 2b.6, QuGe)	
5.3 Standardized geodetic products for a reliable System Earth observation	

17:00 - 18:40

2a.5, 2	2b.4	Sessions (Oral) Satellite Altimetry and Oceanography (joint with ICCC)		
	Deng	rs: Ig, University of Newcastle, Australia Iang, Innovation Academy for Precision Measurement Science and T		
S2a.5	01	Performance of Five Satellite Altimetry Observations in Marine Gravity Ir - Richard Annan, Xiaoyun Wan		
S2a.5	02	Optimal gravity anomaly and vertical gravity gradient in the South China - Daocheng Yu, Cheinway Hwang		
S2a.5	03	DTU21 Mean Sea Surface for Vertical Offshore Reference Frame - Ole Baltazar Andersen, Adil Abulatijiang, Shengjuin Zhang, Stine Kildega		
S2a.5	04	Altimeter-derived marine gravity variations reveal the magm subaqueous volcano - Qianqian Li, Lifeng Bao, Lin Wu, Panpan Zhang, Hui Liu		
S2a.5	05	Radar Altimeter-Based Water Level and Wind Speed Monitoring Ove - Yuanyuan Jia, Philip Chu, C.K. Shum		
S2b.4	06	Quantitative Analysis of Global Sea-Level Budget Based on GF Argo Observations - Fengwei Wang, Yunzhong Shen, Qiujie Chen		
S2b.4	07	Global Ocean Mass Change Estimates in 1993~2004 from Determined at Tongji University - Qiujie Chen, Xingfu Zhang, Fengwei Wang, Yunzhong Shen		
S2b.4	08	High-resolution water level changes in coastal and estuarine regio - Luciana Fenoglio, Joanna Staneva, Salvatore Dinardo, Jürgen Kusch Gärtner, Bernd Uebbing		
S2b.4	09	Retracking of radar altimetry waveforms over inland water bodies		

- Xiaoli Deng, Andrew Marshall, Fukai Peng

Zoom A

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phy (joint with ICCC)

asurement Science and Technology, CAS

ervations in Marine Gravity Inversion over the Gulf of Guinea

gradient in the South China Sea from multi-altimeter data

fshore Reference Frame engjuin Zhang, Stine Kildegaard Rose

ations reveal the magma mass motions within the

/ind Speed Monitoring Over the Laurentian Great Lakes

vel Budget Based on GRACE, Satellite Altimetry and

tes in 1993~2004 from LEO Gravity Field Models

pastal and estuarine regions in North Sea and Baltic tore Dinardo, Jürgen Kusche, Jerome Benveniste, Matthias

17:00 - 18:20

Parallel Sessions (Oral)

5.5 Assimilation of geodetic observations in the modelling of the Atmosphere, Cryosphere and Hydrosphere (Joint ICCC)

Conveners:

- Jianli Chen, Center for Space Research University of Texas at Austin
- Zhenghui Xie, Institute of Atmospheric Physics of Chinese Academy of Sciences
- Di Long, Tsinghua University, China
- Mehdi Khaki, University of Newcastle, UK

5.7 Advances in Geodesy for Geohazard Monitoring and Disaster Risk Reduction (Joint ICCC)

Conveners:

- Allison Craddock, USA
- Balaji Devaraju, India
- Chuang Shi, BeiJing University of Aeronautics & Astronautics, China
- Jianghui Geng, China
- S5.5 01 Crustal response to heavy rains in Japan 2017-2020 - Kosuke Heki, Wei Zhan, Syachrul Arief
- S5.5 02 Long-period Accuracy Evaluation and Spatial-temporal characterization Analysis of Global GNSSderived Precipitable Water Vapor - Junsheng Ding, Junping Chen
- S5.5 03 Temporal error covariances of satellite gravimetry-derived ice mass change products - Andreas Groh, Eric Buchta, Martin Horwath, Matthias O. Willen, Thorben Döhne, Benjamin D. Gutknecht, Maria T. Kappelsberger
- S5.5 04 Penetration Depth Inversion in Hyper-Arid Desert from L-band InSAR Data Based on a Coherence Scattering Model
 - Guanxin Liu, Haiqiang Fu, Jianjun Zhu, Changcheng Wang, Qinghua Xie
- S5.5 05 On the assessment of ERA5 and GPS-based WRFDA for InSAR Atmospheric Correction - Zhenyi Zhang, Weixing Zhang, Yidong Lou, Hua Wang, Yaozong Zhou, Jingna Bai
- S5.7 01 Analysis of the crustal deformation characteristics of Mount Everest and Tibetan region in the past 20 years
 - Yamin Dang, Chuanlu Cheng, Guangwei Jiang, Qiang Yang, Yangyang Sun
- S5.7 02 Monitoring phosphate mining induced landslides in karst mountainous area using multi-temporal InSAR - Hengyi Chen, Chaoying Zhao, Baohang Wang, Liquan Chen

17:00 - 18:20

Zoom B

Parallel Sessions (Oral)

3.1 Earth rotation, low-degree gravitational change and mass transport in geophysical fluids (Joint with ICCC)

Conveners:

- Jianli Chen, University of Texas at Austin, USA
- José Ferrándiz, University of Alicante, Spain
- Richard Gross, NASA's Jet Propulsion Laboratory, USA
- Michael Schindelegger, University of Bonn, Germany
- Henryk Dobslaw, GFZ, Germany
- Jin Li, Shanghai Astronomical Observatory, Chinese Academy of Sciences

3.2 Observations and modeling of deformation related to changing ice loads **Conveners:**

- Jeff Freymueller, Michigan State University, East Lansing, Michigan, USA
- Natalya Gomez, McGill University, Montreal, Quebec, Canada
- Erik R. Ivins, Jet Propulsion Lab., California Institute of Technology, Pasadena, USA
- Rebbeka Steffen, Lantmäteriet, Gävle, Sweden
- Bert Wouters, Utrecht University, Utrecht, Netherlands/Delft University of Technology, Delft, Netherlands
- Hansheng Wang, Innovation Academy for Precision Measurement Science and Technology, CAS

S3.1	01	Chandler wobble excitation by external geo - Aleksander Brzezinski, Justyna Sliwinska
S3.1	02	Effects of the observed Earth's oblateness va - Jose M. Ferrandiz, Alberto Escapa, Tomás Bae
S3.1	03	The Earth and Mars' Variable Rotations Exc - Yonghong Zhou, Xueqing Xu, Cancan Xu, Zhaoya
S3.1	04	Why the Earth accelerates its rotation since - Leonid Zotov, Olesya Marchukova, Christian Bi
S3.1	05	Long-Range Predictability of the Length of I - Adam Scaife
S3.2	01	Surface mass balance loading displacement Antarctic glacial isostatic adjustment and its - Matt King, Christopher Watson
S3.2	02	Spatio-temporal evolution of the Greenland multi-technique geodetic approach - Ana Sanchez, Laurent Métivier, Luce Fleitout, Mariar

Zoom C

ophysical fluids estimated from GRACE gravity data

ariation on precession-nutation: A first assessment enas, Ahmed Z. Zerifi, Isabel Vigo

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ang Kong, Xianran An, Xinhao Liao, Jianli Chen, David Salstein 2016?

Bizouard, Nikolay Sidorenkov

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nt as a dominant source of error in GPS estimates of s relevance to a critical sector of East Antarctica

ice sheet and associated deformation of the Earth: a

anne Greff, Kristel Chanard, Romain Hugonnet, Etienne Berthier

17:00 – 18:20	Posters	S2b.2 P1	Satellite Gravimetry-based Monitoring
Parallel Sessions (Poster)			Management - C K Shum, Yu Zhang, Orhan Akyilmaz, Ehsa
2b.2 Spaceborne and terrestrial gravimetry for hydrology (jo	oint with ICCC)	S2h 2 P2	Sub-regional groundwater storage recover
Conveners:		020.2 1 2	diversion project
- Wei Feng, Innovation Academy for Precision Measurement Science and	d Technology, CAS		- Chong Zhang, Qingyun Duan, Pat JF. Yeh,
- Nico Sneeuw, University of Stuttgart, Germany			
		S2b.2 P3	Retrieving daily terrestrial water storage
3.3 Geodetic observations in volcanic and tectonically activ	re areas		analysis-based inversion method
Conveners:			- Zhongshan Jiang, Dingfa Huang
- Alessandro Bonforte, Istituto Nazionale di Geofisica e Vulcanologia,	Sezione di Catania - Osservatorio	S2b.2 P4	Machine Learning approach to study gro
Etneo, Catania, Italy			GRACE and other hydrological data
- Emily Montgomery-Brown, U.S. Geological Survey – California Volcano	Observatory		- VIBHOR AGARWAL, Orhan Akyilmaz, CK
- Takuya Nishimura, Kyoto University, Uji, Japan			Tajdarul Syed
- Jean-Mathieu Nocquet, Université Côte D'Azur, IRD, CNRS, OCA & Ins	titut de Physique du Globe de Paris	S2b.2 P5	Reconstruction of Water Storage Chang
- Chengli Huang, Shanghai Astronomical Observatory, Chinese Academy	/ of Sciences	020.2 1 0	Combining Satellite Gravity and Hydrolog
			- Xiaolong Li, Taoyong Jin
5.2 Gravity observations and networks in the framework of	GGOS (Joint 2a.1, 2b.6,		
QuGe)		S2b.2 P6	Flood monitoring over the Yangtze Rive
Conveners:			GRACE data assimilation
- Riccardo Barzaghi, Politecnico di Milano			- Xiao Yan, Bao Zhang, Yibin Yao
- Shuanggen Jin, Nanjing University of Information Science & Technology	ı, China	S2b.2 P7	Inter-annual terrestrial water storage cha
- Hartmut Wziontek, Federal Agency for Cartography and Geodesy			and satellite altimetry observations
- Jürgen Müller, Leibniz Universität Hannover, Institut für Erdmessung			- Jin Li, Songyun Wang, Jianli Chen, Xiaogong
5.3 Standardized geodetic products for a reliable System Ea	arth observation	S2b.2 P8	Detect Songhua River Basin Groundwate
Conveners:			and Multi-source Hydrological Data
- Detlef Angermann, DGFI-TUM			- Zhiming Xu, Zhengtao Wang
- Kosuke Heki, Hokkaido University		S2b.2 P9	Hydrological Load Effect in the Tibetan P
- Zhicai Li, National Geomatics Center of China			- Weilong Rao, Wenke Sun

System for Natural Hazards and Water Resources

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Shum, Wei Feng, Ehsan Forootan, Umesh Haritashya,

ge and Drought Monitoring in the Yangtze River Basin gical Data

er basin using GLDAS daily data products based on

anges over the Lake Victoria region from GRACE/GFO

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er Spatiotemporal Variation Characteristics by GRACE

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Plateau: from GRACE or Hydrological data?



- S2b.2 P10 Method for GRACE/GRACE-FO data de-stripe based on image processing perspective - Penghui Wang, Hao Zhou, Zhicai Luo, Lu Tang
- S2b.2 P11 Drought Events over the Amazon River Basin (1993-2019) as Detected by the Climate-driven Total Water Storage Change
 - Kunjun Tian, Zhengtao Wang, Fupeng Li, Yu Gao, Yang Xiao, Cong Liu
- S2b.2 P12 Bridging the gap between GRACE and GRACE-FO by simulating GRACE-like terrestrial water storage anomalies using deep machine learning tools - Merve Keleş, Tuğce Ay, Bihter Tandoğdu, Metehan Uz, Yu Zhang, Orhan Akyilmaz, C.K. Shum, Kazım Gökhan Atman
- S3.3 P1 The GNSS observed modulated seasonal signals in Yunnan, southwest China - Weijie Tan, Junping Chen
- S3.3 P2 Detecting transient signals in GPS time series using machine learning - Xueming Xue
- S3.3 P3 Earthquake triggering by tidal stresses at global scale - Laurent Métivier, Marianne Greff-Lefftz, Gwendoline Pajot-Métivier, Kristel Chanard
- S3.3 P4 Preliminary forecast model of crustal earthquakes in southwest Japan based on GNSS data - Takuya Nishimura
- S3.3 P5 GNSS-GPS Time Series Analysis: Application to the southern region of the Iberian Peninsula and North Africa.

- Javier Antonio Ramírez Zelaya, Manuel Berrocoso Domínguez, Belén Rosado Moscoso, Alejandro Pérez Peña, Jorge Gárate Pasquín, Amos de Gil, Alberto Fernández-Ros, Gonzalo Prates, Paola Barba, Sonia Pérez-Plaza, Fernando Fernández-Palacín

- S3.3 P6 Extraction of crustal deformation by using InSAR and GPS at the eastern margin of Tibet Plateau - Weiwei Bian, Jicang Wu
- S3.3 P7 Measuring the Recent Status of Land Subsidence in Bandung Basin, Indonesia, by InSAR and GPS methods
 - Irwan Gumilar, Teguh Purnama Sidiq, Gigih Pambudi, Brian Bramanto, Hasanuddin Zainal Abidin

- S3.3 P8 Mapping vertical crustal deformation over Weihe Basin, China using Sentinel-1 and ALOS-2 ScanSAR imagery - Yufen Niu, Feifei Qu, Wu Zhu, Qin Zhang, Chaoying Zhao, Wei Qu, Yuxuan Hu
- S3.3 P9 Research on Integrating Multi-track InSAR Deformation Maps
- S3.3 P10 InSAR observation and inversion of the seismogenic fault for The 2009 Yao'an Ms6.0 earthquake in China
 - Bing Zhang, Yongchao Ma, Guochang Xu, Zhiping Lv
- combinations of SAR and optical data - Ajian Zou, Leyang Wang
- Juan Navarro, Silvia Miranda, Alfredo Herrada
- earthquake - Satoshi Fujiwara, Mikio Tobita, Shinzaburo Ozawa
- S3.3 P14 Earthquake Risk Analysis of Angiu-Juxian Section of Yishu Fault Zone - Cunpeng Du, Haitao Yin
- observations (1991-2021)
 - Gárate, Gonçalo Prates, Amós de Gil
- phreatic eruption based on PALSAR-2 time series analysis - Yuji Himematsu, Taku Ozawa, Yosuke Aoki
- S5.2 P1 GGOS Focus Area Unified Height System: achievements and open challenges - Laura Sanchez, Jianliang Huang, Riccardo Barzaghi, Georgios S. Vergos

- Jun Hua, Xinjian Shan, Wenyu Gong, Zhenjie Wang, Lingyun Ji, Chuanjin Liu, Yongsheng Li, Dezheng Zhao

S3.3 P11 Retrieving 3D coseismic deformation of the 2016 Mw 7.8 Kaikoura earthquake using different

S3.3 P12 COSEISMIC DEFORMATION DUE TO THE EARTHQUAKE IN SAN JUAN (ARGENTINA) OF JANUARY 18, 2021 (MW 6.4) AS MEASURED BY CONTINUOUS GNSS DISPLACEMENTS

S3.3 P13 Spatiotemporal functional modeling of postseismic deformation after the 2011 Tohoku-Oki

S3.3 P15 Modeling of the volcano-tectonic activity of Deception Island (Antarctica) from 30 years of GPS

- Belén Rosado, Manuel Berrocoso, Javier Antonio Ramírez-Zelaya, Alberto Fernández-Ros, Jorge

S3.3 P16 Coeruptive and posteruptive crustal deformation associated with the 2018 Kusatsu-Shirane



- S5.2 P2 Summary of the Absolute Gravity Measurements using FG5-210 at Antarctic Research Stations in Antarctica during 2017-2020 Austral Summer Season
 Yoichi Fukuda, Yuichi Aoyama, Jun'ichi Okuno, Akihisa Hattori, Koichiro Doi, Jun Nishijima, Takahito Kazama
- S5.2 P3 Investigation of systematic effects of FG5/FG5X gravimeters - Vojtech Pálinkáš, Petr Křen, Pavel Mašika, Miloš Vaľko
- S5.3 P1 The role and activities of the GGOS Bureau of Products and Standards
 Detlef Angermann, Thomas Gruber, Michael Gerstl, Robert Heinkelmann, Urs Hugentobler, Laura Sanchez, Peter Steigenberger
- S5.3 P2 ICGEM's Current Activities and Future Plans - E. Sinem Ince, Sven Reissland
- S5.3 P3 Assigning Digital Object Identifiers to Geoid Models in the ISG Repository - Mirko Reguzzoni, Kirsten Elger, Lorenzo Rossi, Daniela Carrion
- S5.3 P4 Using WGM2012 to Compute Gravity Anomaly Correction of Leveled Height Differences - Yanhui Cai, Li Zhang, Xu Ma
- S5.3 P5 Evaluating of sea surface heights from multi-mission satellite altimetry by utilizing hydrodynamic and geoid models
 Majid Mostafavi, Nicole Delpeche-Ellmann, Artu Ellmann
- S5.3 P6 Understanding the causes of coastal sea level change from geodetic measurements - Dapeng Mu
- S5.3 P7 Machine learning prediction for filling the interruptions of tide gauge data using a least square estimation method from nearest stations
 Vahidreza Jahanmard, Nicole Delpeche-Ellmann, Artu Ellmann
- S5.3 P8 Metrological support of astronomical-geodesic and gyroscopic azimuth measuring instruments - Maksim Khanzadian, Andrey Mazurkevich



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Friday, 2 July 2021

14:00 – 15:20 | Parallel Sessions

2b.2 Spaceborne and terrestrial gravimetry for hydrology (joint with ICCC)	Zoom A
5.7 Advances in Geodesy for Geohazard Monitoring and Disaster Risk Reduction (Joint ICCC)	Zoom B
3.2 Observations and modeling of deformation related to changing ice loads	Zoom C
3.3 Geodetic observations in volcanic and tectonically active areas	Zoom C
Posters	
2a.5, 2b.4 Satellite Altimetry and Oceanography (joint with ICCC)	
2b.6 Future Gravity Mission Concepts (joint with QuGe)	
5.4 Geodetic space weather research	
5.6 Geodesy contributions to address societal challenges	

14:00 - 15:20

	Parallel Sessions (Oral)			
	2b.2 Spaceborne and terrestrial gravimetry f			
Conveners: - Wei Feng, Innovation Academy for Precision Measure - Nico Sneeuw, University of Stuttgart, Germany				
	S2b.2 01	Gravity response to a monsoonal rain eve - KUAN-HUNG CHEN, Cheinway Hwang		
	S2b.2 02	Monitoring fast water storage variations Classical Karst - Tommaso Pivetta, Carla Braitenberg, Franci		
	S2b.2 03	Quantifying water storage change over La - Min Wei, Hao Zhou, Zhicai Luo, Min Dai, Siyo		
	S2b.2 04	Recent Changes in Surface and Groundw - Hong Lin, Xiao Cheng, Lei Zheng		
	S2b.2 05	Monitoring groundwater storage change i - Xiaotao Chang, Guang Zhu, Wei Liu, Miao Z		
	S2b.2 06	Using Swarm to Detect Total Water Stora Basin, Volga Basin and Zambezi Basin as		

.2 07 Reconstructing Climate-driven Water Sto

S2b.2 07 Reconstructing Climate-driven Water Storage Anomalies using GRACE Satellite Data - Bingshi Liu, Xiancai Zou, Shuang Yi, Nico Sneeuw, Jianqing Cai, Jiancheng Li

Zoom A

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for hydrology (joint with ICCC)

rement Science and Technology, CAS

ent in the Pingtung Plain, southern Taiwan

in Karst through gravimetry: a study case from the

Gabrovšek, Bruno Meurers, Gerald Gabriel

ake Baikal using GRACE and GRACE Follow-On rou Xu

water in Large Arctic River Basins

in China by satellite gravimetry Zhou, Haozhe Zhang, Qingliang Que

age Changes in 26 Global Basins (Taking the Amazon s Examples)

i Xiong, Yu Gao, Lingxuan Wang, Bingbing Zhang

Friday, 2 July 2021

14:00 -	15:20 Zoom B	
	I Sessions (Oral) ances in Geodesy for Geohazard Monitoring and Disaster Risk Reduction (Joint	
- Allison (- Balaji De - Chuang	ers: Craddock, USA evaraju, India Shi, BeiJing University of Aeronautics & Astronautics, China i Geng, China	
S5.7 03	Quantifying glacier displacement and glacial lake outburst floods with SAR and optical images: A case study in Jinweng Co Lake, Tibet, China - Liye Yang, Zhong Lu, Chaoying Zhao, Chengsheng Yang	
S5.7 04	Landslide detection, monitoring and failure mechanism research in Guizhou Province, China with multi-sensor SAR datasets - Chaoying Zhao, Liquan Chen, Hengyi Chen	
S5.7 05		
S5.7 06		
S5.7 07		
S5.7 08	Nicholas Kyriakides, Marios Tzouvaras, Sylvana Pilidou, Kyriacos Themistocleous, Diofantos Hadjimitsis The new pilot system for Earthquake and Tsunami Risk Estimation by ionospheric sounding (ETREbis) at the IPGP Caribbean observatories	
S5.7 09	 Michela Ravanelli, Fabio Manta, Giovanni Occhipinti, Mattia Crespi Comparing Natural Hazards Assessment using Satellite Imagery Data and Geodetic Earth Observation Data Thomas Chen 	

14:00 - 15:20

Parallel Sessions (Oral)

3.2 Observations and modeling of deformation related to changing ice loads **Conveners:**

- Jeff Freymueller, Michigan State University, East Lansing, Michigan, USA
- Natalya Gomez, McGill University, Montreal, Quebec, Canada
- Erik R. Ivins, Jet Propulsion Lab., California Institute of Technology, Pasadena, USA
- Rebbeka Steffen, Lantmäteriet, Gävle, Sweden
- Hansheng Wang, Innovation Academy for Precision Measurement Science and Technology, CAS

3.3 Geodetic observations in volcanic and tectonically active areas **Conveners:**

- Etneo, Catania, Italy
- Emily Montgomery-Brown, U.S. Geological Survey California Volcano Observatory
- Takuya Nishimura, Kyoto University, Uji, Japan
- Jean-Mathieu Nocquet, Université Côte D'Azur, IRD, CNRS, OCA & Institut de Physique du Globe de Paris
- Chengli Huang, Shanghai Astronomical Observatory, Chinese Academy of Sciences

S3.2 03	Bedrock uplift in response to recent ice-mass v - Nahidul Hoque Samrat, Matt King, Christopher
S3.2 04	The mid-Holocene sea-level highstand and C - Tanghua Li, Hansheng Wang, Stephen Chua,
S3.2 05	Spatiotemporal glacial isostatic model res recommendations and examples for mounta - Kimberly DeGrandpre, Jeffrey Freymueller
S3.3 01	

- revealed by GNSS observations
- Yuan Gao, Wei Qu, Qin Zhang, Hailu Chen, Shichuan Liang
- (Mw4.1-6.6) in west China from time-series Sentinel-1 SAR images - Teng Wang, Heng Luo, Shengji Wei, Mingsheng Liao
- GPS observations and its implication for seismic hazard - Lupeng Zhang, Dingfa Huang, CK Shum
- S3.3 04 Causative fault geometries of two blinded dip-slip earthquakes in the interior of Asia Continent revealed by InSAR
 - Yuqing He, Teng Wang, Lihua Fang, Li Zhao

Zoom C

- Bert Wouters, Utrecht University, Utrecht, Netherlands/Delft University of Technology, Delft, Netherlands

- Alessandro Bonforte, Istituto Nazionale di Geofisica e Vulcanologia, Sezione di Catania - Osservatorio

variability on northern Marguerite Bay, Antarctic Peninsula er Watson, Andrea Hay, Valentina Barletta, Andrea Bordoni

Glacial Isostatic Adjustment modelling

Nicole Khan, Patrick Wu, Benjamin Horton

solution testing for small ice loads: Input parameter tain galciers in southcentral and southeast Alaska

I rheology and heterogeneity impact on tectonic stress characteristics of North China

S3.3 02 InSAR-derived earthquake catalog: Source locations and focal mechanisms of 30+ earthquakes

S3.3 03 Complementary afterslip process following the 2016 Mw 7.8 Kaikoura earthquake from ~4 years

Friday, 2 July 2021

14:00 – 15:20	Posters	S2a.5 P1 The mean dynamic topography ar	nd geos
Parallel Sessions (Poster)		method - Hongkai Shi, Yihao Wu, Ole Anderse	n, Xiufer
2a.5, 2b.4 Satellite Altimetry and Oceanography (joint with ICC Conveners:	C)	S2a.5 P2 Estimating Snow Depth in Arctic U Satellites	Jsing the
Xiaoli Deng, University of Newcastle, AustraliaZizhan Zhang, Innovation Academy for Precision Measurement Science and	nd Technology, CAS	- Wenxuan Liu, Taoyong Jin, Hailan Hu	Jang
2b.6 Future Gravity Mission Concepts (joint with QuGe) Conveners:		S2a.5 P3 Inversion of gravity anomalies in th ocean products - Hang Li, Shengjun Zhang	ne Sout
 Frank Flechtner, Helmholtz Centre Potsdam GFZ German Research Centre Wei Feng, Innovation Academy for Precision Measurement Science and Te Matthias Weigelt, Leibniz University Hanover 		S2b.4 P4 The ways to improve the accuracy reflected from the ocean surface - Vladislav Lopatin, Vyacheslav Fateev	-
 5.4 Geodetic space weather research Conveners: Michael Schmidt, Technical University Munich (TUM), Germany 		S2b.4 P5 Leading Edge Identification with P altimetry waveforms - Nico Sneeuw, Sajedeh Behnia, Moha	
 Ehsan Forootan, Geodesy and Earth Observation Group Aalborg University Changhui Xu, Chinese Academy of Surveying and Mapping 	У	S2b.4 P6 Data quality analysis of Argo float o - Lu Tang, Jin Li, Hao Zhou, Zhicai Luc	
5.6 Geodesy contributions to address societal challenges Conveners:		S2b.4 P7 Quantifying the precision of retracker - Fukai Peng, Xiaoli Deng, Xiao Cheng	
 Basara Miyahara, Geospatial Information Authority of Japan Yamin Dang, Chinese Academy of Surveying and Mapping 		S2b.4 P8 Spatial-temporal prediction of region - Ruiyang Cai, Jian Zhao	onal sea
- Nicholas Brown, Geoscience Australia		S2b.4 P9 Mechanism of Interannual Variabilit - Yuting Niu, Jianhuang Qin, Xuhua Ch	2
		S2b.4 P10 Detecting regional deep ocean wa CTD data - Yuanyuan Yang, Min Zhong, Wei Fen	

strophic current estimation based on a Least-square

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e Sea Ice Surface Height from Heterologous Altimeter

th China Sea and Hawaii area derived from ICESat-2

termining the height of the geoid using GNSS signals

ormation (LEIPI): a new approach to retracking inland

Tourian

ations from 2016 to 2020 hui Wang

n-2 sea level data in the 0-5 km Australian coastal zone

a level changes from the ocean Climate Data Records

cean Bottom Pressure in the South Indian Ocean

below 2000m based on altimetry, GRACE, Argo, and

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eng Mu



Friday, 2 July 2021

S2b.4 P11 Impact of hydrological loading signals on the tide gauge observations of sea level - Balaji Devaraju, Milaa Murshan S2b.4 P12 Spatio-temporal variations of the steric sea level in the seas around India during the GRACE era - Balaji Devaraju, Gaurav Jiwan, Shivam Chaudhary, Yasir Malik S2b.6 P1 The expected performance of the inclined satellite formation mission for temporal gravity field determination - Hao Zhou, Zhicai Luo S2b.6 P2 Laser space gravity gradiometer with free test mass - Ruslan Davlatov, Vyacheslav Fateev S2b.6 P3 Multi-satellite formations and constellations of CubeSats and their potential in NGGMs - Nikolas Pfaffenzeller, Roland Pail S2b.6 P4 Simulations on gravity field recovery from potential differences and gravity gradients for the MOCAST+ quantum mission proposal - Öykü Koç, Khulan Batsukh, Lorenzo Rossi, Mirko Reguzzoni, Federica Migliaccio S5.4 P1 3D model to explore the ionosphere and plasmasphere exclusively using satellite-based GNSS data - Fabricio Prol, Mainul Hoque S5.4 P2 Towards a better understanding of space weather events and their impact on geodetic measurements - Alberto Garcia-Rigo, Benedikt S. Soja, Anna Belehaki, Jens Berdermann, Consuelo Cid, Denise Dettmering, Jinsil Lee, Anthony J. Mannucci, Enric Monte-Moreno, Xiaoqing Pi, Rami Qahwaji, Pietro Zucca S5.4 P3 Use of Empirical Mode Decomposition (EMD) method to investigate the solar storms impact on GRACE range-rate residuals - Hamid Moghadaspour, Siavash Iran Pour, Saniya Behzadpour, Torsten Mayer-Gürr, Nico Sneeuw, Alireza Amiri-Simkooei S5.4 P4 Impact of 09-15 November 2012 magnetic cloud storm on vTEC along west Euro-African GPS Chain - Amira Shimeis S5.4 P5 A latitude-dependent ionospheric variogram model - Tong Liu, Yiping Jiang, Li Liu, Mengfei Sun, Guochang Xu, Zhibin Yu

S5.4 P6 Ionospheric TEC analysis and modeling using Empirical Mode Decomposition (EMD) - Hamid Moghadaspour, Siavash Iran Pour, Alireza Amiri-Simkooei, Nico Sneeuw, Saniya Behzadpour, Torsten Mayer-Gürr S5.6 P1 The Global Geodetic Observing System (GGOS) - fundamental infrastructure for science and society -- Basara Miyahara, Laura Sánchez, Martin Sehnal, Allison Cradock S5.6 P2 Identifying tools to connect Global Geodetic Reference Frame (GGRF) Capacity Development within the United Nations GGIM Integrated Geospatial Information Framework (IGIF) - Allison Craddock, Graeme Blick, Ryan Keenan, Mikael Lilje, Rob Sarib S5.6 P3 The status and development of the Asia Pacific Reference Frame (APREF) and its applications - Guorong Hu, John Dawson, Ryan Ruddick, Minghai Jia, Simon McClusky S5.6 P4 GGOS Service and Application Under the PNT Mode - Yamin Dang, Shuqiang Xue, Tao Jiang, Qiang Yang, Wei Wang S5.6 P5 Thinking for the Integration of Satellite Communication, Navigation and Remote-sensing based on the network information SoS - Zuoya Zheng S5.6 P6 Investigation of a method for reducing the measurement error of time delays between optical signals in phase rangefinders - Anna Deikun S5.6 P7 Absolute 3D positioning of corner reflectors with Sentinel-1 SAR images for deformation monitoring of Shanghai Yangtze River Bridge - Ruiging Song, Jicang Wu, Xinyou Song, Yuting Li, Guowei Tan S5.6 P8 Towards Indian Forest Sustainability: Satellite-Based Ecological and Nature Hazards Monitoring - C K Shum, Soumitri Das, Junyi Guo, Yuanyuan Jia, Samuel Malloy, John Horack, Vibhor Agarwal, Orhan Akyilmaz, Xiaobin Cai, Tom Darrah, Ehsan Forootan, Steve Lee, Peter Luk, Joseph Mascaro, Rongjun Qin, Hassan Syed, Metehan Uz, Yu Zhang S5.6 P9 Coseismic and early postseismic deformations due to the 2019 earthquake sequence in Ridgecrest, California - Kefeng He, Caijun Xu, Yangmao Wen

Friday, 2 July 2021

15:30 - 16:50 **Parallel Sessions**

2b.2 Spaceborne and terrestrial gravimetry for hydrology (joint with ICCC)	Zoom A
2b.6 Future Gravity Mission Concepts (joint with QuGe)	Zoom A
5.6 Geodesy contributions to address societal challenges	Zoom B
3.3 Geodetic observations in volcanic and tectonically active areas	Zoom C

15:30 - 16:50

Parallel Sessions (Oral) 2b.2 Spaceborne and terrestrial gravimetry for hydrology (joint with ICCC)

Conveners:

- Wei Feng, Innovation Academy for Precision Measurement Science and Technology, CAS
- Nico Sneeuw, University of Stuttgart, Germany

2b.6 Future Gravity Mission Concepts (joint with QuGe) **Conveners:**

- Frank Flechtner, Helmholtz Centre Potsdam GFZ German Research Centre for Geosciences, Germany
- Wei Feng, Innovation Academy for Precision Measurement Science and Technology, CAS
- Matthias Weigelt, Leibniz University Hanover

S2b.2 08	Inversion of Regional Surface Mass Ano on Slepian Basis Functions - Jiangtao Tan, Bo Zhong, Xianpao Li, Tao Liu
S2b.2 09	Regional inversion of GRACE/-FO KBRI water storage changes - Metehan Uz, Yu Zhang, Orhan Akyilmaz, Jur
S2b.6 01	Mass change And Geosciences Interna mission in preparation - Ilias Daras, Lucia Tsaoussi, Charley Dunn, F Carnicero, Charles Webb, Pierluigi Silvestrin
S2b.6 02	Simulation studies for a Mass change Ar An ESA/NASA joint mission concept in pr - Roland Pail, Frank Flechtner, Sean Bruinsma
S2b.6 03	GRACE-I mission for gapless observation of - Frank Flechtner, Christoph Dahle, Markus Ha
006 0 04	Cimulations of the Novt Constation Cra

- and Status of Chinese TianQin Mission
- proposed MOCAST+ gravity mission - Carla Braitenberg, Alberto Pastorutti, Tommaso Pivetta

Zoom A

omalies using GRACE Geopotential Differences Based

u

R/-LRI observations to estimate high resolution total

inyi Guo, C.K. Shum

ational Constellation (MAGIC) - An ESA/NASA joint

Roger Haagmans, Günther March, Luca Massotti, Bernardo

nd Geosciences International Constellation (MAGIC) reparation

a, Pieter Visser, Andreas Güntner, The MAGIC Science Team of mass transport and biodiversity

lauk, Josefine Wilms, Michael Murböck

S2b.6 04 Simulations of the Next Generation Gravity Field Missions Based on Multi-Pair Constellations

- Wei Feng, Changqing Wang, Yihao Yan, Min Zhong, Hou-Tse Hsu, Meng Yang, Hsien-Chi Yeh S2b.6 05 Climatological, tectonic and volcanic gravity signals compared to the sensitivity of the

.

Friday, 2 July 2021

15:30 – 16:50		Zoom B	15:30 – 16:50		
Parallel	l Sessions (Oral)		Parallel	Parallel Sessions (Oral)	
5.6 Geo	desy contributions to address societal challenges	3.3 Geo	3.3 Geodetic observations in volcanic and tector		
Convene	ers:		Conven	 Conveners: Alessandro Bonforte, Istituto Nazionale di Geofisica e Etneo, Catania, Italy Emily Montgomery-Brown, U.S. Geological Survey – Calir 	
- Basara N	Viyahara, Geospatial Information Authority of Japan		- Alessan		
	ang, Chinese Academy of Surveying and Mapping				
- Nicholas	Brown, Geoscience Australia				
S5.6 01	The UN Global Geodetic Centre of Excellence (GGCE)			Nishimura, Kyoto University, Uji, Japan athieu Nocquet, Université Côte D'Azur, IRD, CN	
	- Johannes Bouman		- Chengli	Huang, Shanghai Astronomical Observatory, Chi	
S5.6 02	GGOS D-A-CH – A new regional affiliate of the Global Geodetic Observing System		S3.3 06	.3 06 Grey Wolf Optimal Combination Algorithm for	
	- Hansjoerg Kutterer, Johannes Boehm, Johannes Bouman, Roland Pail, Markus Rothacher, Harak			Study of the Bodrum-Kos earthquake in 2017 - Longxiang Sun, Leyang Wang	
S5.6 03	Embracing challenges through national, regional & international partnership in the P - Andrick Lal	acific	S3.3 07	Time-dependent Modeling of the Long-lasting along Chaman Fault using InSAR Time Series	
S5.6 04	SIRGAS and GRFA WG UN-GGIM: Americas interactions for sustainable geodesy			- Masato Furuya, Matsumoto Fumiko	
	- Sonia Costa, Diego Piñón, José Antonio Tarrío Mosquera, Demián Gomez, Gabriel Guimar	ães	S3.3 08	Horizontal and vertical deformation rates linked del Fuego: interpretation of the geodetic obse	
S5.6 05	Group on Earth Observations (GEO) Disaster Risk Reduction (DRR) WG - David Borges			 the current seismic cycle Luciano Pedro Oscar Mendoza, Andreas Richte Gerardo Connon, Mirko Scheinert, Reinhard Dietri 	
S5.6 06	News from the GGOS DOI Working Group				
	- Kirsten Elger, GGOS DOI Working Group		S3.3 09	Geophysical Modeling	
S5.6 07	Status and Future Development of GNSS enhancement of Tsunami Early Warn (GTEWS)	ing Systems		- Jiaqi Zhang, Lianhuan Wei, Guoming Liu, Crist Bignami, Stefano Salvi, Tiejun Gao, Francesca Ro	
	- John LaBrecque, Allison Allison Craddock, Brendan Crowell, John Rundle		S3.3 10	Estimation and correction of error sources in N - Hongyu Liang, Lei Zhang	
			S3.3 11	On the detection of structural breaks in G earthquakes using machine learning - Laura Crocetti, Matthias Schartner, Benedikt Soja	

Zoom C

ctonically active areas

e Vulcanologia, Sezione di Catania - Osservatorio

California Volcano Observatory

CNRS, OCA & Institut de Physique du Globe de Paris Chinese Academy of Sciences

for Inversion of Seismic Source Parameters: A Case 017

ting Afterslip due to the 2016 Moderate Earthquakes ies

nked to the Magallanes-Fagnano Fault System, Tierra bservations in the context of geological evidence and

ichter, Eric Rodolfo Marderwald, José Luis Hormaechea, Dietrich, Raúl Anibal Perdomo

an Tianchi Volcano with Time Series InSAR and

Cristiano Tolomei, Guido Ventura, Elisa Trasatti, Christian a Romana Cinti

in MTInSAR

GNSS station coordinate time series caused by

Friday, 2 July 2021

IAG Young Authors Awards

17:00 - 18:20 IAG Scientific Assembly 2021 Closing Ceremonies Chairperson: - Markku Poutanen, Secretary General of IAG Introduction, Zuheir Altamimi, IAG President Statistics of the Assembly, Markku Poutanen, IAG Secretary General Statistics and highlights of the Symposia Symposium 1: Reference Frames, Christopher Kotsakis Symposium 2a: Earth's Static Gravity Field, Mirko Reguzzoni Symposium 2b: Earth's Time-variable Gravity Field, Adrian Jäggi Symposium 3: Earth Rotation and Geodynamics, Janusz Bogusz Symposium 4: Positioning and applications, Allison Kealy Symposium 5: Global Geodetic Observing System (GGOS): the metrological basis for the monitoring of the System Earth, Basara Miyahara Symposium 6: ICC symposium (ICCT, ICCC, ICCM, QuGe), Pavel Novák, Annette Eicker, Yuanxi Yang, Jürgen Müller

Proceedings of the IAG Scientific Assembly, Jeff Freymueller

Closing the 2021 IAG Scientific Assembly, Zuheir Altamimi, IAG President



- Dr.-Ing. Susanne Glaser



- Dr. Khosro Ghobadi-Far

The IAG Young Authors Award 2019 is presented to Dr.-Ing. Susanne Glaser for her paper: Susanne Glaser, Rolf König, Karl Hans Neumayer, Tobias Nilsson, Robert Heinkelmann, Frank Flechtner & Harald Schuh (2019): On the impact of local ties on the datum realization of global terrestrial reference frames, Journal of Geodesy, 93: 655-667.

The paper deals with the effect of random and systematic errors and selection of local ties on the datum realization of global terrestrial reference frames. It is based on a thorough simulations study covering GPS, SLR and VLBI over many years. These investigations have widespread implications for our understanding of the errors in contemporary TRFs.

Dr. Glaser received her Doctor of Engineering (Dr.-Ing.) degree in Geodesy at Technische Universität Dresden, Germany in 2014, and currently she works as a research associate at the GFZ German Research Centre for Geosciences at Potsdam, Germany.

This paper is a first demonstration of the utility of satellite gravimetry to detect the gravitational signatures of tsunami waves from space. This study demonstrates an innovative way of applying GRACE and GRACE Follow-On data to detect transient geophysical mass changes which cannot be observed by the conventional monthly Level-2 and mascon solutions.

Dr. Ghobadi-Far received his PhD at the University of Newcastle (Australia) in 2020 on analysis of GRACE data for developing new geophysical applications. Currently he works as a Postdoctoral Associate at the Department of Geoscience of Virginia Tech, USA.

The IAG Young Authors Award 2020 is presented to Dr. Khosro Ghobadi-Far for his paper: Ghobadi-Far, K., Han, SC., Allgever, S., Tregoning, P., Sauber, J., Behzadpour S., Mayer-Guerr T., Sneeuw N. and Okal E. (2020): GRACE gravitational measurements of tsunamis after the 2004, 2010, and 2011 great earthquakes. Journal of Geodesy 94: 65.

Chinese Academy of Surveying and Mapping (CASM)

Chinese Academy of Surveying and Mapping (CASM) was established in 1959 and affiliated to the Ministry of Natural Resources. CASM is mainly engaged in the research in the fields of geodesy & navigation, photogrammetry & remote sensing, cartography & GIS, natural resources investigation & monitoring, and geospatial big data, etc.



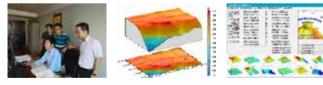
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Geodesy at CASM: Institute of geodesy and geodynamics

1. Geodetic Datum Group



2. Gravity and Vertical Datum Group







4. Satellite Laser Ranging Group







Wuhan University (WHU) is a comprehensive and key national university directly under the administration of the Ministry of Education. It is also one of the first batch of "Double First-Class" construction universities of China.

Geodesy at WHU:

- School of Geodesy and Geomatics
- GNSS Research Center
- State Key Laboratory of Information Engineering in Surveying, Mapping and Remote Sensing
- Chinese Antarctic Center of Surveying and Mapping

Main research fields related to Geodesy are as follows:

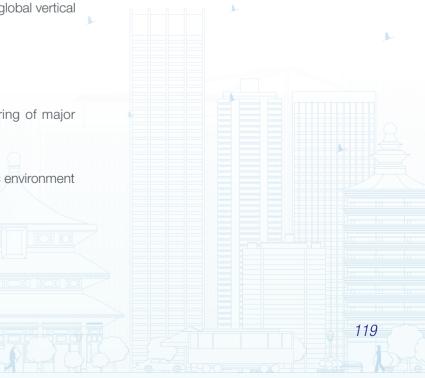
- 1. Basic research and new thought of intelligent surveying and
- mapping
- 2. Unification of high precision time-space datum and global vertical datum
- 3. Navigation and location service
- 4. Gravity field detection and its application
- 5. Crustal deformation and geodynamic
- 6. Disaster monitoring and intelligent safety monitoring of major project
- 7. Intelligent surveying robot
- 8. Marine surveying and mapping and marine dynamic environment

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Brief Introduction of Co-organizers







Shanghai Astronomical Observatory (SHAO)

Shanghai Astronomical Observatory, an institute of the Chinese Academy of Sciences (CAS), was officially established in 1962. Astro-geodynamics, Galaxies & Cosmology and Planetary Science are the major basic research fields. SHAO also develops modern technologies for astronomical observations and time & frequency applications.



Geodesy at SHAO: Center for Astro-Geodynamics

1. Coordinating the Asia-Pacific Space Geodynamics(APSG) Program, unites all relevant activities in the Asia-Pacific region into a cooperative research on plate tectonic, crustal motion and deformation, sea level change etc.

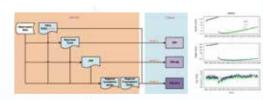
2. Coordinating Chinese SLR and VLBI network, dedicating on development of VGOS and modern SLR technology and participating in the ILRS/IVS scientific and service activities. Working on the routine data analysis of VLBI/GNSS/SLR.

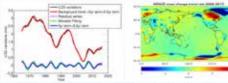
3. Reference frame and precise positioning: weekly & longterm combination of TRF & EOP from VLBI/GNSS/SLR/DORIS data, development of precise positioning techniques and GNSS positioning service platform.

4. Investigation on global climate change and Geodynamics using geodetic and satellite gravimetry observations, study on the variation of LOD & polar motion, EOP predication, theoretical nutation model of non-rigid Earth & FCN, etc.











The Department of Surveying and Mapping Engineering of SGUSI, starting as the Survey Teaching and Research Section in 2001, was established in 2006. At present, there are surveying and mapping engineering specialty and surveying and mapping engineering (Intelligent navigation experimental class). Surveying and Mapping Engineering is a national first-class major construction site, a certified specialty, a featured specialty in Beijing, and a brand specialty in Beijing.

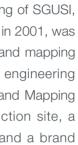


2. Urban fine management and service system





Brief Introduction of Co-organizers





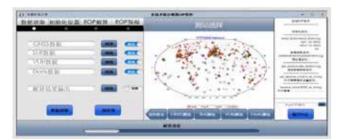
China University of Mining and Technology (CUMT)

The academic discipline of Surveying and Mapping Science & Technology in CUMT (founded in 1909) dates back to the first mine surveying undergraduate program in China proposed in 1953. It was the cradle of mine surveying education, at present is also at the pioneering positon of both education and research in China. The ongoing research projects cover Geodesy and Survey Engineering, Cartography and GIS, Photogrammetry and Remote Sensing, Surveying related to Mining and Underground, and so on.



Geodesy at CUMT: School of Environment and Spatial Informatics

1. Geodesy and Data Processing



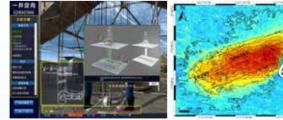
2. Indoor Positioning and GNSS







4. Surveying related to Mining and Underground





CETC54 State Key Laboratory of Satellite Navigation System CePN1 and Equipment Technology (CePNT)

The CETC54 State Key Laboratory of Satellite Navigation System and Equipment Technology is the first state key laboratory in the field of satellite navigation in China. The Laboratory mainly engaged in basic theories and pre-competitive common technological innovations in the construction and equipment application of satellite navigation systems, committed to scientific and technological innovation research from "concept to practical system", including standard research and development

Major achievements in recent years

1. iGMAS tracking station









College of Surveying and Geo-Informatics, Tongji University (CSGI)

Founded in 1932, the discipline of Surveying and Mapping at Tongji University is the birthplace of surveying higher education industry in China. CSGI was formally established in 2012, after the independence from the College of Civil Engineering. CSGI has achieved great excellence in both education and scientific research. It is mainly engaged in the research in the fields of Satellite Geodesy, Precision Engineering Surveying, Photogrammetry, Remote Sensing, Cartography, and Geographic Information Engineering, etc.



Geodesy at CSGI: Geodetic Survey and Survey Engineering Teaching and Research Office

1. GNSS Group

The GNSS group in Tongji University focuses on the fundamental theories and key technologies for multi-GNSS multi-sensor precise positioning. In recent year, they developed the long-range precise RTK theory and software, LEO-enhanced BeiDou related theory.

2. Satellite gravimetry Group

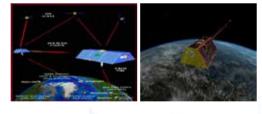
The satellite gravimetry group focuses on the theories and methods to inverse the high-resolution and high-precise Earth gravitational field by using Grace and Grace-FO satellites. Several models have been published internationally with best performance.

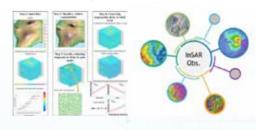
3. InSAR Group

The group focuses on development of low-complexity, and easy-toimplement satellite radar data processing algorithms and application of interferometry technologies to image natural and built environments and study the geohazards and their effects on infrastructures.

4. International academic exchange











CSU was established in 2000 and enlisted as one of the A-Level "Double First Rate" universities by the State Council in 2017. The scientific research about geomatics and geo-informatics at the CSU is mainly focused on geodesy & navigation, photogrammetry & remote sensing, cartography & GIS and geohazards monitoring & controlling, etc. The faculty consists of 50 full-time teachers, including 18 full professors. In the past five years, more than 450 academic papers have been published in international SCI journals, and the total funding was more than 100 million RMB, and the researches have been awarded by 17 prizes. In addition, we have been awarded the Second Prize of National Award for Technological Invention (2009) and the Second Prize of National Award for Technological Progress (2018) as the first ordered member.

Geodesy at CSU: The School of Geosciences and Info-Physics

2. Remote Sensing of

Environment Group

pollution, etc..

1. Imaging Geodesy Group Focusing on modern geodetic data adjustment and processing, InSAR theory, penetrated surveying and mapping, etc..











Focusing on remote sensing data processing, monitoring of natural resources exploration and regional environmental

3. GNSS Navigation Group

Focusing on multi-system GNSS precise positioning, GNSS navigation, GNSS atmospheric sounding. GNSS deformation monitoring, etc..

4. Geohazards PCP Group Focusing on the perception, cognition, and prediction (PCP) of natural geohazards usina multi-source earth observation data, etc.

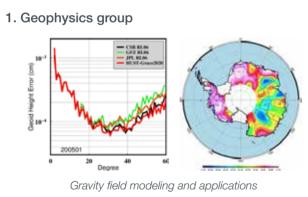


Huazhong University of Science and Technology (HUST)

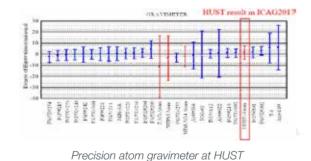
Huazhong University of Science and Technology is a national key university directly under the administration of the Ministry of Education of P.R. China. The Center for Gravitational Experiments (CGE) at HUST engaged in the research on gravitational experiments, precision gravity measurements, geodesy and geophysics theories and applications since 1983.



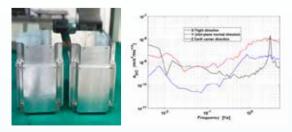
Geodesy at CGE & National Precise Gravity Measurement Facility, HUST



3. Atom Interferometer group

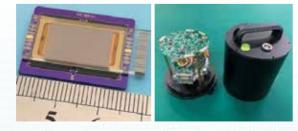


2. Space Electrostatic Accelerometers group



Inertial sensor onboard Tiangin-1 mission

4. MEMS Accelerometer and Gradiometer group



MEMS Accelerometer and Seismometer



College of Geodesy and Geomatics, Shandong University of Science and Technology (SDUST) was established in 2007 with a history of more than 60 years. It currently has a first-level doctoral discipline of "Surveying Science and Technology" and a post-doctoral research center, and was rated as B-level in the 4th round of discipline evaluation. The main research directions include marine surveying and mapping, geodesy & navigation, photogrammetry and remote sensing, cartography & GIS, high-end equipment development, mine and underground surveying, etc.

Geodesy at College of Geodesy and Geomatics of SDUST



Brief Introduction of Co-organizers





Liaoning Technical University (LNTU)

Liaoning Technical University is a comprehensive university mainly focuses on science, engineering, and technology. The School of Geometrics (SOG) is one of the 26 schools in LNTU and it has 60 staff, nearly 500 doctoral and master students, as well as about 1 000 undergraduate students engaged in the field of geodesy & navigation, photogramm try & remote sensing as well as cartography & GIS. It is the largest talent training base of surveying & mapping area in northern China.



Aerospace Information Research Institute (AIR), **CAS BDSMART GNSS Research Group**

The Aerospace Information Research Institute (AIR) of the Chinese Academy of Sciences (CAS) was established in July 2017. BDSMART GNSS research group focuses on ground- and spacebased real-time GNSS techniques, especially on High Accuracy Positioning (HAP) applications as well as GNSS-based ionospheric monitoring and modeling. BDSMART group is also actively involved in IAG, IGS and IDS research activities and scientific services.

Geodesy at LNTU: The School of Geomatics

1. Geodetic Graduates



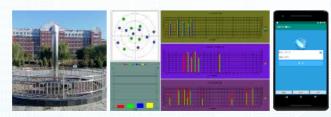


2. International Academic Exchange



4. CORS Application

3. GNSS Navigation Group

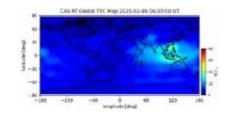


Geodesy at CAS/AIR: BDSMART GNSS Research Group

1. BDSMART Receiver for lonosphere and **Troposphere Monitor**



2. Real-time Global Ionospheric TEC map Generated from CAS



Brief Introduction of Co-organizers







Geodetic Data Processing Centre of Ministry of Natural Resources of China (GDPC)

Geodetic Data Processing Centre of Ministry of Natural Resources of China was established in 1956 and affiliated to Ministry of Natural Resources. GDPC mainly engaged in geodetic data processing & management, and the research in the fields of geodesy & navigation, establishing & management the national geodetic database and providing support services for the monitoring & management of natural resources, etc.

Geodesy at GDPC

1. Terrestrial Reference Frame Group



3. Beidou Positioning and Navigation Group

2. Gravity and Geoid Refining Group



4. Vetical Datum Group









China University of Geosciences (Beijing) (CUGB)



remote sensing, cartography & GIS, etc.

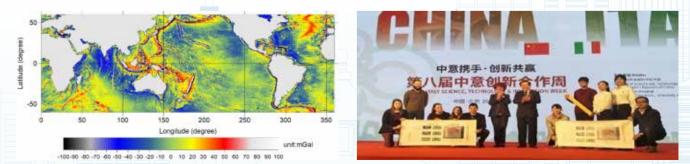
Geodesy at CUGB: Department of surveying and navigation

1. Precise Positioning and Navigation Group





3. Satellite Gravity Group



The geological map of Sinus Iridum Gravity anomaly derived from Chinese HY-2A satellite observations



China University of Geosciences (Beijing) is a national key university of China, which evolved from the Beijing Institute of Geology formed in 1952. CUGB is mainly engaged in the fields of geodesy & navigation, photogrammetry &

2. Geodetic data processing and InSAR Group

4. Planetary Mapping Group



College of Geomatics and Geoinformation, Guilin University of Technology (CGG)



The discipline of Surveying and Mapping was founded in 1956 at Guilin University of Technology. CGG was formally established in 2011, after the independence from the College of Civil and Architecture Engineering. CGG has cultivated a great number of outstanding talents.

It is mainly engaged in the research in the fields of Satellite Geodesy and its applications, Photogrammetry, Remote Sensing, and Geographic Information Engineering, etc.



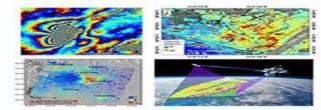
Geodesy at CGG: Geodetic Survey and Survey Engineering

1. LiDAR Group

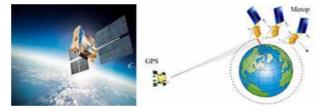


The group focuses on the fundamental theories and key technologies for 3D LiDAR technology and highresolution remote sensing image. In recent years, they developed array LiDAR, bathymetry LiDAR and auxiliary products with completely independent intellectual property rights.

3. InSAR Group

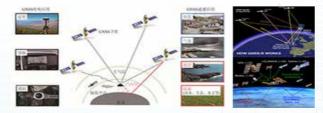


The group focuses on research on data processing theory and algorithm of InSAR/GBInSAR, and application of InSAR technologies in surface deformation monitoring geological disaster risk assessment and safety monitoring of buildings. 2. GNSS Atmospheric Sounding Group



The group focuses on the theories and methods to develop the real-time high-precise models for tropospheric and GNSS Precipitable Water Vapor (PWV) monitoring. A series of atmospheric sounding models have been established for improving positioning and PWV monitoring performance.

4. GNSS-Reflectometry Group



The GNSS-R group focuses on the theories and methods to interpret the surface environment by using GNSS reflected signals. The multi-satellite or multifrequency combined inversion algorithms have been effectively applied to monitor soil moisture, snow depth, sea level height and other fields.

School of Geospatial Engineering and Science (SGES), Sun Yat-sen University

SGES was established in 2019 and located in one of the most beautiful coastal cities in China--Zhuhai. SGES is mainly engaged in the fields of photogrammetry & remote sensing, geodesy & navigation, etc. The SGES strives to be a leading research institute worldwide and nationwide, nurturing and training talents in field of geospatial research from all around the world.

Research Focuses and Groups at SGES

1. Advanced Remote Sensing Technology

LiDAR, UAV Remote Sensing, Image Processing, Big Data, AI, etc.



3. Polar and Oceanic Remote Sensing

Remote Sensing of Ice and Snow, Oceanographic RS, Airborne and Spaceborne Polar Observation Systems, Deep Sea Survey, etc.



http://sges.sysu.edu.cn/



Brief Introduction of Co-organizers





2. Geodesy and Navigation Technology

g Satellite gravimetry, altimetry, GNSS, InSAR, SLR/LLR, etc.

4. Environmental Remote Sensing

- S, Quantitative RS, Atmospheric Sounding, Ecological RS,
- s, Global Change, Precision Agriculture, etc.

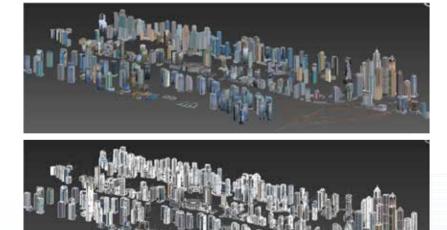
Key Laboratory of Surveying and Mapping Science and Geospatial Information Technology, Ministry of Natural Resources of China (LSMSGIT)

Engaged in the basic theory and application in the fields of surveying and mapping and geospatial information, the Key Laboratory of Surveying and Mapping Science and Geospatial Information Technology, Ministry of Natural Resources (LSMSGIT) aspires to tackle the important and typical scientific and technical problems in economic and social development, major strategic projects and strategic development.

There are 122 permanent personnel in the LSMSGIT, including 112 research personnel, as well as 150 doctoral/ master students. Among them, there are 1 academician of Chinese Academy of Engineering, 38 research fellows and 39 associate research fellows, with 55 percent of the research personnel under the age of 45.

The LSMSGIT mainly includes five research fields:

- 1. Establishment and service of global land-sea unified geodetic datum,
- 2. Indoor and outdoor integrated positioning and navigation,
- 3. Data-Intensive computing of remote sensing,
- 4. Fusion, mining and service based on spatiotemporal big data,
- 5. Monitoring of natural resources.



3D modeling for remote sensing images

Beijing Key Laboratory of Urban Spatial Information Engineering

Beijing Key Laboratory of Urban Spatial Information Engineering is built based on Beijing Institute of Surveying and mapping and China Academy of Surveying and mapping. Facing the needs of urban spatial information service, the laboratory constructs the service system of smart city spatial information engineering, builds the center of spatial information technology theory and application research, leads the technological innovation of the urban spatial information engineering industry in Beijing, promotes the combination of industry, University, research and application, and provides scientific and technological support for the urban planning, construction and management of Beijing.

The main research directions of the laboratory are as follows:

- 1. Basic theory and application of spatial information
- 2. Research on the theory and application of urban spatial information engineering
- 3. Research and application of smart city spatial information service
- 4. Urban evaluation theory and Application Research Based on spatial big data



Exclusive Sponsorship

CHC Navigation

CHC Navigation at a glance

CHC Navigation (CHCNAV) creates innovative GNSS navigation and positioning solutions to make customers' work more efficient. CHCNAV products and solutions cover multiple industries such as geospatial, construction, agriculture and marine. With a presence across the globe, distributors in more than 100 countries and more than 1,300 employees, today CHC Navigation is recognized as one of the fastest-growing companies in geomatics technologies.

From GNSS to LiDAR surveys

Technology integration for CHC Navigation means going beyond survey instruments and developing geospatial tools that provide effective decision-making solutions to the geospatial community. CHCNAV is a global provider of integrated positioning and navigation solutions, from ground to airborne drone platforms, from traditional GNSS receivers to 3D mapping and scanning solutions, machine control GNSS+INS sensors and tractors' auto-steering systems, all that within real time infrastructure from GNSS network solution to advanced bridge monitoring systems.

Enabling Technology to support Geospatial Professionals

CHCNAV is rapidly expanding in geographically thought bespoke business and marketing centers. The proximity to our customer is a key factor to maintain a clear understanding of geospatial customer requirements in an extremely fast changing environment. Fundamental research in technologies is making larger contribution in our plans, including advanced tightly integrated positioning algorithms, IoT, cloud-based solutions and simplification of data acquisition workflow processes with carefully designed man-to-machine interface.

Make Your Work More Efficient

CHCNAV slogan perfectly summarizes the way our GNSS-based positioning and navigation Solutions are designed to dramatically improve productivity and provide outstanding return on investment for our customers and business partners.

Product

Infrastructure & Navigation



P5E GNSS

CGI-610 GNSS/INS System

Surveying and Engineering





i73 Pocket IMU-RTK GNSS

i90 IMU-RTK GNSS

Geospatial & Mapping





AlphaAir450 Lidar System

P330 PRO UAV





AlphaUni 900/1300 Lidar Solution AlphaUni 300 Lidar Solution Alpha 3D Mobile Mapping Solution

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P2 GNSS



i50 GNSS



BB4 UAV



Marine Survey



Apache 4 USV



Apache 3 USV



Precision Agriculture



NX300 Autosteering System

About Beijing

As capital of the People's Republic of China, Beijing serves as the nation's centre of politics, culture, international exchange and scientific innovation.

With a history of over 3000 years and a capital history of more than 850 years (serving as the capital city of five ancient dynasties), Beijing is a famous historical and cultural city in the world and one of the four ancient Chinese capitals. As early as 700,000 years ago, primitive communities, as evidenced by the unearthed relics of "Peking man", had appeared at the Zhoukoudian Area of Beijing. The first documented name of Beijing was "Ji".

Few cities in the world have served for so long as the political headquarters and cultural centre of an area as immense as China. Encyclopedia Britannica describes Beijing as one of the greatest cities in the world, and asserted: "The city has been an integral part of China's history over the past eight centuries, and nearly every



major building of any age in Beijing has at least some national historical significance." Numerous historical sites such as the Forbidden City, the Temple of Heaven, the Summer Palace, the Old Summer Palace, and Beihai Park all add glamour to the city.



The vast urban area with both ancient appeal and modern prosperity, the broad plain spanning to the southeast, and Taihang Mountain and Yanshan Mountain lying magnificently in the northwest all endowed Beijing with unique charm. The relics of ancient gardens, temples and royal palaces have

injected profound cultural connotation in the city; the steep cliffs, deep valleys, beautiful springs and waterfalls have covered a mysterious veil over its outskirts; the busy pedestrian streets and numerous business districts have provided vigour of life to this ancient city.

Today, Beijing has already developed into a modern international metropolis: the Financial Street has long been a veritable financial management centre of China, and the Central Business District is a symbol of Beijing's opening up and its economic strength. In addition, the National Theatre for Performing Arts, Terminal 3 of the Beijing Capital International Airport, the CCTV Headquarters Building, the "Bird's Nest", the "Water Cube", and a number of other buildings have also become the modern symbols of Beijing. Walking through hutongs in Beijing, you may find people of all races from around the world. With its brand-new image with both ancient and stylish features, Beijing is embracing more than 147 million visitors every year.