



Final Program

TerraSAR-X / TanDEM-X Science Team Meeting

**DLR Oberpfaffenhofen, Germany
October 21 – 24, 2019**



Session overview

Monday, October 21, 2019		Building 124
13.00 – 14.10	Plenary I: TerraSAR-X, TanDEM-X and future national SAR Missions	
14.10 – 14.20	Short break	
14.20 – 15.40	Plenary II: Future International SAR Missions	
15.40 – 16.00	Coffee break	
16.00 – 17.00	Session 1.1: Land Cover / Forest	
17.00 – 17.15	Short break	
17.15 – 18.15	Session 1.2: Urban I	
18.30 – 21.30	Icebreaker Event	

Tuesday, October 22, 2019		Building 124	Building 135 (RMC)
09.00 – 10.40	Session 2.1: Sea Ice		Session 2.2: Georisk I (Volcanoes)
10.40 – 11.10	Coffee break		
11.10 – 12.50	Session 3.1: Agriculture / Land Cover		Session 3.2: Georisk II
12.50 – 14.00	Lunch break		
14.00 – 15.20	Session 4.1: Forest I		Session 4.2: Ocean / Coast I
15.20 – 15.50	Coffee break		
15.50 – 17.10	Session 5.1: Forest II		Session 5.2: Ocean / Coast II
17.20 – 19.30	Poster Session (TechLab)		

Wednesday, October 23, 2019		Building 124	Building 135 (RMC)
09.00 – 10.40	Session 6.1: Hydrology		Session 6.2: Urban II
10.40 – 11.10	Coffee break		
11.10 – 12.50	Session 7.1: Permafrost		Session 7.2: Archaeology
12.50 – 14.00	Lunch break		
14.00 – 15.20	Session 8.1: Landslide Monitoring		Session 8.2: DEM Methods
15.20 – 15.50	Coffee break		
15.50 – 17.30	Session 9.1: Ice and Snow I		Session 9.2: Georisk III
17.40 – 20.00	Poster Session (TechLab)		

Thursday, October 24, 2019		Building 124	Building 135 (RMC)
09.00 – 10.40	Session 10.1: Ice and Snow II		Session 10.2: DEM Applications
10.20 – 11.10	Coffee break		
11.10 – 12.50	Session 11.1: Ice and Snow III		Session 11.2: Methods

Plenary I: TerraSAR-X, TanDEM-X and future national SAR Missions

Building 124

Chairperson: Irena Hajnsek and Achim Roth

- 13.00 – 13.05 **Welcome**
Alberto Moreira – German Aerospace Center (DLR)
- 13.05 – 13.20 **TerraSAR-X/TanDEM-X overview**
Stefan Buckreuz – German Aerospace Center (DLR)
- 13.20 – 13.40 **Status HRWS**
Elizabeth Nuncio – German Aerospace Center (DLR)
- 13.40 – 14.00 **Tandem-L Project Status**
Manfred Zink – German Aerospace Center (DLR)
- 14.00 – 14.10 **AGENDA Presentation**
Irena Hajnsek/Achim Roth – German Aerospace Center (DLR)
- 14.10 – 14.20 **Short break**

Plenary II: Future International SAR Missions

Building 124

Chairperson: Irena Hajnsek and Achim Roth

- 14.20 – 14.40 **RADARSAT Constellation Mission (RCM)**
Yves Crevier – Canadian Space Agency (CSA)
- 14.40 – 15.00 **PAZ Science Activities**
María José González – INTA
- 15.00 – 15.20 **NASA-ISRO SAR (NISAR) Mission Status**
Franz Meyer – Alaska SAR Facility
- 15.20 – 15.40 **EO Science and Applications activities in the Space 4.0 era**
Yves-Louis Desnos – ESA
- 15.40 – 16.00 **Coffee break**

Session 1.1: Land Cover / Forest

Building 124

Chairperson: Yves-Louis Desnos

- 16.00 – 16.20 **A Multi-Sensor Fusion Approach for Segregating Cocoa Tree Crops from Natural Forest**
Yaqing Gou – University of Leicester
- 16.20 – 16.40 **Forest and Water Mapping with TanDEM-X**
Jose-Luis Bueso-Bello, Paola Rizzoli, Francescopaolo Sica, Paolo Valdo – DLR
- 16.40 – 17.00 **TanDEM-X and Sentinel-1 Synergy for an Early Warning System the Amazon Rainforest Case Study**
Andrea Pulella, Paola Rizzoli, Francescopaolo Sica – DLR
- 17.00 – 17.15 **Short break**

Session 1.2: Urban I

Building 124

Chairperson: Andreas Schmitt

- 17.15 – 17.35 **Using TSX/TDX Pursuit Monostatic SAR Stacks for PS-InSAR in Urban Areas**
Timo Balz, Ziyun Wang, Ming-Sheng Liao – Wuhan University
- 17.35 – 17.55 **Global Urban Footprint - Achievements and Follow-up Activities**
Thomas Esch, Felix Bachofer, Wieke Heldens, Mattia Marconcini, Daniela Palacios-Lopez, Achim Roth, Julian Zeidler – DLR
- 17.55 – 18.15 **Spaceborne Transmitter-Stationary Receiver Bistatic SAR Imaging - Synchronization Aspects**
*Adrian Focsa, Andrei Anghel, Remus Cacoveanu – University Politehnica of Bucharest;
Mihai Datcu – DLR*
- 18.30 – 22.00 **Icebreaker Event** Building 109 (TechLab)

Session 2.1: Sea Ice Applications

Building 124

Chairperson: Rolf Scheiber

- 09.00 – 09.20 **Sea Ice Drift at Different Time Scales Observed by TerraSAR-X and TanDEM-X**
Leif Eriksson, Denis Demchev – Chalmers University of Technology; Dyre Oliver Dammann – Stormgeo
- 09.20 – 09.40 **Classification of Icebergs Using TanDEM-X Single Pass InSAR**
*Leif Eriksson – Chalmers University of Technology; Dyre Oliver Dammann – Stormgeo;
Son V. Nghiem – Jet Propulsion Laboratory*
- 09.40 – 10.00 **TerraSAR-X and Time-Lapse Photography for Snow on Sea-Ice Monitoring in Deception Bay, Nunavik**
Sophie Dufour-Beauséjour, Monique Bernier, Jimmy Poulin, Yves Gauthier – Institut National de la Recherche Scientifique; Anna Wendleder – DLR; Veronique Gilbert – Kativik Regional Government; Juupi Tuniq – Northern Village of Salluit; Amelie Rouleau – Raglan Mine (a Glencore Company)
- 10.00 – 10.20 **TanDEM-X Observations of Freshwater Ice Cover**
Joost van der Sanden, Hugo Drouin and Naomi Short – Canada Centre for Remote Sensing
- 10.20 – 10.40 **Polarimetric Behavior for the Derivation of Sea-Ice Surface Topographic Height from TanDEM-X Interferometric SAR Data**
Lanqing Huang, Irena Hajnsek – ETH Zurich; Son V. Nghiem – Jet Propulsion Laboratory

Session 2.2: Georisk I (Volcanoes)

Building 135 (RMC)

Chairperson: Nicole Richter

- 09.00 – 09.20 **Imaging the 2013 Explosive Crater Excavation and New Dome Formation at Volcán De Colima with TerraSAR-X, Time-Lapse Cameras and Modelling**
Thomas Walter – German Research Centre for Geosciences (GFZ)
- 09.20 – 09.40 **Deformations and Morphology Changes Associated with the 2016-2017 Eruption Sequence at Bezymianny Volcano, Kamchatka**
René Mania, Thomas Walter – German Research Centre for Geosciences (GFZ); Alexander Belousov, Marina Belousova – Institute of Volcanology and Seismology, Russian Academy of Sciences; Sergey Senyukov – Kamchatkan Branch of Geophysical Survey, Russian Academy of Sciences
- 09.40 – 10.00 **Tracking Volcanic Activity with TerraSAR-X and TanDEM-X**
Michael Poland – US Geological Survey; Matthew Pritchard – Cornell University; Susanna Ebmeier – University of Leeds; Juliet Biggs, Fabien Albino – University of Bristol; Francisco Delgado – IPGP; Julia Kubanek – European Space Research and Technology Centre (ESTEC); Paul Lundgren – Jet Propulsion Laboratory; Christelle Wauthier – Pennsylvania State University; Eugenio Sansosti – IREA-CNR
- 10.00 – 10.20 **Contribution of TerraSAR-X Data to the Volcano Monitoring and Research Efforts at the Piton De La Fournaise Volcanological Observatory (OVPF-IPGP)**
*Nicole Richter, Patrice Boissier, Aline Peltier – Observatoire Volcanologique du Piton de la Fournaise (OVPF-IPGP); Alexis Hrysiewicz, Jean-Luc Froger – Laboratoire Magmas et Volcans (LMV)
Sam Poppe – Vrije Universiteit Brussel (VUB); Nicolas Villeneuve – Université de La Réunion*
- 10.20 – 10.40 **Morphological Changes from the 2018-2019 Eruption at Shiveluch Volcano Kamchatka, Observed with Radar and Optical Satellite Data**
Alina Shevchenko – German Research Centre for Geosciences (GFZ) & Institute of Volcanology and Seismology FEB RAS; Edgar Zorn, Thomas Walter, Magdalena Vassileva – German Research Centre for Geosciences (GFZ)
- 10.40 – 11.10 **Coffee break**

Session 3.1: Agriculture / Land Cover

Building 124

Chairperson: Simon Zwieback

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| 11.10 – 11.30 | Testing the Contribution of Coherent Co-Polar Polarimetry at X-Band for Crop-Type Mapping
<i>Mario Busquier, Juan Manuel Lopez-Sanchez, Noelia Romero-Puig, Alejandro Mestre-Quereda – University of Alicante; Damian Bargiel – Technische Universität Darmstadt</i> |
| 11.30 – 11.50 | Assessment of the Influence of the Double-Bounce Decorrelation on the Retrieval of Scene Model Parameters with PolInSAR TanDEM-X Data
<i>Noelia Romero-Puig, Juan Manuel Lopez-Sanchez, Josep David Ballester-Berman – University of Alicante</i> |
| 11.50 – 12.10 | Joint Assessment of Spaceborne X-, C-, S- And L-band SAR Imagery in Australian Environments
<i>Zheng-Shu Zhou, Amy Parker, Aelx Held, Peter Caccetta – CSIRO; Ake Rosenqvist – Earth Observation (soloEO)</i> |
| 12.10 – 12.30 | Semantic Extraction from TerraSAR-X Dataset - Different Perspectives
<i>Wei Yao, Mihai Datcu – DLR</i> |
| 12.30 – 12.50 | Physical Radar Signature Extraction from Flexible PolSAR Images
<i>Juanping Zhao, Zenghui Zhang, Huilin Xiong, Wenxian Yu – Shanghai Jiao Tong University; Mihai Datcu – DLR</i> |

Session 3.2: Georisk II

Building 135 (RMC)

Chairperson: Mahdi Motagh

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| 11.10 – 11.30 | Detection of Sinkhole Activity in Central Florida Using High Spatial-Resolution TerraSAR-X InSAR Time Series Observations
<i>Shimon Wdowinski, Talib Oliver-Cabrera, Boya Zhang – Florida International University; Sarah Kruse, Tonian Robinson – University of Southern Florida</i> |
| 11.30 – 11.50 | Wink Sinkholes in Texas Observed by TerraSAR-X and Other Satellite Imagery
<i>Jinwoo Kim, Zhong Lu – Southern Methodist University</i> |
| 11.50 – 12.10 | Assessing Subsidence and Sinkhole Hazard in Wuhan, China: Results from InSAR Measurements
<i>Jiyuan Hu, Jiming Guo – Wuhan University; Mahdi Motagh – German Research Centre for Geosciences (GFZ); Mahmud Haghshenas Haghighi – Leibniz University Hannover</i> |
| 12.10 – 12.30 | Plate Tectonics Measurement Using TerraSAR-X
<i>Hartmut Runge – DLR</i> |
| 12.30 – 12.50 | Monitoring of Man-made Changes Using C- And X-Band SAR Satellite Data
<i>Nadine Kiefl, Catherine Hartley, Wolfgang Koppe, Jan Anderssohn – Airbus Defence and Space GmbH</i> |
| 12.50 – 14.00 | Lunch break |

Session 4.1: Forest I

Building 124

Chairperson: Kostas Papathanassiou

- 14.00 – 14.20 **First Steps Towards a Spanish National Map of Forest Height Derived from TanDEM-X Data**
Cristina Gomez – INIA; Juan Manuel Lopez-Sanchez, Noelia Romero-Puig, Alejandro Mestre-Quereda – University of Alicante; Pablo Alejandro – Quasar Science Resources; Jianjun Zhu, Haiqiang Fu, Wenjie He – Central South University
- 14.20 – 14.40 **Sensitivity of TanDEM-X to Vertical and Horizontal Boreal Forest Structure Using IWCM**
Henrik Persson – Swedish University of Agricultural Sciences; Jan Askne, Lars Ulander – Chalmers University of Technology
- 14.40 – 15.00 **Penetration Effect on TanDEM-X InSAR Heights and Its Compensation in Different Forest Types**
Michael Schlund, Collins B. Kukunda, Stefan Erasmi – University of Göttingen; Birgit Wessel – DLR
- 15.00 – 15.20 **InSAR DEM Differencing for Monitoring Changes in Forest Height and AGB**
Svein Solberg – Norwegian Forest and Landscape Institute

Session 4.2: Ocean / Coast I

Building 135 (RMC)

Chairperson: Roland Romeiser

- 14.00 – 14.20 **Ocean Surface Dynamics Derived from TerraSAR-X/TanDEM-X and Hydrodynamic Modeling**
Andreas Lehmann – GEOMAR Helmholtz Centre for Ocean Research; Steffen Suchandt – DLR
- 14.20 – 14.40 **Imaging Exposed Intertidal Flats by Single- And Dual-Co-Polarization SAR**
Martin Gade – University Hamburg; Wensheng Wang – Key Laboratory of Network Information System Technology (NIST)
- 14.40 – 15.00 **Coastal Shoreline Extraction from Very High Resolution (VHR2) Satellite SAR Imagery**
Daithí Maguire – National University of Ireland Galway
- 15.00 – 15.20 **Object Detection in TerraSAR-X Images Using Transfer Learning with Simulated Data**
Heather Hunter, Hans Graber – University of Miami
- 15.20 – 15.50 **Coffee break**

Session 5.1: Forest II

Building 124

Chairperson: Seungkuk Lee

- 15.50 – 16.10 **Retrieval of Mangrove Forest Structure Parameters from TanDEM-X**
Seungkuk Lee, Temilola Fatoyinbo, David Lagomasino, Nathan Thomas – NASA GSFC
- 16.10 – 16.30 **Testing the Ability of TanDEM-X Data to Detect Forest Degradation and Regrowth in Tropical Forests**
Edward Mitchard, Iain McNicol, Chiara Aquino, Harry Carstairs – University of Edinburgh
- 16.30 – 16.50 **On the Role of Structure Metrics in the Combination of the GEDI Waveforms and TanDEM-X Coherences for Biomass Estimation**
Changhyun Choi, Roman Guliaev, Matteo Pardini, Konstantinos P. Papathanassiou – DLR
- 16.50 – 17.10 **Exploiting the Link Between Lidar Full Waveforms and TanDEM-X Coherences: An Application to Forest Height Estimation Within the GEDI Mission**
Roman Guliaev, Changhyun Choi, Matteo Pardini, Konstantinos P. Papathanassiou – DLR

Session 5.2: Ocean / Coast II

Building 135 (RMC)

Chairperson: Martin Gade

- 15.50 – 16.10 **Extraction of Moving Ocean Wave Patterns, Currents, and Water Depths from Reprocessed TerraSAR-X Spotlight-Mode Data**
Roland Romeiser, Hans Graber – University of Miami
- 16.10 – 16.30 **Wave and Wind Parameters Estimated from the Sea Surface Roughness Within the Context of Ocean-Atmosphere Interaction**
*Guillermo Díaz Méndez, Francisco Ocampo-Torres, Daniel Pelaez Zapata – CICESE;
Bernardo Esquivel Trava – IIO-UABC; Rogelio Hasimoto-Beltran – CIMAT*
- 16.30 – 16.50 **Classification of Various Sea Surface Films and Newly-Formed Ice Using Dual-pol TerraSAR-X SAR Data**
Dmitry V. Ikonin, Andrei Yu. Ivanov – Russian Academy of Sciences
- 16.50 – 17.10 **Non-Linear Modelling of Detectability of Ship Wakes and Comparison between X-Band and C-Band SAR**
Björn Tings, Domenico Velotto, Sergey Voinov, Andrey Pleskachevsky, Sven Jacobsen - DLR

17.20 – 19.30 Poster Session

Building 109 (TechLab)

1. **Comparison of the Interferometric Phase Noise for TerraSAR-X, TanDEM-X, Sentinel-1, and PALSAR-2**
Takashi Nonaka – Nihon University
2. **A Comparative Study on the Geometric Accuracy of TerraSAR-X and Sentinel-1**
Ulrich Balss, Christoph Gisinger, Michael Eineder – DLR
3. **Deep Learning Impact in Forest Monitoring Using TanDEM-X Data**
Antonio Mazza, Giuseppe Scarpa – University Federico II of Naples; Francescopaolo Sica, Paola Rizzoli – DLR
4. **A Comparison of Interferometric Phase Filtering Techniques for Digital Elevation Model Generation from TanDEM-X Data**
Nicola Gollin, Francescopaolo Sica, Paola Rizzoli – DLR
5. **Canopy Height Model Estimation for Mountainous Terrain Forest Case Study from the Baikal Lake Region Russia**
Tumen Chimitdorzhiev, Aleksei Dmitriev, Alena Sherkhoeva, Pavel Dagurov, Arcadii Baltukhaev – IPMS SB RAS; Irina Kirbizhekova – Buryat Scientific Centre
6. **Fusion of TanDEM- X and Sentinel-1 to Derive Soil Erosion Activity Maps in Gully Affected Areas**
Miguel Vallejo Orti – Namibia University of Science and Technology
7. **Ground Deformation Monitoring of Hambach Open Pit Mine in Germany by Space-borne SAR Interferometry**
Wei Tang – China University of Mining and Technology; Mahdi Motagh – German Research Centre for Geosciences (GFZ)
8. **Lac Bam Shown by TerraSAR-X - The Visualisation of Seasonal and Long Term Changes**
*Christoph Klingebiel, Andreas Schmitt – Munich University of Applied Sciences; Anna Wendleder – DLR
Linda Moser – GAF*
9. **Monitoring Spatial City Growth and Land Surface Temperature (LST) of Dhaka Metropolitan Area (DMA) Using Geospatial Data**
Ram Avtar – Hokkaido University
10. **Transfer Learning of U-Net Convolutional Networks for TanDEM-X Forest/Non-Forest Mapping at Large Scales**
Collins Kukunda Stefan Erasmi, Michael Schlund – University of Göttingen; Birgit Wessel – DLR
11. **Estimation of Changes in Forest Height as a Proxy of Carbon Stock Changes in the Argentine Chaco Forest**
Diego de Abelleira – Instituto Nacional de Tecnología Agropecuaria
12. **Fusing GEDI Lidar and TanDEM-X InSAR Data for Improved Forest Biomass Estimation**
Wenlu Qi, Ralph Dubayah – University of Maryland; Matteo Pardini, Konstantinos P. Papathanassiou – DLR; Temilola Fatoyinbo, SeungKuk Lee – NASA Goddard Space Flight Center
13. **Differentiating Forest Types Using TerraSAR-X Spotlight Images Based on Inferential Statistics and Multi-variate Analysis**
Dalia Farghaly – Leuphana Universität Lüneburg
14. **InSAR Based Subsidence Monitoring for Starobin Potash Deposit**
Oleg Konovalov – Belarusian State University
15. **Canopy Height and Above-Ground Biomass Retrieval in Tropical Forests Using Multi-Pass X- And C-Band Pol-InSAR Data**
Anna Berninger, Sandra Lohberger, Florian Siegert – Remote Sensing Solutions GmbH
16. **Change Detection from Extensive Time Series Using TerraSAR-X Staring Spotlight Data**
Manfred Hager, Harald Anglberger, Timo Kempf, Carlos Villamil Lopez – DLR

17.20 – 19.30 Poster Session**Building 109 (TechLab)**

17. **Interferometric Processing of Bistatic Data from TanDEM-X over Mountainous and Flat Test Areas in Bulgaria**
Zlatomir Dimitrov – Space Research and Technology Institute & Bulgarian Academy of Sciences
18. **SAR Polarimetric Decomposition: An Overview**
Omar El Kharki – Faculty Of Sciences and Techniques of Tangier
19. **4D-evolution of a Dike-Induced Graben Fracture A Case Study on the 2014-15 Rifting Event During the Eruption of Bárðarbunga at Holuhraun, Iceland, Using Time-Series Analyses of Remote Sensing and Field Data**
*Stephan Kolzenburg, Ulrich Münzer – Ludwig-Maximilians-University; Mariel Dirscherl, Ernst Hauber – DLR
Doris Hermle – 3D RealityMaps GmbH; Julia Kubanek – European Space Research and Technology Centre (ESTEC);
Ágúst Guðmundsson – Fjarkönnun ehf.*
20. **A-DInSAR Analysis for Automatic Detection of Landslide Activity at the Moselle Valley, Germany**
Andre Kalia – Federal Institute for Geosciences and Natural Resources
21. **Mapping Surface Deformation Related to the 2017 North Korea Nuclear Test Using TerraSAR-X Spotlight Interferometric Pairs**
Won-Kyung Baek, Hyung-Sup Jung – University of Seoul
22. **SAR Change Detection in a General Case Using Normalized Compression Distance**
Gabriel Dax, Corneliu Octavian Dumitru, Gottfried Schwarz, Mihai Datcu – DLR

Session 6.1: Hydrology

Building 124

Chairperson: Irena Hajnsek

- 09.00 – 09.20 **Extraction of Absolute Water Level in the Florida Everglades Using TanDEM-X Bistatic Science Phase Observations with a Large Perpendicular Baseline**
Sang-Hoon Hong – Pusan National University; Shimon Wdowinski – Florida International University; Sang-Wan Kim – Sejong University
- 09.20 – 09.40 **Improving the TanDEM-X Digital Elevation Model for Flood Modelling Using Multi-GNSS Real Time Kinematic Precise Point Positioning Data to Correct Flood Affecting Road Dams in the Western Cuvelai Basin - Namibia**
Robert Arendt, Leona Faulstich, Achim Schulte – Freie Universität Berlin; Robert Jüpner – Technische Universität Kaiserslautern; André Assmann – Geomer GmbH; Joachim Lengricht, Frank Kavishe – University of Namibia
- 09.40 – 10.00 **Using TanDEM-X to Detect and Categorize Gullies in Namibia**
Miguel Vallejo Orti – Namibia University of Science and Technology
- 10.00 – 10.20 **Accuracy Assessment of the TanDEM-X 90M Digital Elevation Model for Selected Floodplain Sites**
Laurence Hawker, Jeffrey Neal, Paul Bates – University of Bristol
- 10.20 – 10.40 **Monitoring Water Lock Hessigheim of River Neckar**
Philipp Schneider, Uwe Sörgel – Universität Stuttgart

Session 6.2: Urban II

Building 135 (RMC)

Chairperson: Thomas Esch

- 09.00 – 09.20 **Damage Assessment for Urban Areas in Syria Based on Analysis of Satellite SAR Imagery**
Bara'a Alkhalaf, Michael Hahn – Hochschule für Technik, Stuttgart; Thomas Esch – DLR
- 09.20 – 09.40 **Featuring the Deformation Along Metro Lines in Shanghai with Six Years TerraSAR-X Dataset**
Ru Wang, Ming-Sheng Liao, Mengshi Yang – Wuhan University
- 09.40 – 10.00 **Satellite-based Ground and Infrastructure Stability Evaluations Regarding Multi-Scale Subsidence Processes over Mexico City**
Shimon Wdowinski – Florida International University; Dario Solano-Rojas, Enrique Cabral-Cano – Universidad Nacional Autónoma de México; Emre Havazli – Jet Propulsion Laboratory; Batuhan Osmanoglu – USRA - NASA GSFC
- 10.00 – 10.20 **Remote Exploration of Deformation Characteristics and Mechanisms of Complexly Structured Bridges Combined Using TerraSAR-X Images with Other SAR Data Stacks**
Xiaoqiong Qin, Chisheng Wang – Shenzhen University; Ming-Sheng Liao, Lu Zhang – Wuhan University; Xiaoli Ding – The Hong Kong Polytechnic University
- 10.20 – 10.40 **Spaceborne Bridge Monitoring Using TerraSAR-X Satellite**
Edward Hoppe – Virginia Department of Transportation; Fabrizio Novali, Alfio Fumagalli, – Tele-Rilevamento Europa; Alessio Rucci, Sara Del Conte, Giacomo Falorni, Nora Toro – TRE Altamira Inc.
- 10.40 – 11.10 **Coffee break**

Session 7.1: Permafrost

Building 124

Chairperson: Samuel Stettner

- 11.10 – 11.30 **The 2015 Sagavanirktok River Flood and Associated Permafrost Degradation Observed with TerraSAR-X/TanDEM-X**
Mark McClernan, Simon Zwieback, Franz J Meyer – University of Alaska Fairbanks
- 11.30 – 11.50 **Analyzing Permafrost Thaw Settlement Using X-band Space-Borne SAR Satellites**
Deying Ma, Mahdi Motagh – German Research Centre for Geosciences (GFZ); Guoxiang Liu – Southwest Jiaotong University
- 11.50 – 12.10 **Permafrost Observation by TerraSAR-X/TanDEM-X in the Northern Qinghai-Tibet Plateau**
Chao Wang – Institute of Remote Sensing and Digital Earth, CAS
- 12.10 – 12.30 **Large-scale Monitoring of Rapid Permafrost Thaw with Satellite Radar Interferometry**
Philipp Bernhard, Silvan Leinss, Irena Hajsek – ETH Zürich; Simon Zwieback – University of Alaska Fairbanks
- 12.30 – 12.50 **Using TanDEM-X and TerraSAR-X Datasets for Flood Simulations on the Lena River Delta**
Avi Putri Pertiwi, Punit Kumar Bhola, Timo Schaffhauser – Technical University of Munich ; Achim Roth – DLR

Session 7.2: Archaeology

Building 135 (RMC)

Chairperson: Achim Roth

- 11.10 – 11.30 **Remote Sensing Archaeology: Searching for Lake Parime from Space**
Jose Miguel Perez Gomez – Universidad Simón Bolívar; Charles Brewer-Carías – Academia de Ciencias Físicas Matemáticas y Naturales; Andrzej T. Antczak, Maria Magdalena Antczak – Leiden University; Giovanni Marchisio – Planet; Thomas Busche – DLR; Alejandro Chumaceiro – Sigis; Sarkis Yammine – Fundación Yammine; Federico Mayoral, Ricardo Trevisi, Karel Bentata – Fundación Manoa; Charles Brewer-Capriles – Fundación Explora
- 11.30 – 11.50 **Integrating TanDEM-X Data with Radar and Multispectral Imagery for Mapping Former Nile Branches and Their Correlation to Ancient Egyptian Settlements**
Eman M. Ghoneim – University of North Carolina Wilmington; Raghda El-Behaedi – University of Chicago
- 11.50 – 12.10 **SARchaeology Along the Extended Silk Road**
Timo Balz – Wuhan University; Fulong Chen – RADI, CAS; Gino Caspari – University of Sydney
- 12.10 – 12.30 **The Utilization of TerraSAR-X and TanDEM-X for Subsurface Imaging at the Archaeological Site of 'Uqdat al-Bakrah, Oman**
Frances Wiig – University of New South Wales; Michael Harrower, Smiti Nathan, Ioana Dumitru – Johns Hopkins University; Alexander Braun – Queens University; Joseph Lehner – University of Sydney; Scott Hensley – Jet Propulsion Laboratory
- 12.30 – 12.50 **The Brú Na Bóinne Archaeological Site - A New Space Borne SAR Perspective**
Thomas Busche – DLR; Steve Davis – University College Dublin; Knut Rassmann – German Archaeological Institute
- 12.50 – 14.00 **Lunch break**

Session 8.1: Landslide Monitoring

Building 124

Chairperson: Christian Minet

- 14.00 – 14.20 **Land Displacement in Perth (Western Australia) for 2012.7 to 2018.7 from TerraSAR-X Strip-map Data (DLR Project LAN1499)**
Michael Filmer, Amy Parker, Will Featherstone, Luyen Bui, Todd Lyon, Paul Johnston – Curtin University; Simon Williams – National Oceanography Centre; Matthew Garthwaite – Geoscience Australia
- 14.20 – 14.40 **Active Landslide Deformation Monitoring Using Point-Like Target Offset Tracking with High-Resolution TerraSAR-X Data**
Lu Zhang, Menghua Li, Jie Dong, Ming-Sheng Liao – Wuhan University
- 14.40 – 15.00 **Monitoring Very Slow Landslides in Switzerland with InSAR - TerraSAR-X Contribution**
Tazio Strozzi, Rafael Caduff, Andrea Manconi – Gamma Remote Sensing; Christian Ambrosi – University of Applied Sciences and Arts of Southern Switzerland
- 15.00 – 15.20 **High Resolution InSAR Investigations of Landslide Motion and Its Interaction with Glacier Flow and Volcanic Activity in British Columbia, Canada**
Bernhard Rabus, Farnoush Hosseini, Arturo Velasco, Anna Gribbon, Wyatt Gronnemose – Simon Fraser University

Session 8.2: DEM Methods

Building 135 (RMC)

Chairperson: Thomas Busche

- 14.00 – 14.20 **New Approaches to the Archaeology of the Indus Civilisation Using TanDEM-X in Combination with Multisensor Multitemporal Satellite Data and Machine Learning**
Hector Orengo – Catalan Institute of Classical Archaeology; Arnau Garcia-Molsosa, Francesc Conesa, Adam Green, Cameron Petrie – University of Cambridge; Ravindra Singh – Banaras Hindu University
- 14.20 – 14.40 **Anthropogenic Relief as Part of the Human Impact on the Environment**
Vanya Stamenova, Stefan Stamenov – Space Research and Technology Institute - Bulgarian Academy of Sciences
- 14.40 – 15.00 **The Offset-Compensated Nonlocal Filtering: Performance Evaluation on TanDEM-X Data and DEM Generation**
Francescopaolo Sica, Nicola Gollin, Paola Rizzoli – DLR
- 15.00 – 15.20 **TanDEM-X Change DEM: The Latest DEM Based on New Global Acquisitions (2017-2019)**
Marie Lachaise, Markus Bachmann, Thomas Fritz, Martin Huber, Barbara Schweißhelm, Birgit Wessel – DLR
- 15.20 – 15.50 **Coffee Break**

Session 9.1: Ice and Snow I

Building 124

Chairperson: Dana Floricioiu

- 15.50 – 16.10 **TerraSAR-X Yearly Velocity Mosaics of the South Patagonia Icefield from 2016 to 2018**
Erling Johnson, Dana Floricioiu – DLR
- 16.10 – 16.30 **Arctic sea ice cover by spaceborne SAR data in cross polarization based on machine learning**
Xiao-Ming Li – Aerospace Information Research Institute (CAS)
- 16.30 – 16.50 **An Improved Data Set for Antarctica: a Filled and Edited 90m-TanDEM-X Digital Elevation Model**
Birgit Wessel, Martin Huber, Sahra Abdullahi, Achim Roth – DLR; Felix Reuss – SLU
- 16.50 – 17.10 **Mining Displacement Field Times Series Derived from TerraSAR-X Images with Confidence Measures Application to Alpine Glaciers in the Mont Blanc Massif**
Emmanuel Trouve, Nicolas Meger, Tuan Nguyen, Ludovic Ravanel – University of Savoie; Christophe Rigotti, Catherine Pothier – University of Lyon
- 17.10 – 17.30 **Analysis of TanDEM-X Interferometric Signal Penetration in Antarctic Snow and Ice**
Helmut Rott, Stefan Scheiblauer, Jan Wuite, Thomas Nagler – ENVEO IT GmbH; Dana Floricioiu, Lukas Krieger, Paola Rizzoli – DLR

Session 9.2: Georisk III

Building 135 (RMC)

Chairperson: Simon Plank

- 15.50 – 16.10 **Characterization of Built Environments with TanDEM-X and Sentinel-2**
Christian Geiß – DLR
- 16.10 – 16.30 **Assessment of Displacement of Taleqan's Body and Comparing with Water Level Line by DIn-SAR Method**
Mehrnoosh Ghadimi – University of Tehran
- 16.30 – 16.50 **Multi-frequency Interferometric Synthetic Aperture Radar (InSAR) at the German Federal Agency for Cartography and Geodesy (BKG)**
Stefan Friedlaender – Bundesamtf. Kartographie und Geodäsie
- 16.50 – 17.10 **Seasonal Tropospheric Delay Correction in InSAR Observations for Landslide Deformation Monitoring**
Jie Dong, Lu Zhang, Ming-Sheng Liao – Wuhan University
- 17.10 – 17.30 **TerraSAR-X Data for the Exploration of the Highly Active Subantarctic Mount Michael Volcano (Saunders Island), South Sandwich Islands**
Nicole Richter, Allan Derrien – Observatoire Volcanologique du Piton de la Fournaise (OVPF-IPGP); Paul Wintersteller – University of Bremen; Martin Meschede – University of Greifswald; Thomas Walter – German Research Centre for Geosciences (GFZ)

17.40 – 20.00 Poster Session

Building 109 (TechLab)

1. **Wadden Sea Monitoring with TerraSAR-X and Sentinel-1**
Stefan Wiehle, Sven Jacobsen, Björn Tings – DLR
2. **Comparison of Detectability of Ship Wakes Between C-Band and X-Band SAR**
Björn Tings, Domenico Velotto, Sergey Voinov, Andrey Pleskachevsky, Sven Jacobsen – DLR
3. **Eddy Detection on SAR Images Based on Faster R-CNN**
Di Zhang, Martin Gade – University of Hamburg
4. **TerraSAR-X Time-series InSAR Measurements of Permafrost Deformation in the Mackenzie Delta, Canada**
Ya-Lun Tsai, Andreas Dietz, Claudia Kuenzer – DLR; Natascha Oppelt – Kiel University
5. **Deriving Snow State Variables Mapping Approach Using Radar Satellite Observations and Multisource In-Situ Data**
Joëlle Voglimacci-Stephanopoli, Vincent Sasseville, Alexandre Langlois – Université de Sherbrooke; Hugues Lantuit – Alfred Wegener Institute (AWI); Samuel Stettner – DLR
6. **Preliminary Results on TerraSAR-X Time Series Analyses (2018-2019) of Polarimetric and Interferometric Features in the Mackenzie Delta Region (Canadian Arctic)**
Tobias Ullmann, Roland Baumhauer – University of Würzburg; Jennifer Sobiech-Wolf – Alfred Wegener Institute
7. **Detection of Snow Avalanches Using TerraSAR-X**
Toni Lanzemberger, Andreas Schmitt – Munich University of Applied Sciences; Anna Wendleder – DLR
8. **Which impact have climate and supraglacial lakes on the surface velocity of Baltoro Glacier for 1992-2017**
Anna Wendleder – DLR; Peter Friedl - Friedrich-Alexander-Universität Erlangen Nürnberg (FAU); Christoph Mayer - Bavarian Academy of Sciences and Humanities
9. **Glacier Changes in the Tropical Andes**
Thorsten Seehaus, Christian Sommer, Philipp Malz, Matthias Braun – Friedrich-Alexander-Universität Erlangen Nürnberg (FAU); Alejo Cochachin – Area de Evaluation de Glaciares y Lagunas; Alvaro Soruco – Universidad Mayor de San Andres
10. **Northeast Greenland Drainage Basins Derived from the TanDEM-X Global DEM and Sentinel-1 Ice Velocities**
Lukas Krieger, Dana Floricioiu – DLR; Niklas Neckel – Alfred Wegener Institute
11. **Grounding Line Derivation over Key Glaciers in Antarctica from Sentinel-1 and TerraSAR-X**
Dana Floricioiu, Lukas Krieger, Alessandro Parizzi – DLR; Jan Wuite, Thomas Nagler – ENVEO IT
12. **Assessment and Improvement of TanDEM-X Global DEM with the REMA DEM on the Antarctic Peninsula**
Yuting Dong – China University of Geosciences; Dana Floricioiu, Thomas Fritz, Michael Eineder – DLR
13. **21st Century Area and Elevation Changes of Glaciers in the European Alps**
Christian Sommer, Philipp Malz, Thorsten Seehaus, Matthias Braun – Friedrich-Alexander-University Erlangen-Nuremberg
14. **First Detailed Quantification of Glacier Elevation and Mass Changes in South Georgia and New Zealand**
David Farías, Christian Sommer, Philipp Malz, Thorsten Seehaus, Matthias Braun, Sophia Bachmann – Friedrich-Alexander-University Erlangen-Nuremberg
15. **TanDEM-X Derived Surface Elevation Changes of Fedchenko Glacier, Pamir Mountains**
*Anja Wendt, Christoph Mayer, Astrid Lambrecht and Christof Völksen – Bavarian Academy of Sciences and Humanities
Dana Floricioiu – DLR*

17.40 – 20.00 Poster Session**Building 109 (TechLab)**

16. **TerraSAR-X Ice Mapping of the Mackenzie River Using a Convolutional Neural Network**
Felix Reuss, – SLU; Achim Roth, Birgit Wessel – DLR; Svenja Rudolph – Friedrich-Alexander-University Erlangen-Nuremberg
17. **TerraSAR-X and TanDEM-X for Monitoring Key Processes on the Greenland Ice Sheet**
Niklas Neckel, Sophie Berger, Veit Helm, Angelika Humbert – Alfred Wegener Institute
18. **Detecting and Monitoring Ice-Shelf Basal Mass Balance in Dronning Maud Land, East Antarctica**
Sophie Berger, Veit Helm, Niklas Neckel, Olaf Eisen – Alfred Wegener Institute; Quentin Glaude – University of Liege; Frank Pattyn – Université libre de Bruxelles
19. **TerraSAR-X SBAS Analysis for Subsidence Estimation Due to Groundwater Use for Agriculture in Tunisia**
Clémence Dubois – Friedrich-Schiller University Jena; Andre Kalia, Ilona Gruenberg – Federal Institute for Geosciences and Natural Resources
20. **Comparison of Catchment Delineations Using the 0.4 TanDEM-X and Other Elevation Models**
Jussi Baade – Friedrich-Schiller-University Jena; Laura Keys – University of Alabama
21. **Investigation of the Effect of Drought on Soil Moisture Changes Using Remote Sensing Data (Case Study: Kermanshah Province, Iran)**
Abdolnabi Abdeh Kolahchi – Soil Conservation and Watershed Management Research Institute (SCWMRI)
22. **Wetland Mapping with Multi-Polarization SAR Backscatter and Coherence of TanDEM-X Data**
Magdalena Mleczko, Marek Mróz – University of Warmia and Mazury
23. **Representation Learning for SAR Observations: A Generative Model Approach**
Vlad Andrei, Corneliu Octavian Dumitru, Mihai Datcu – DLR

Session 10.1: Ice and Snow II

Building 124

Chairperson: Georg Fischer

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| 09.00 – 09.20 | Mountain Glacier Elevation Change Mapping and Geodetic Mass Balance (TanDEM-X to SRTM)
<i>Philipp Malz, Christian Sommer, David Farías, Matthias Braun, Thorsten Seehaus – Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU)</i> |
| 09.20 – 09.40 | Glacier Detachment Analysis in the West Kunlun Shan Mountains
<i>Silvan Leinss, Cyril Willmann, Irena Hajsek – ETH Zürich</i> |
| 09.40 – 10.00 | Ice Thickness Modelling of Glaciers Using High-Resolution TanDEM-X DEM and Stress-Driven Model
<i>Ankur Pandit – TCS Research & Innovation & IDPCS, Indian Institute of Technology Bombay</i> |
| 10.00 – 10.20 | TanDEM-X Dual-Polarization Time Series for the Estimation of Snow Accumulation on an Alpine Glacier
<i>Giuseppe Parrella, Irena Hajsek – DLR</i> |

Session 10.2: DEM Applications

Building 135 (RMC)

Chairperson: Birgit Wessel

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| 09.00 – 09.20 | Innovative Approach to Derive Improved DEM Using Multispectral Imagery and Artificial Neural Network
<i>Shie-Yui Liong, DongEon Kim, Jiandong Liu – National University of Singapore; Philippe Gourbesville – Université De Nice; Günter Strunz – DLR</i> |
| 09.20 – 09.40 | Vertical Accuracy of the TanDEM-X DEM in Regard to the Density of the CPs
<i>Dimitra Vassilaki – University of Thessaly; Thanasis Stamos – National Technical University of Athens</i> |
| 09.40 – 10.00 | TanDEM-X DEM Precision and Accuracy Assessment Based on a Large Assembly of Differential GNSS Ground Measurements in Kruger National Park, South Africa
<i>Jussi Baade, Christiane Schmullius – Friedrich-Schiller-University Jena</i> |
| 10.00 – 10.20 | Accuracy Assessment of the Global TanDEM-X DEM in Mountain Environment
<i>Jana Maresova, Katerina Gdulova, Vitezslav Moudry – Czech University of Life Sciences Prague</i> |
| 10.20 – 11.10 | Coffee break |

Session 11.1: Ice and Snow III

Building 124

Chairperson: Anna Wendleder

- 11.10 – 11.30 **Pause in Dynamic Thinning on Jakobshavn Isbrae Triggered by Reduced Surface Melt and a Cool Ocean**
Anna Hogg – CPOM & Uni Leeds
- 11.30 – 11.50 **The Greenland Ice Mapping Project: A Decade of Measuring Glacier Flow Variability with TerraSAR-X and TanDEM-X**
Ian Joughin, Benjamin Smith – University of Washington
- 11.50 – 12.10 **Strain and Rotation of an Ice Flow from Wrapped SAR Interferograms Examples of Darwin Glacier and Northeast Greenland Ice Stream (NEGIS)**
Alessandro Parizzi, Wael Abdel Jaber – DLR
- 12.10 – 12.30 **Heterogeneous Retreat and Ice Melt of Thwaites Glacier, West Antarctica**
*Pietro Milillo, Eric Rignot – Jet Propulsion Laboratory; Paola Rizzoli, Jose-Luis Bueso-Bello, Pau Prats – DLR
Bernd Scheuchl, Jeremie Mouginot – University of California*
- 12.30 – 12.50 **Assessment of Penetration Depth Bias in TanDEM-X Surface Elevation on Devon Island Ice Cap, Canadian Arctic**
Claire Bernard-Grand'Maison, Luke Copland – University of Ottawa; David Burgess – Natural Resources Canada; Sahra Abdullahi, Birgit Wessel, Achim Roth – DLR

Session 11.2: Methods

Building 135 (RMC)

Chairperson: Corneliu Octavian Dumitru

- 11.10 – 11.30 **Study on 3D Tomographic SAR Imaging Using TanDEM-X DEM 12M in China**
Lang Feng, Jan-Peter Muller – University College London
- 11.30 – 11.50 **Automated Geomorphological Mapping at Regional Scale Based on TanDEM-X DEM and Sentinel-2**
*Clemens Eisank – GRID-IT; Sebastian D'Oleire-Oltmanns – University of Salzburg;
Volker Wichmann – Laserdata*
- 11.50 – 12.10 **Dynamic DEM for Survey Mapping Applications in Indonesia**
Atriyon Julzarika – Indonesian National Institute of Aeronautics and Space (LAPAN) & Universitas Gadjah Mada (UGM)
- 12.10 – 12.30 **Fundamental Limit of Absolute Phase Retrieval with Split-Band Interferometry Application to TerraSAR-X / TanDEM-X and SENTINEL Images**
*Denis Defrère, Quentin Glaude, Murielle Kirkove, Anne Orban – University of Liège;
Aikaterini Radioti, Dominique Derauw, Christian Barbier – Liège Space Center;
Ludivine Libert – Enveo IT GmbH*
- 12.30 – 12.50 **A Novel Deep Learning Framework Based on Transfer Learning and Joint Time-Frequency Analysis**
*Zhongling Huang, Zongxu Pan, Bin Le – Chinese Academy of Sciences;
Corneliu Octavian Dumitru, Mihai Datcu – DLR*

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