



# DIGITAL | EARTH | OBSERVATION

01-04 JULY 2019 IN SALZBURG / AUSTRIA



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# OVERVIEW

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# AGENDA

## Sunday, 30<sup>th</sup> of June 2019

09:00am Excursion  
06:00pm Location: Nationalpark Berchtesgaden (extra fee)

## Monday, 1<sup>st</sup> of July 2019

08:30am Check In EARSeL  
05:00pm Location: Registration Office

10:00am A1: EARSeL Opening Keynote

11:00am Location: A - Audimax

Chair: **Stefan Lang**, University of Salzburg, Austria

Welcome addresses: **Prof. Arne Bathke**, Dean Faculty of Natural Science, University of Salzburg

**Dr. Christian Stöckl**, Deputy Head of the Salzburg Government

**Dr. Klaus-Ulrich Komp**, EARSeL president

Keynote Speaker: **Christina Corbane**, Joint Research Centre (JRC), European Commission

Topic: „Mainstreaming Knowledge from Data Sources to Policy Indicators: Examples from the Global Human Settlement Layer“

11:00am B2: Time Series I

12:30pm Location: B - Blauer Hörsaal

Chair: **Dirk Tiede**, University of Salzburg, Austria

**Using Time Series Of Sentinel-2 Data to Improve Alpine Forest Map Products**

**Janik Deutscher**, Martin Puhm, Andreas Wimmer, Klaus Granica, Mathias Schardt / Joanneum Research, Austria

**Investigating Dense Time Series of Optical and SAR Earth Observation Data for Crop Type Classification**

**Alym Orynbaikyzyl**<sup>1</sup>, Ursula Gessner<sup>1</sup>, Christopher Conrad<sup>2,3</sup> / 1: Department of Land Surface Dynamics, German Aerospace Center (DLR), German Remote Sensing Data Center (DFD), Wessling, Germany; 2: Department of Remote Sensing, Institute of Geography and Geology, University of Würzburg, Würzburg, Germany; 3: Institute of Geosciences and Geography, University of Halle, Halle, Germany

**Preprocessing Very High Temporal Resolution Night-Lights Data for Noise Removal**

**Demetris Stathakis**, Pavlos Baltas, Leonidas Liakos / University of Thessaly, PRD, Spatial Analysis, GIS and Thematic Mapping Laboratory

D2: DRR

Location: D - GI Studio

Chair: **Valerie Graw**, Center for Remote Sensing of Land Surfaces (ZFL), Germany

**InSAR Norway: A National Ground Motion Service Based upon Sentinel-1**

**John F. Dehls**<sup>1</sup>, Yngvar Larsen<sup>2</sup>, Petar Marinkovic<sup>3</sup>, Tom Rune Lauknes<sup>2</sup>, Daniel Stodle<sup>2</sup>, Dag Anders Moldestad<sup>4</sup> / 1: Geological Survey of Norway, Norway; 2: NORCE; 3: PPO.labs; 4: Norwegian Space Agency

**Web Service for EO-Based Rapid Mapping of Landslides**

**Florian Albrecht**<sup>1</sup>, Daniel Hölbling<sup>1</sup>, Elisabeth Weinke<sup>1</sup>, Mario Hernandez<sup>2</sup> / 1: University of Salzburg, Austria; 2: International Society for Photogrammetry and Remote Sensing, Geneva, Switzerland

**Potentials of Remote Sensing to Support Disaster Risk Management in Monastir, Tunisia**

**Konstanze Fila**<sup>1</sup>, Felicitas Bellert<sup>1</sup>, Rainer Malmberg<sup>1</sup>, Michael Hagenlocher<sup>2</sup>, Mostapha Harb<sup>2</sup>, Davide Cotti<sup>2</sup>, Sonia Ayed<sup>3</sup> / 1: IABG mbH, Germany; 2: United Nations University, Institute for Environmental and Human Security (UNUEHS), Germany; 3: Municipality of Monastir, Tunisia

**Utilizing Earth Observation & Crowdsourcing for Rapid Assessment of Disaster Events**

**Refiz Duro**<sup>1</sup>, Tanja Gasber<sup>2</sup>, Kuo-Yu Chuang<sup>3</sup>, Aynabat Anyyeva<sup>1</sup>, Sebastian Sippl<sup>1</sup>, Alexandra-Ioana Bojor<sup>1</sup>, Peter Kutschera<sup>1</sup>, Volodymyr Andryachenko<sup>2</sup>, Franziska Albrecht<sup>2</sup> / 1: Austrian Institute of Technology, Austria; 2: GeoVille Information Systems and Data Processing GmbH, Austria; 3: GeoThings Inc., Taiwan

12:30pm Lunch Break

01:30pm

01:30pm B3: Natural Ressources I

03:00pm Location: B - Blauer Hörsaal

Chair: **Lorenz Wendt**, University of Salzburg, Austria

**Exploring the Spatial and Seasonal Distributions of the European Vegetation Growth Limiting Factors with Earth Observation Data**

**Arnon Karnieli**<sup>1</sup>, Noa Ohana-Levi<sup>1</sup>, Micha Silver<sup>1</sup>, Tarin Paz-Kagan<sup>2</sup>, Natalya Panov<sup>1</sup>, Dani Varghese<sup>1</sup>, Nektarios Chrysoulakis<sup>3</sup>, Carl Beierkuhnlein<sup>4</sup>, Antonello Provenzale<sup>5</sup> / 1: The Remote Sensing Laboratory, Institutes for Desert Research, Ben Gurion University, Israel; 2: Agriculture Research Organization, Volcani Institute, Israel; 3: Remote Sensing Lab, Institute of Applied and Computational Mathematics, Foundation for Research and Technology, Greece; 4: Department of Biogeography University of Bayreuth, Germany; 5: Department of Earth System Sciences and Environmental Technologies, National Research Council, Italy

**Monitoring of Winter Vegetation on Arable Land based on Satellite Data**

**Magdalena Ochsenbauer**<sup>1</sup>, Wolfgang Ehbauer<sup>2</sup>, Franziska Brohmeyer<sup>3</sup>, Monika Prasch<sup>4</sup>, Florian Ebertseder<sup>4</sup> / 1: Bavarian State Research Center for Agriculture (until April 2019), Bavarian State Ministry for Food, Agriculture and Forestry, Department of ICT, Germany; 2: District Government of Lower Franconia, Department Nutrition and Agriculture, Germany; 3: VISTA Geoscientific Remote Sensing GmbH, Germany; 4: Bavarian State Research Center for Agriculture, Germany

**Phenological Spectral Knowledge for Alpine Biotope Type Mapping Derived From Sentinel-2 Satellite Data**

**Thomas Strasser**, Stefan Lang / University of Salzburg, Austria

**A Multi-Scale Model for The Detection and Structure Description of Fog Geo-Ecosystems (Tillandsia Lomas) in the Chilean-Peruvian Coastal Desert**

**Alexander Siegmund**<sup>1,2</sup>, Julia Schumacher<sup>1</sup>, Anne Schneibel<sup>1</sup>, Camilo del Rio<sup>3</sup> / 1: Heidelberg University of Education, Germany; 2: Heidelberg Center for the Environment, Institute of Geography, Heidelberg University; 3: Instituto de Geografía, Pontificia Universidad Católica de Chile

D3: Big EO Data

Location: D - GI Studio

Chair: **Peter Baumann**, Jacobs University, Germany  
Extended Talk - 1:30pm - 2:00pm

**The Role of ISDE for Promoting the Vision of Digital Earth**

**Changlin Wang** / Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences, China, People's Republic of

**OpenEO – An API for Standardised Access to Big Earth Observation Data in a Landscape of a Growing Number of EO Cloud Providers**

**Alexander Jacob**<sup>1</sup>, Edzer Pebesma<sup>2</sup>, Markus Neteler<sup>3</sup>, Wolfgang Wagner<sup>4</sup>, Jan Verbesselt<sup>5</sup>, Matthias Mohr<sup>6</sup>, Jeroen Dries<sup>6</sup>, Roberto Monsorno<sup>1</sup>, Prateek Budhwar<sup>1</sup>, Christian Briese<sup>7</sup>, Luca Foresta<sup>8</sup>, Matthias Schramm<sup>4</sup>, Miha Kadunc<sup>9</sup>, Pieter Kempeneers<sup>9</sup>, Noel Gorelick<sup>10</sup> / 1: Eurac Research, Italy; 2: University of Münster, Germany; 3: Mundialis GmbH and Co. KG, Germany; 4: Vienna University of Technology (TU Wien), Austria; 5: Wageningen University and Research, Netherlands; 6: VITO, Belgium; 7: EODC GmbH, Austria; 8: Sinergise, Slovenia; 9: JRC, Italy; 10: Google Switzerland GmbH, Switzerland

**1x1 and Useful Hints how to Use Cloud-based (Dias, Aws, ...) Live Copernicus Data in ArcGIS**

**Guenter Doerffel**<sup>1</sup>, Stanislaw Dalek<sup>2</sup>, Abhijit Doshi<sup>3</sup> / 1: Esri Inc., European Office, The Netherlands; 2: CloudFerro, Warsaw, Poland; 3: Esri Inc., Sharjah Office, Sharjah, UAE

Coffee Break (sponsored by Trimble and Spatial Services)

03:00pm  
03:30pm

## B4: Time Series II

Location: B - Blauer Hörsaal

Chair: Anna Spiteri, Integrated Resources Management Co. Ltd, Malta

### The Greenland-Paradox: Time Series Analyses in the Big Earth

#### Observation Data Era

Martin Sudmanns, Dirk Tiede, Hannah Augustin / Department of Geoinformatics - Z\_GIS, University of Salzburg, Austria

#### Comparison of the Surface Water Dynamics in Different Climate

#### Regimes, Czech and Romania, Using Long Time Satellite Imagery Series

Ales Letal<sup>1</sup>, Ionut Sandric<sup>2,3</sup>, Renata Pavelkova<sup>1</sup>, Radu Irimia<sup>2</sup>, Zenaïda Chitu<sup>4,5</sup> / 1: Palacky University Olomouc, Faculty of Science, Department of Geography; 2: University of Bucharest, Faculty of Geography, Romania; 3: Esri Romania, Romania; 4: National Institute of Hydrology and Water Management; 5: National Administration of Meteorology, Romania

#### Remotely Sensed Time Series for Drought Monitoring: Testing

#### Multisource Data in Two Countries

Gohar Ghazaryan<sup>1</sup>, Javier Gonzalez<sup>1</sup>, Olena Dubovyk<sup>1,2</sup> / 1: University of Bonn, Center for Remote Sensing of Land Surfaces (ZFL), Germany; 2: University of Bonn, Remote Sensing Research Group (RSRG), Germany

## D4: EO Education

Location: D - GI Studio

Chair: Alexander Siegmund, Heidelberg University of Education & Heidelberg University, Germany

### Living Earth: Interactive E-learning Modules on Geo:spektiv to Explore Living Habitats by Remote Sensing

Alexandra Siegmund<sup>1</sup>, Alexander Siegmund<sup>2</sup> / 1: Siegmund: Space & Education GmbH; 2: Heidelberg University of Education & Heidelberg University, Germany

### Augmenting Reality with Hyperspectral Data – A Learning App in Unity

Claudia Lindner, Henryk Hodam, Carsten Jürgens, Annette Ortwein, Johannes Schultz, Fabian Selg, Andreas Rienow / Ruhr-University Bochum, Germany

### Mini-MOOCs on Earth Observation - The Impartation of Remote Sensing in Schools in Times of Global Change

Henryk Hodam, Carsten Jürgens, Claudia Lindner, Annette Ortwein, Johannes Schultz, Fabian Selg, Andreas Rienow / Ruhr-Universität Bochum, Germany

### (E-)Learning with Open Geo- And Remote Sensing Data

Henning Aberle, Michael Hovenbitzer / Federal Agency for Cartography and Geodesy, Germany

03:30pm  
05:00pm

## A5: EARSel Poster Session

Location: A - Audimax

Chair: Barbara Riedler, University of Salzburg, Austria

### P1 | A Combined Use of In-Situ and Remote Sensing Data for the Monitoring of Soil Moisture in Wallonia, Belgium

Sophie Petit, Odile Close, Laura Van de Vyvere, Benjamin Beaumont, Eric Hallot / ISSeP, Belgium

### P2 | Earth Observation Services for Smart Airports Operational Management

Laura Van de Vyvere<sup>1</sup>, Olivier Dubois<sup>2</sup>, Nicolas Hanse<sup>3</sup>, Benjamin Beaumont<sup>1</sup>, Eric Hallot<sup>1</sup> / 1: ISSeP, Belgium; 2: OSCARS, Belgium; 3: ESNAH, Belgium

### P3 | Near Real-Time Change Detection in Forest Areas Using Kalman Filtering

Martin Puhm, Andreas Wimmer, Mathias Schardt / Joanneum Research, Austria

### P4 | Employing Copernicus Data and Time Series Analysis for the Identification and Promotion of Underutilised Lands for Bioenergy Production

Manuela Hirschmugl<sup>1</sup>, Carina Sobel<sup>1</sup>, Cosette Khawaja<sup>2</sup>, Rainer Janssen<sup>2</sup>, Dominik Rutz<sup>2</sup>, Marie-Alice Budniok<sup>3</sup>, Alfonso Calera<sup>4</sup>, David Cifuentes<sup>1</sup>, Marco Colangeli<sup>5</sup>, Michela Morese<sup>6</sup>, Mathias Schardt<sup>1</sup>, Lorenzo Traverso<sup>7</sup> / 1: Joanneum Research, Austria; 2: WIP Renewable Energies, Germany; 3: European Landowners' Organization, Belgium; 4: Universidad de Castilla – La Mancha, Spain; 5: Food and Agriculture Organization of the United Nations, Italy

### P5 | Sentinel-2 Based Monitoring of Change Dynamics in a Large-Scale Refugee Camp – The Example of Kutupalong (Bangladesh)

Stefanie Lettner, Lorenz Wendt, Stefan Lang / University of Salzburg, Austria

### P6 | Evaluation of Minimum Noise Fraction Transformation and Independent Component Analysis for Dwelling Annotation in Refugee Camps using Convolutional Neural Network

Omid Ghorbanzadeh, Zahra Dabiri, Dirk Tiede, Sepideh Tavakkoli Pirallilou, Thomas Blaschke, Stefan Lang / University of Salzburg, Austria

### P7 | Preserving Natural Reserves using Images from Satellites and RPAS

Paulina Lyubenova Raeva, Karel Pavelka Jr., Karel Pavelka / Czech Technical University in Prague, Czech Republic

### P9 | Using UAV Spectral Vegetation Indices for Estimation and Mapping of Biophysical Variables in Winter Wheat

Georgi JeleV<sup>1</sup>, Petar Dimitrov<sup>1</sup>, Iliana Kamenova<sup>1</sup>, Iliana Ilieva<sup>1</sup>, Eugenia Roumenina<sup>1</sup>, Lachezar Filchev<sup>1</sup>, Alexander Gikov<sup>1</sup>, Martin Banov<sup>2</sup>, Veneta Krasteva<sup>2</sup>, Viktor Kolchakov<sup>2</sup>, Milena Kercheva<sup>2</sup>, Emil Dimitrov<sup>2</sup>, Nevena Miteva<sup>2</sup> / 1: Space Research and Technology Institute, Bulgarian Academy of Sciences, Bulgaria; 2: Institute of Soil Science, Agrotechnologies and Plant Protection „Nikola Poushkarov“, Bulgaria

### P10 | Digital@bw: Working with Optical Satellite Data within a Public Authority

Maryse Wampach, Franziska Wild-Pfeiffer, Marius Rokus / State Office for Spatial Information and Land Development Baden-Wuerttemberg, Germany

### P12 | Deep Learning for Fusion of Hyperspectral and LiDAR Data for Tree Species Classification

Wenzhi Liao / Ghent University, Belgium

### P13 | Spatial Analysis of Ecological Impacts of Global Change on Drylands and their Implications for Desertification In Algeria

Ahmed Zegrar, Nadjia Bentekhici, Djamel Mansour, Naima Benshila, Mohamed Ghabi / Centre of Spatial Techniques, Algeria

### P14 | Efficient Transport Planning and Port Operation/Management in the Eastern Mediterranean through Geo-informatics

Marios Tzouvaras<sup>1</sup>, Diofantos Hadjimitsis<sup>1</sup>, Marinos Papadopoulos<sup>2</sup> / 1: Department of Civil Engineering and Geomatics, School of Engineering and Technology, Cyprus University of Technology, Limassol, Cyprus; 2: Cyprus University of Technology, Cyprus

### P15 | Feature Sensitivity to Scale Parameter and Image Segmentation Evaluation on Aeolian Desertified Land

Zhang Lei / Information Research Institute, Chinese Academy of Sciences

### P16 | SBAS and DInSAR Technique Integration for Mining Subsidence Monitoring in Rydułtowy Mine in Poland

Kamila Pawluszek, Andrzej Borkowski / Wrocław University of Environmental and Life Sciences, Poland

05:00pm  
06:00pm

Come Together (sponsored by Malvern Panalytical)

Location: COOK & WINE

06:30pm  
08:00pm

# AGENDA

## Tuesday, 2<sup>nd</sup> of July 2019

08:30am 05:00pm	<b>Check In EARSeL</b> <b>Location: Registration Office</b>	
09:00am 09:45am	<b>A6: EARSeL Keynote</b> <b>Location: A - Audimax</b> Chair: <b>Dirk Tiede</b> , University of Salzburg, Austria Keynote Speaker: <b>Agnieszka Lukaszczyk</b> , Planet Labs Germany GmbH Topic: „Space Technology to the Power of Hundreds“	
09:45am 10:30am	<b>B7: Data Cubes</b> <b>Location: B - Blauer Hörsaal</b> Chair: <b>Christina Corbane</b> , Joint Research Centre, Italy <b>Protecting Pixels: Fine-Grain Access Control for Earth Data</b> <i>Peter Baumann</i> , Dimitar Misev / Jacobs University, Germany <b>Sentinel-2 Semantic Data and Information Cube of Austria</b> <i>Hannah Augustin</i> <sup>1</sup> , <i>Martin Sudmanns</i> <sup>1</sup> , <i>Dirk Tiede</i> <sup>1</sup> , <i>Christian Werner</i> <sup>1</sup> , <i>Jakob Schmolgruber</i> <sup>1</sup> , <i>Stefan Lang</i> <sup>1</sup> , <i>Andrea Baraldi</i> <sup>1,2</sup> / 1: Department of Geoinformatics – Z_GIS, University of Salzburg; 2: Italian Space Agency (ASI)	<b>D7: Machine / Deep learning I</b> <b>Location: D - GI Studio</b> Chair: <b>Agnieszka Lukaszczyk</b> , Planet Labs Germany GmbH, Germany <b>Landslide Features Mapping with Ultra-High Aerial Images and Deep Learning</b> <i>Ionut Sandric</i> <sup>1,2</sup> , <i>Marta Jurchescu</i> <sup>3</sup> , <i>Radu Irimia</i> <sup>1</sup> , <i>Zenaida Chitu</i> <sup>4,5</sup> , <i>Viorel Ilinca</i> <sup>6</sup> , <i>Francisc Senzaconi</i> <sup>7</sup> / 1: University of Bucharest, Faculty of Geography, Romania; 2: Esri Romania; 3: Institute of Geography Romanian Academy; 4: National Administration of Meteorology; 5: National Institute of Hydrology and Water Management; 6: Geological Institute of Romania; 7: General Inspectorate for Emergency Situations <b>Post-disaster Recovery Assessment Using Multitemporal Satellite Images with a Deep Learning Approach</b> <i>Saman Ghaffarian</i> , <i>Norman Kerle</i> / ITC, University of Twente, Netherlands
10:30am 11:00am	<b>Coffee Break</b> (sponsored by Trimble and Spatial Services)	
11:00am 12:30pm	<b>B8: Machine / Deep learning II</b> <b>Location: B - Blauer Hörsaal</b> Chair: <b>Stefan Lang</b> , University of Salzburg, Austria Invited Speaker: <b>Andrea Baraldi</b> , Italian Space Agency, ASI Topic: „What Artificial Intelligence (AI) and Computer Vision (CV) are and what Deep Learning-from-data (DL) is not: Few Analytical Thesis Statements and their Pragmatic Consequences“ <b>Convolutional Neural Network (CNN) for Dwelling Extraction in Refugee/IDP Camps</b> <i>Omid Ghorbanzadeh</i> , <i>Dirk Tiede</i> , <i>Lorenz Wendt</i> , <i>Martin Sudmanns</i> , <i>Stefan Lang</i> / Universität Salzburg <b>Earth Observation and Machine Learning For Geomorphological Mapping at Regional Scale</b> <i>Clemens Eisank</i> <sup>1</sup> , <i>Sebastian d'Oleire-Oltmanns</i> <sup>2</sup> , <i>Volker Wichmann</i> <sup>3</sup> / 1: GRID-IT, Austria; 2: University of Salzburg, Department of Geoinformatics Z_GIS, Austria; 3: Laserdata, Austria	<b>F8: Citizen Science and Conventional EO Interaction I</b> <b>Location: Dekanatsaal</b> Chair: <b>Joan Masó</b> , CREAM, Spain <b>Citizen Science and Conventional Earth Observation Interaction</b> <i>Joan Masó</i> <sup>1</sup> , <i>Chrysovalantis Tsiakos</i> <sup>2</sup> , <i>Athanasia Tsertou</i> <sup>2</sup> , <i>Angelos Amditis</i> <sup>2</sup> , <i>Steffen Fritz</i> <sup>3</sup> , <i>Dahlia Domian</i> <sup>3</sup> , <i>Uta Wehn</i> <sup>4</sup> , <i>Andy Cobley</i> <sup>5</sup> / 1: CREAM, Spain; 2: Institute of Communication and Computer Systems, Greece; 3: International Institute for Applied Systems Analysis, Austria; 4: IHE Delft Institute for Water Education, The Netherlands; 5: University of Dundee, United Kingdom <b>Leveraging Citizen Science and Machine Learning for Improved Land Cover/Land Use maps</b> <i>Chrysovalantis - Antonios Tsiakos</i> , <i>Yannis Kopsinis</i> , <i>Maria Krommyda</i> , <i>Athanasia Tsertou</i> , <i>Angelos Amditis</i> / Institute of Communication and Computer Systems, Greece <b>CSEOL: Catalysing the Potential of Citizen Science for Earth Observation into Concrete, Achievable Projects</b> <i>Uta Wehn</i> <sup>1</sup> , <i>Cathy Cotton</i> <sup>1</sup> , <i>Elizabeth Gilles-Roldán Little</i> <sup>2</sup> , <i>Joan Masó</i> <sup>3</sup> / 1: IHE Delft Institute for Water Education, Netherlands, The; 2: Starlab; 3: CREAM
12:30pm 01:30pm	<b>Lunch Break</b>	

## B9: Sensor Integration 1

**Location: B - Blauer Hörsaal**

Chair: **Thomas Blaschke**, University of Salzburg, Austria

### Using Multiple Along and Across Track Pleiades Stereo Images for Improved Digital Surface Model Generation

Roland Perko<sup>1</sup>, Manuela Hirschmugl<sup>1</sup>, Janik Deutscher<sup>1</sup>, Mathias Schardt<sup>1</sup>, Markus Hollaus<sup>2</sup>, Peter M. Roth<sup>3</sup> / 1: Joanneum Research, Austria; 2: Technical University of Vienna, Austria; 3: Graz University of Technology, Austria

### Height Models based on CORONA Images

Karsten Jacobsen<sup>1</sup>, Rolf Rüdiger Ludwig<sup>2</sup> / 1: Leibniz University Hannover, Germany; 2: Bundesanstalt für Geowissenschaften und Rohstoffe, Germany

### Bidirectional Modified PCA Fusion of MODIS and Landsat 8 Data for Downscaling of Coarse Scale Thermal Imagery

Kul Vaibhav Sharma, Sumit Khandelwal, Nivedita Kaul / Malaviya National Institute of Technology Jaipur, India

### Digital Cameras Calibration for Cultural Heritage Documentation: The Case Study of a Mass Digitization Project of Religious Monuments in Cyprus

Christodoulos Mettas<sup>1</sup>, Evagoras Evagorou<sup>1</sup>, Athos Agapiou<sup>1</sup>, Kyriacos Themistocleous<sup>1</sup>, Diofantos Hadjimitsis<sup>1</sup>, Spyridon Papavasileiou<sup>2</sup> / 1: Cyprus University of Technology, Cyprus; 2: Holy Bishopric of Limassol, Cyprus

## D9: Humanitarian Applications

**Location: D - GI Studio**

Chair: **Anna Spiteri**, Integrated Resources Management Co. Ltd, Malta

### Use of Remote Sensing to Monitor Agricultural Projects for Economic Security in the Humanitarian Context

Yann Rebois / International Committee of the Red Cross, Switzerland

### Automation Opportunities at EO Tasks for Humanitarian Purposes

Peter Michael Jeremias, Stefan Lang, Dirk Tiede, Gina Maricela Schwendemann, Petra Füreder / University of Salzburg, Department of Geoinformatics - Z\_GIS, Austria

### RefCampApp – Automation Support for Refugee Camp Analysis based on Very High Resolution Satellite Data

Dirk Tiede, Petra Füreder, Linda Menk / Department of Geoinformatics - Z\_GIS, University of Salzburg, Austria

### SAR Data for Humanitarian Advocacy. The Case of Relocated People in Bangladesh

Andreas Braun / University of Tübingen, Germany

## F9: Citizen Science and Conventional EO Interaction 2

**Location: Dekanatsaal**

Chair: **Chrysovalantis - Antonios Tsiakos**, Institute of Communication and Computer Systems, Greece

### FotoQuest Go: A Citizen Science Approach to the Collection of In-Situ Land Cover and Land Use Data for Calibration and Validation

Steffen Fritz, Tobias Sturn, Mathias Karner, Inian Moorthy, Linda See, Juan Carlos Laso Bayas, Dilek Fraisl / International Institute for Applied Systems Analysis (IIASA), Austria

### Improving Cloud Detection in Satellite Imagery using a Citizen Science Approach

Inian Moorthy<sup>1</sup>, Tobias Sturn<sup>1</sup>, Matej Bati<sup>2</sup>, Linda See<sup>1</sup>, Grega Mil inski<sup>2</sup>, Steffen Fritz<sup>1</sup> / 1: International Institute for Applied Systems Analysis (IIASA), Austria; 2: Sinergise Laboratory for Geographical Information Systems, Ltd, Slovenia

### How Ground Truth 2.0 Citizen Observatories are Enhancing Earth Observation

Joan Masó<sup>1</sup>, Uta Wehn<sup>2</sup>, Ester Prat<sup>1</sup> / 1: CREAF, Spain; 2: IHE Delft Institute for Water Education, The Netherlands

### The GROW project, Interoperability between In-Situ Sensors, Citizen Science and Crowd Sourced Data

Andy Cobley<sup>1</sup>, Mel Woods<sup>1</sup>, Drew Hemment<sup>1</sup>, Rianne Giensen<sup>2</sup> / 1: University of Dundee, United Kingdom; 2: HydroLogic Research BV, Netherlands

12:30pm  
01:30pm

Coffee Break (sponsored by Trimble and Spatial Services)

05:00pm  
05:30pm

## \*A10: Invited Talk

**Location: A - Audimax**

Chair: **Barbara Riedler**, University of Salzburg, Austria

Chair: **Peter Zeil**, Spatial Services, Austria

Invited Speaker: **Anna Spiteri**, Integrated Resources Management Co Ltd, IRMCo I Managing Director

Topic: „The (Missing?) Message of Copernicus“

03:30pm  
04:00pm

# AGENDA

04:00pm **A10: EARSeL Poster Session**

05:00pm **Location: A - Audimax**

Chair: **Barbara Riedler**, University of Salzburg, Austria

**P17 | Evaluation of Sentinel-2 Vegetation Indices for Prediction of Biophysical Variables of Winter Wheat in Bulgaria**

**Iliina Kamenova**, Petar Dimitrov / Space Research and Technology Institute, Bulgarian Academy of Sciences, Bulgaria

**P18 | Random Forest Based Automated Crop Mapping in Small-Scale Farming using Stacked Multitemporal Sentinel 1 and Sentinel 2 Satellite Imagery: A Case Study for Croatia**

**Ivona Žiža**, Ivan Tomljenovi, Branimir Radun, Alen Berta, Zrinka Mesi, Vladimir Kušan / Olkon ltd. Institute of Applied Ecology, Zagreb, Croatia

**P19 | Band-to-Band Registration of Kompsat-3 AEISS**

**Changno Lee**<sup>1</sup>, Jaehong Oh<sup>2</sup> / 1: Seoul National University of Science and Technology, Korea, Republic of (South Korea); 2: Korea Maritime and Ocean University, Korea, Republic of (South Korea)

**P20 | Educational Activities under the CopHub.AC Project in Cyprus**

**Diofantos Hadjimitsis**<sup>1</sup>, **Georgia Kouta**<sup>1</sup>, **Marios Tzouvaras**<sup>1</sup>, **Christiana Papoutsas**<sup>1</sup>, **Kyriacos Themistocleous**<sup>1</sup>, **Stefan Lang**<sup>2</sup>, **Marinos Papadopoulos**<sup>3</sup> / 1: Department of Civil Engineering and Geomatics, School of Engineering and Technology, Cyprus University of Technology, Limassol, Cyprus; 2: Interfaculty Department of Geoinformatics - Z\_GIS, University of Salzburg, Austria; 3: Cyprus University of Technology, Cyprus

**P21 | Assessment of Least Mean Square Multivariate Kriging Regression for Spatial Downscaling of MODIS Thermal Imagery**

**Kul Vaibhav Sharma**, **Sumit Khandelwal**, Nivedita Kaul / Malaviya National Institute of Technology Jaipur, India

**P22 | Establishing a Strategic Research Infrastructure Unit to Monitor Natural Hazards in the Eastern Mediterranean Region via Integration of Space-based Techniques: The case of CyCLOPS**

**Chris Danezis**<sup>1</sup>, **Diofantos Hadjimitsis**<sup>1</sup>, **Michael Eineder**<sup>2</sup>, **Ramon Bricic**<sup>2</sup>, **Kyriacos Themistocleous**<sup>1</sup>, **Christiana Papoutsas**<sup>1</sup>, **Evangelos Mendonidis**<sup>1</sup>, **Marios Nikolaidis**<sup>1</sup>, **Marios Tzouvaras**<sup>1</sup>, **Andreas Christofe**<sup>1</sup>, **Christodoulos Mettas**<sup>1</sup> / 1: Cyprus University of Technology, Cyprus; 2: German Aerospace Center, Germany

**P23 | DIEGO - A Multispectral Thermal Infrared Sensor on the International Space Station**

**Johannes Schultz**<sup>1,2</sup>, **Andreas Rienow**<sup>2</sup>, **Carsten Jürgens**<sup>2</sup> / 1: University of Bonn, Department of Geography, Germany; 2: Ruhr-University Bochum, Department of Geography, Germany

**P24 | Remote Sensing and Participatory Mapping for Clean Energy Provision**

**Javier Muro**<sup>1</sup>, **Jose Jara**<sup>2</sup>, **Esteban Calderón**<sup>2</sup>, **Carlos García Lanchares**<sup>1</sup>, **Richard Resl**<sup>3</sup>, **Leo Zurita**<sup>3</sup>, **Valerie Graw**<sup>1</sup> / 1: University of Bonn, Center for Remote Sensing of Land Surfaces, Germany; 2: Tratural, Ecuador; 3: University San Francisco de Quito, Ecuador

**P25 | Multi-Sensor Remote Sensing Data Fusion and Machine Learning for Regional Scale Mountain Permafrost Distribution Modelling**

**Simon König** / University of Bonn, Germany

**P26 | Classification of PolSAR Crop Time Series of Unequal Length**

**Nicolas Jakob Wagener** / European Space Agency

**P27 | Forest Mask Delineation using Sentinel 1 Synthetic Aperture Radar for Forest Wind-Throw Assessment**

**Stuart Krause**<sup>1,2,3</sup>, **Jan-Peter Mund**<sup>1</sup>, **Tanja GM Sanders**<sup>2</sup> / 1: Thünen Institute of Forest Ecosystems, Germany; 2: Eberswalde University for Sustainable Development, Germany; 3: University of Bonn, Department of Geography, Germany

**P28 | Using Google Earth Engine and Free Satellite Data for Forest Mapping, Assessment and Monitoring in S. Miguel Island (Archipelago of the Azores, Portugal)**

**Manuel Fernández Urrutia**<sup>1,2</sup>, **João Madruga**<sup>2,3</sup>, **Artur Gil**<sup>1,4</sup> / 1: Ce3C – Centre for Ecology, Evolution and Environmental Changes & Azorean Biodiversity Group - University of the Azores; 2: Faculty of Agrarian and Environmental Sciences - University of the Azores; 3: IITAA - Instituto de Investigação e Tecnologia da Agronomia e Meio Ambiente - University of the Azores; 4: Faculty of Sciences and Technology - Department of Biology - University of the Azores

**P29 | Schematic Odentification of Rice Crops Using Parcel-based Sentinel-2 Data Series for The Monitoring of The Common Agricultural Policy in Murcia**

**Manuel Erena**<sup>1</sup>, **Francisco J. López**<sup>1</sup>, **Esteban Gómez**<sup>2</sup>, **Agueda Soriano**<sup>2</sup>, **Zaida Hernandez**<sup>1</sup>, **Joaquin F. Atenza**<sup>1</sup>, **Antonio Saura**<sup>1</sup>, **Jose A. Dominguez**<sup>3</sup> / 1: GIS and Remote Sensing, IMIDA, Murcia, Spain; 2: General Directorate of Agrarian Funds and Rural Development, CARM, Murcia, Spain; 3: Crop Research Institute, VURV, Prague, Czech Republic

**P30 | Evaluating Methods For Built-Up Area Estimation In Refugee Camps Using Sentinel-2 Data - A Case Study**

**Riccardo Biella**<sup>1</sup> / 1: Lund University, Sweden

04:00pm **EARSeL Council Meeting**

06:30pm **Location: F - Dekanatsaal**

Chair: **Klaus-Ulrich Komp**, EFTAS, Germany

Only for EARSeL Council Members, SIG chairs and Honorary members

05:00pm **Coffee Break** (sponsored by Trimble and Spatial Services)

05:30pm

05:30pm **A11: GI\_Forum Keynote OPEN to EARSeL**

07:00pm **Location: A - Audimax**

Chair: **Thomas Jekel**, University of Salzburg, Austria

Keynote Speaker: **Jochen Albrecht**

Topic: "Redefining ,What is Special About Spatial?‘ - Spatiality in the Age of Data Science"

07:00pm **Icebreaker**

07:30pm **Location: West Terrace**



# Wednesday, 3<sup>rd</sup> of July 2019

Check In EARSeL

Location: Registration Office

08:30am  
05:00pm

## C12: SDG I

Location: C - Grüner Hörsaal

Chair: Mario Hernandez, Future Earth, Mexico

### How Can Copernicus Data and Products Help Germany in the Implementation of the UNSDGs?

Gopika Suresh<sup>1</sup>, Christian Schweitzer<sup>2</sup>, Michael Hovenbitzer<sup>1</sup>, Patrick Knöfel<sup>1</sup> / 1: German Federal Agency for Cartography and Geodesy; 2: German Environment Agency

### The Potential of Remote Sensing to Estimate the Population of Invisible Spaces in Support of the SDG Slum Indicator

Monika Kuffer<sup>1</sup>, Claudio Persello<sup>1</sup>, Karin Pfeffer<sup>1</sup>, Richard Sliuzas<sup>1</sup>, Vinodkumar Rao<sup>2</sup> / 1: University of Twente, Netherlands, The; 2: SPARC - (SDI affiliate), Mumbai, India

### Spatially-Explicit Modelling of Slum Growth with an Urban Cellular Automaton – Three Scenarios of Lagos 2035

Andreas Rienow<sup>1</sup>, Olabisi Badmos<sup>2</sup>, Carsten Jürgens<sup>1</sup> / 1: Ruhr-University Bochum, Germany; 2: Center for Development Research, Germany

### The Role of Remote Sensing in Land Degradation Assessment: Opportunities and Challenges

Olena Dubovyk / University of Bonn, Germany

## D12: Natural Resources II

Location: D - GI Studio

Chair: Martin Sudmanns, University of Salzburg, Austria

### Fire Monitoring and Analysis for Climate Change Mitigation and Improved Fire Management: the firemaps.net Platform Approach

Gernot Ruecker, Dejan Popovic, David Leimbach, Joachim Tiemann / ZEBRIS, Germany

### Mapping Burned Area with Harmonic Model Using Time Series Sentinel-2 Imagery in Conifer Forests of Sweden

Xikun Hu, Puzhao Zhang, Andrea Nascetti, Yifang Ban / Division of Geoinformatics, KTH Royal Institute of Technology, SE-100 44, Stockholm, Sweden

### OBI4RTM: Towards an Operational Tool for Object-based Plant Parameter Retrieval from Sentinel-2 Imagery using Radiative Transfer Modelling

Lukas Graf, Levente Papp / University of Salzburg, Department of Geoinformatics Z\_GIS, Austria

## G12: Summer School Presentations

„Copernicus for Digital Earth“

Location: G - Hörsaal 414

Chair: Barbara Riedler, University of Salzburg, Austria  
Chair: Peter Zeil, Spatial Services, Austria

09:00am  
10:15am

## Coffee Break (sponsored by Trimble and Spatial Services)

10:15am  
10:30am

## A13: EARSeL / GI\_Forum Joint Keynote | AGIT Opening

Location: A - Audimax

Chair: Josef Strobl, University of Salzburg - Z\_GIS, Austria

Keynote Speaker: Josef Aschbacher, ESA | Director of Earth Observation Programmes

Topic: „Feeling the Pulse of our Planet from Space – the ESA EO Programme“

10:30am  
12:00pm

## Lunch Break

12:00pm  
01:00pm

## C14: Copernicus I

Location: C - Grüner Hörsaal

Chair: Stefan Lang, University of Salzburg, Austria

### Research Capacity for the Evolution of Copernicus

Barbara Riedler<sup>1</sup>, Stefan Lang<sup>1</sup>, Peter Zeil<sup>2</sup>, Nefeli Politi-Stergiou<sup>3</sup>, Monica Miguel-Lago<sup>4</sup>, Christoph Schröder<sup>5</sup>, Valerio Tramutoli<sup>6</sup> / 1: University of Salzburg, Austria; 2: Spatial Services, Austria; 3: Evenflow, Belgium; 4: EARSeL, Belgium; 5: University of Malaga, Spain; 6: University of Basilicata, Italy

### The Benefits for Joining Forces in the Mediterranean Region in Earth Observation: The Mediterranean Regional Information Network (MedRIN)

Vincent Ambrosia<sup>1</sup>, Diofantos Hadjimitsis<sup>2</sup>, Giannis Gitas<sup>3</sup>, Ioannis Manakos<sup>4</sup>, George Zalides<sup>5</sup>, Chariton Kalaitzides<sup>5</sup>, Mora Brice<sup>6</sup>, Jana Albrechtova<sup>7</sup>, Tapete Deodato<sup>8</sup>, Nektarios Chrysoulakis<sup>9</sup>, Eyal Ben Dor<sup>10</sup>, Arnon Karnieli<sup>11</sup>, Harry Kontoes<sup>12</sup>, Levent Genç<sup>13</sup>, Aziz Kuru<sup>14</sup>, Kyriacos Themistocleous<sup>2</sup>, George Papadavid<sup>15</sup>, Andreas Christofe<sup>2</sup>, Christiana Papoutsas<sup>2</sup>, Stavros Stagakis<sup>10</sup>, Garik Gutman<sup>16</sup>, Christodoulos Mettas<sup>2</sup>, Georgia Kouta<sup>2</sup>, Silas Michaelides<sup>2</sup> / 1: NASA-Ames Research Center, USA; 2: Department of Civil Engineering and Geomatics, School of Engineering and Technology, Cyprus University of Technology, Limassol, Cyprus; 3: Aristotle University of Thessaloniki, Greece; 4: Centre for Research and Technology Hellas, Information Technologies Institute, Thessaloniki, Greece; 5: MAICh, Chania, Crete, Greece; 6: Communications & Systèmes, Toulouse, France; 7: Charles University, Faculty of Science, Czechia; 8: Scientific Research Unit, Italian Space Agency (ASI), Rome, Italy; 9: Remote Sensing Lab, Institute of Applied and Computational Mathematics, Foundation for Research and Technology – Hellas (FORTH), Nikolaou Plastira 100, Vassilika Voutou, GR 700 13 Heraklion, Crete, Greece; 10: Tel Aviv University, Israel; 11: Ben-Gurion University, Israel; 12: National Observatory of Athens, Athens, Greece; 13: Çanakkale University, Turkey; 14: Tubitak Uzay, Turkey; 15: Agricultural Research Institute, Cyprus; 16: NASA, Land-Cover/Land-Use Change (LCLUC), USA

## D14: Sensor Integration II

Location: D - GI Studio

Chair: Janik Deutscher, Joanneum Research, Austria

### Noise Reduction and Signal Retention of Hyperspectral Data Based on Orthogonal Wavelet Transform Basis Functions

George Leblanc / National Research Council of Canada, Canada

### Multiscale Laplacian\_Gram-Schmidt Based Image Fusion using Airborne APEX hyperspectral and Worldview-2 Panchromatic Imagery

Zahra Dabiri<sup>1</sup>, Stefan Lang<sup>1</sup>, Peter Hofmann<sup>1,2</sup> / 1: University of Salzburg, Austria; 2: University of Salzburg, Austria, Deggendorf Institute of Technology

### Using Earth Observation and Open-source Information to Monitor Environmental Dimensions of Armed Conflicts

Wim Zwijnenburg / PAX/Bellingcat, Netherlands

## I14: eCognition Workshop

Location: I - HS 433

Workshop Instructor: Keith Peterson and Matthias Staengel / Trimble  
Topic: „Introduction to Object-based Image Analysis with eCognition“

01:00pm  
02:30pm

# AGENDA

01:40pm **\*C14: Copernicus I - Round Table**  
 02:30pm **Location: C - Grüner Hörsaal**  
 Chair: **Stefan Lang**, University of Salzburg, Austria  
 Topic: „The future uptake of space – ready for the future?“  
**Francesco Sarti** (ESA) / **Stéphane Ourevitch** (SpaceTec Partners) / **Romana Kofler** (UN 2030) / **Peter Zeil** (Spatial Services)

02:30pm **Coffee Break** (sponsored by Trimble and Spatial Services)  
 03:00pm

03:00pm **C15: Copernicus II**  
 04:30pm **Location: C - Grüner Hörsaal**  
 Chair: **Stephane Ourevitch**, SpaceTec Partners, Belgium  
**Commercial Cloud and EO Services Usage: Opening the Gates to the Research Community Open Clouds for Research Environments (OCRE)**  
 Antonio Romeo<sup>1</sup>, Andres Steijaert<sup>2</sup>, Joao Fernandes<sup>3</sup>, Sara Pittonet<sup>4</sup>, Marc-Elian Begin<sup>5</sup>, Geoff Sawyer<sup>6</sup>, Lefteris Mamais<sup>1</sup>, **José Manuel Delgado Blasco**<sup>1</sup> / 1: RHEA Group, Italy; 2: GÉANT, The Netherlands; 3: CERN, Switzerland; 4: Trust-IT, Italy; 5: SixSq, Switzerland; 6: EARSC, Belgium; 7: Evenflow, Belgium  
**Improving Awareness and Usage of the Information Provided by the Copernicus Earth Observation Programme in the Republic of Cyprus**  
**Marinos Papadopoulos**, Christodoulos Mettas, Diofantos Hadjimitsis / Cyprus University of Technology, Cyprus  
**CopHub.AC Citizen App**  
**Markus Kerschbaumer**<sup>1</sup>, Peter Zeil<sup>1</sup>, Kerstin Kulesa<sup>1</sup>, Peter Baumann<sup>2</sup>, Diana Vaiciute<sup>3</sup>, Martynas Bucas<sup>3</sup>, Valerio Tramutoli<sup>4</sup>, Monica Miguel-Lago<sup>5</sup>, Giorgio Saio<sup>6</sup>, Christoph Schröder<sup>7</sup> / 1: Spatial Services GmbH, Austria; 2: radaman GmbH; 3: Klaipeda University; 4: Università degli Studi della Basilicata; 5: European Association of Remote Sensing Companies; 6: Geographical Information Systems International Group; 7: University of Málaga

**D15: Natural Ressources III**  
**Location: D - GI Studio**  
 Chair: **Andreas Braun**, University of Tübingen, Germany  
**Mapping Fluvial Ecosystems in Mountainous Regions using Spectral Mixture Analysis**  
**Liza Stancic**<sup>1</sup>, Žiga Kokalj<sup>1,2</sup>, Krištof Oštir<sup>3</sup> / 1: Research Centre of the Slovenian Academy of Sciences and Arts, Institute of Anthropological and Spatial Studies, Department of Remote Sensing, Slovenia; 2: Centre of Excellence for Space Sciences and Technologies, Slovenia; 3: University of Ljubljana, Faculty of Civil and Geodetic Engineering, Slovenia  
**Effect of Distance From Hot Spots on The Relationship of LST with Enhanced Vegetation Index and Road Density**  
**Sumit Khandelwal**, Rohit Goyal, Nivedita Kaul / MNIT Jaipur, India  
**Sentinel-1 SAR Data for Agricultural Applications**  
**Dietrich Theodor Heintz**<sup>1</sup>, Luca Gatti<sup>2</sup> / 1: cropix, Switzerland; 2: sarnap SA, Switzerland  
**Immersive Virtual Reality Coral Reef Visualization Based on Remote Sensing and Biodiversity Information**  
**Rainer Andreas Ressler**, Florian Hruby / CONABIO

**I15: eCognition Workshop**  
**Location: I - HS 433**  
 Workshop Instructor: **Keith Peterson** and **Matthias Staengel**, Trimble  
 Topic: „Introduction to Object-based Image Analysis with eCognition“

04:30pm **Coffee Break** (sponsored by Trimble and Spatial Services)  
 05:00pm

05:00pm **D16: EARSeL 43<sup>rd</sup> General Assembly**  
 06:30pm **Location: D - GI Studio**  
 Chair: **Klaus-Ulrich Komp**, EFTAS, Germany

07:30pm **EARSeL Symposium Dinner**  
 09:00pm **Location: ARGE Beisl**  
 (extra fee)

# Thursday, 4<sup>th</sup> of July 2019

Check In EARSeL

Location: Registration Office

08:30am  
05:00pm

A17: GI\_Forum Keynote OPEN to EARSeL & Award Ceremony

Location: A - Audimax

Chair: Stefan Lang, University of Salzburg, Austria

09:00am  
10:30am

Keynote Speaker: Nicholas R. Chrisman

Topic: „Continuity in a Changing Discipline: Transformations of Data Streams“

Coffee Break (sponsored by Trimble and Spatial Services)

10:30am  
11:30am

B18: UAV - Joint Session GI\_Forum / EARSeL

Location: B - Blauer Hörsaal

Extracting Tree Heights of Dense Rainforests Based on UAV Imagery - A Best Practice Approach

Stefan Reder, Lilli Waßermann / HNE Eberswalde, Deutschland

Aerial and Terrestrial Photogrammetric Point Cloud Fusion for Intensive Forest Monitoring

Stuart Krause<sup>1,2,3</sup> / 1: Thünen Institute of Forest Ecosystems; 2: Faculty of Forest and Environment, Eberswalde University of Sustainable Development; 3: Department of Geography, University of Bonn

On the Potentiality of UAV Multispectral Imagery to Detect Oak Wilt Disease Using Convolutional Neural Networks

Hwa-Seon Lee, Won-Woo Seo, Kyu-Sung Lee / Inha University, Korea, Republic of (South Korea)

Mapping of Rumex Obtusifolius in Native Grassland using Unmanned Aerial Vehicle: From Object-based Image Analysis to Deep Learning

Olee Hoi Ying Lam<sup>1</sup>, Bethany Melville<sup>1</sup>, Marcel Dogotari<sup>1</sup>, Moritz Prüm<sup>1</sup>, Hemang Narendra Vithlani<sup>1</sup>, Corinna Roers<sup>2</sup>, Rolf Becker<sup>1</sup>, Frank Zimmer<sup>1</sup> / 1: Hochschule Rhein-Waal, Faculty of Communication and Environment, Germany; 2: Naturschutzzentrum im Kreis Kleve e.V., Germany

D18: SDG 2

Location: D - GI Studio

Chair: Hannah Augustin, University of Salzburg, Austria

Invited Speaker: Valerie Graw / Center for Remote Sensing of Land Surfaces (ZFL), University of Bonn

Topic: „Pixel for People - EO to Support the Global Development Agenda“

The Sustainable Development Goals, a Reason to Develop a Digital Earth Platform

Mario Hernandez<sup>1</sup>, Wang Changlin<sup>2</sup> / 1: International Society for Digital Earth (ISDE) - Secretary General; 2: International Society for Digital Earth (ISDE) - Executive Director, Chinese Academy of Sciences

Sentinel-2A MSI and SPOT 5 Data for Urbanization Monitoring and Environmental Impact Analysis in Stockholm

Dorothy Furberg, Yifang Ban, Andrea Nascetti / KTH Royal Institute of Technology, Sweden

I18: M.App Workshop

Location: I - HS 433

Workshop Instructor: Ruth Leska and Brigitta Putzenlechner / Geosystems

Topic: „Compose your Application for Web and Mobile Devices with Hexagon's M.App Portfolio“

11:30am  
01:00pm

Lunch Break

01:00pm  
02:00pm

I19: RUS Copernicus Training

Location: I - HS 433

Workshop Instructors: Tereza Smejkalova and Miguel Castro Gomez / RUS

Topic: „Workshop on Optical and SAR Data Fusion for Agriculture“

02:00pm  
03:30pm

Coffee Break (sponsored by Trimble and Spatial Services)

03:30pm  
04:30pm

I20: RUS Copernicus Training

Location: I - HS 433

Workshop Instructors: Tereza Smejkalova and Miguel Castro Gomez / RUS

Topic: „Workshop on Optical and SAR Data Fusion for Sgriculture“

04:30pm  
06:00pm

# DIGITAL | EARTH | OBSERVATION

## EARSEL 2019 SYMPOSIUM IN SALZBURG – „HERZLICH WILLKOMMEN“!

Salzburg, well known for its natural beauty and rich cultural heritage, is happy to welcome you for an inspiring conference on Digital Earth Observation. While we are sure that the city of Salzburg and its surrounding will offer you an unforgettable time, Salzburg as a place has more to offer for our topic than just a beautiful theatre. Active in the GI(S) domain for more than 30 years now, the Department of Geoinformatics (Z\_GIS) at the University of Salzburg has international reputation in distance learning, interdisciplinary GI education, fundamental and applied research, and is - at least once per year – playing the “GISymphony” during our annual conferences.

In this vibrant and inspiring setting, Z\_GIS' largest research group, the OBIA Lab, is proud to host the 39th EARSeL Symposium and the 43rd General Assembly, under an exciting topic, with inspiring keynotes and invited talks, oral presentations and posters, uniting old- and newcomers, in a fruitful mix of communities arising from the back-to-back events AGIT and GI Forum.

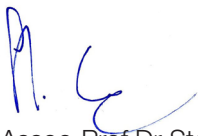
Stimulated by our engagement in the Copernicus Academy and supported by the Horizon-2020 project CopHub.AC, this year's theme “Digital | Earth | Observation” intends to highlight new trends and achievements in EO image processing and analysis, in the light of the big Earth data paradigm. With this ambition we'd like to stimulate focus on more ubiquitous solutions, potentially scaling up to global, and globally applicable, strategies – both technical and domain-wise (e.g. SDGs). The conference theme also comprises the current mega-trend of “digitalisation” in terms of process automation, workflow re-structuring and the demand for new job profiles in the EO sector.

The rapid pace of geospatial technology, impacting large parts of social and economic life, continuously challenges flexibility and creativity of the research teams in our department. Seven research groups develop and adapt new technologies, creating an ever expanding fabric of applied research activities. The educational programme of the University has responded to this as well, taking up and supporting new initiatives, such as the ERASMUS+ Joint Masters “Copernicus Master in Digital Earth”, the new Masters programme in Data Science and an interdisciplinary Bachelor programme called DIG (Digitalisation, Information, Society). The Federal State of Salzburg, which kindly supports keynote addresses for this event, considers geoinformation as one of the key elements in its strategic technology roadmap for the future.

The symposium would not exist without supporters and numerous engaged individuals. We are grateful to all our sponsors, colleagues, and actors around this conference for their invested time and effort. We greatly acknowledge what has been contributed to make this event a unique experience and highly appreciate the continuous and easy communication with the EARSeL secretariat during its preparation!

Again, a very warm welcome and we do hope you enjoy your stay in the city of “Sound of Music”, now turning for a few days into the “Sound of Earth observation”.

On behalf of the local host team,



Assoc-Prof Dr Stefan Lang, Programme Chair  
Salzburg, June 2019

## SCIENTIFIC COMMITTEE

**Andrea Baraldi**

Italian Space Agency, ASI / ITALY

**Thomas Blaschke**

University of Salzburg, Z\_GIS / AUSTRIA

**Andreas Braun**

University of Tübingen / GERMANY

**Adrijana Car**

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**Mattia Crespi**

University of Rome "La Sapienza" / ITALY

**Barbara Hofer**

University of Salzburg, Z\_GIS / AUSTRIA

**Sébastien Lefèvre**

University of South Brittany / FRANCE

**Pierre-Philippe Mathieu**

European Space Agency / ITALY

**Monica Miguel-Lago**

EARSC / BELGIUM

**Bernd Resch**

University of Salzburg, Z\_GIS / AUSTRIA

**Francesco Sarti**

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**Elisabeth Schöpfer**

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**Martyna Stelmaszczuk-Górska**

Friedrich Schiller University Jena / GERMANY

**Peter Zeil**

Spatial Services GmbH / AUSTRIA

## LOCAL ORGANIZER

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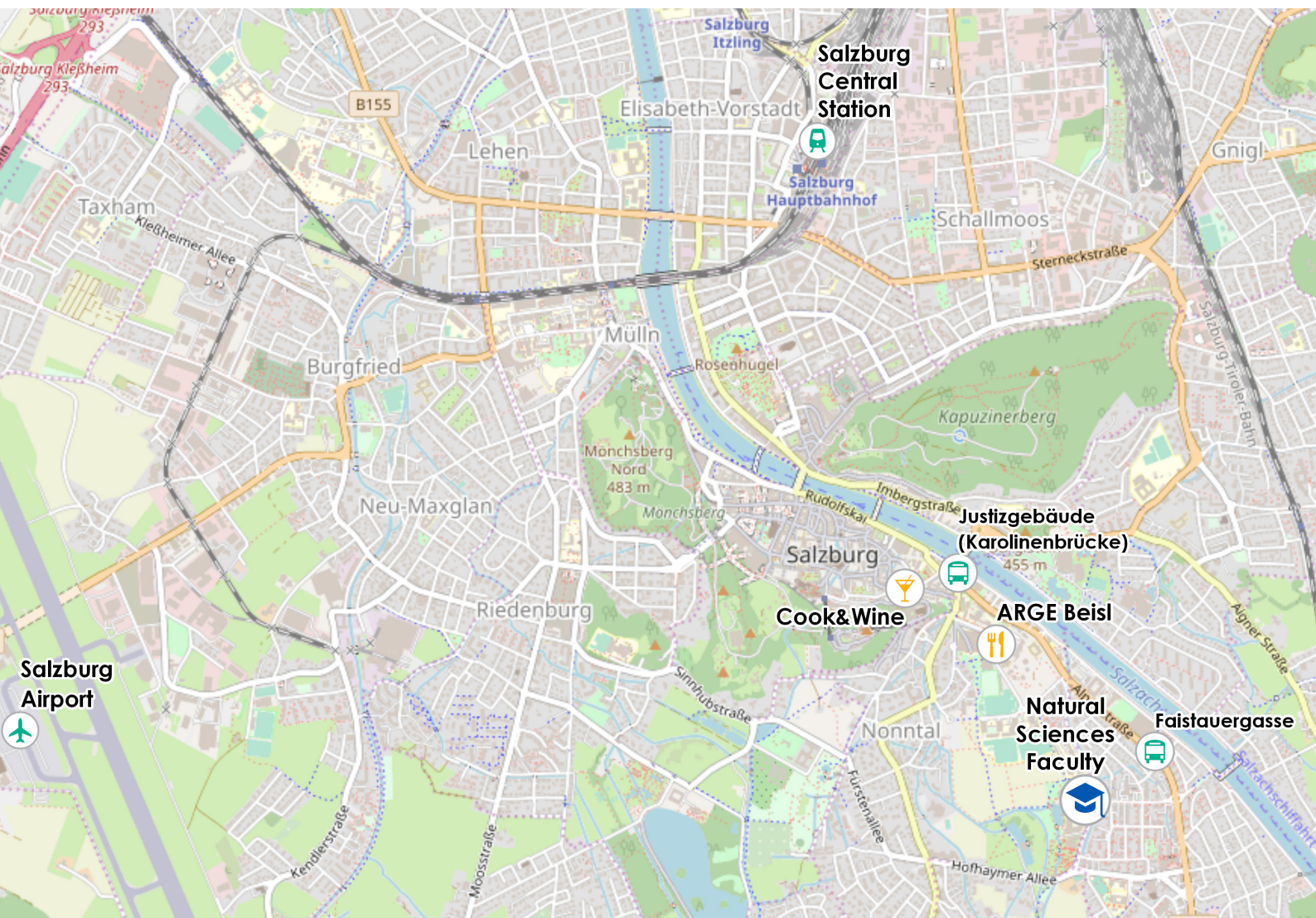
# VENUE

The 39<sup>th</sup> EARSeL Symposium will take place at the **Faculty of Natural Sciences**  
Hellbrunner Str. 34, 5020 Salzburg, Austria


The faculty can be reached with the following public transport systems:


- > **From Salzburg Central Station:** Take the bus Nr. 25 (to Salzburg Süd) or bus Nr. 3 to (Salzburg Süd) and leave the bus at Faistauergasse. From there it is only 5 minutes by foot to the Faculty of Natural Sciences.
- > **From Salzburg Airport:** Take the bus Nr. 10 (to Sam), change at Salzburg Mozartsteg (Rudolfskai) to bus Nr. 25 (to Salzburg Süd) and leave the bus at Faistauergasse. From there it is only 5 minutes by foot to the Faculty of Natural Sciences.


Overview of venues

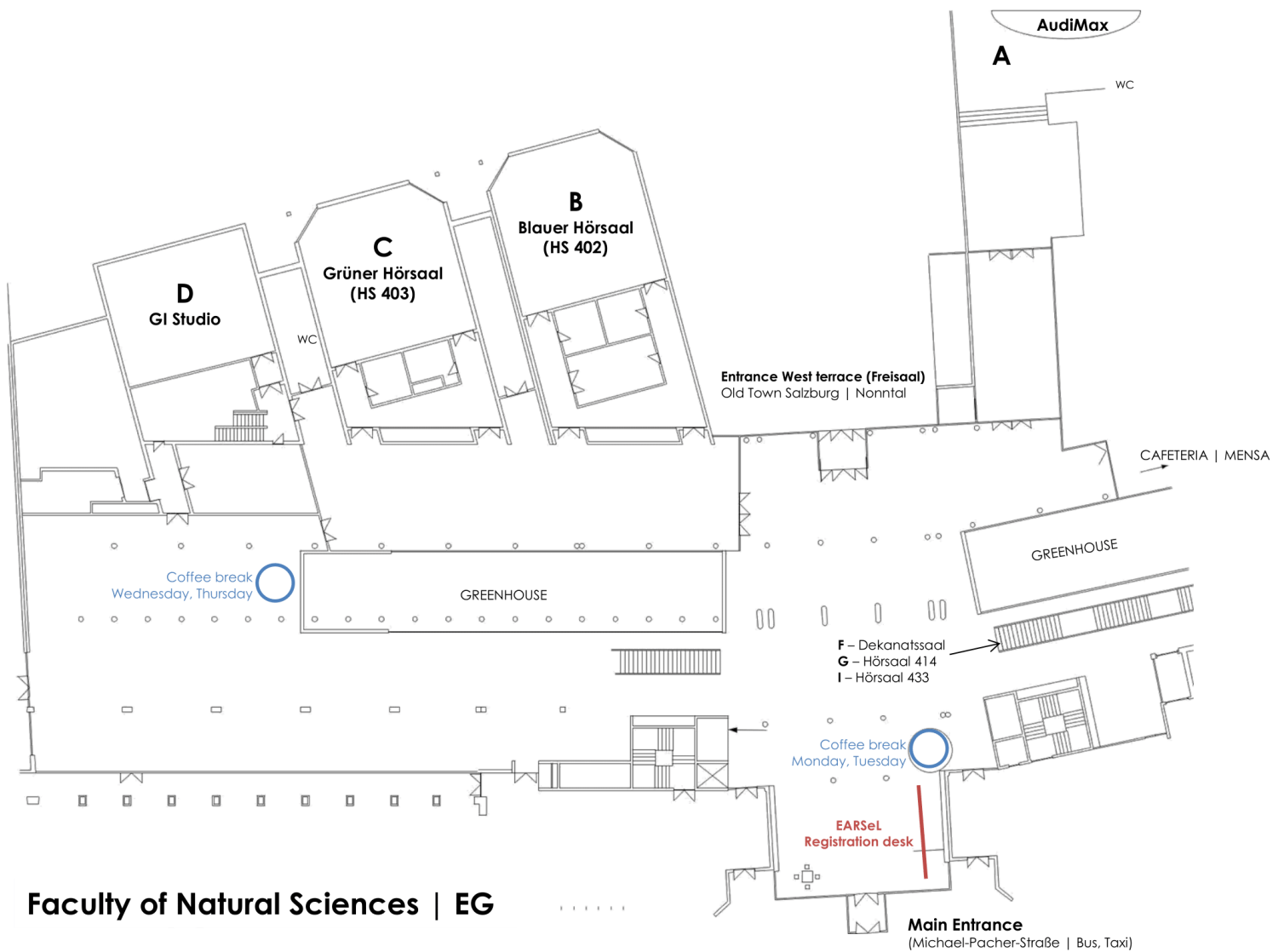


# SYMPOSIUM

 Faculty of Natural Sciences (NaWi)  
Hellbrunner Str. 34, 5020 Salzburg, Austria

 Monday, 1<sup>st</sup> July to Thursday, 4<sup>th</sup> July 2019

 The oral presentations will be held in different lecture rooms of the faculty (find details in the programme) and the poster presentations will take place in the Auditorium maximum.



# SOCIAL EVENTS

## COME TOGETHER



Cook&Wine  
www.cookandwine.at - Kaigasse 43, 5020 Salzburg



Monday, 1<sup>st</sup> July 2019, 18:30 – 20:00



Please arrive at the location individually. Cook&Wine can be reached by foot in 20 minutes from the Faculty of Natural Sciences or by bus Nr. 3 or 8 from Salzburg Faistauergasse to Salzburg Justizgebäude (Karolinenbrücke) in 15 minutes (see map).



## ICE BREAKER



Faculty of Natural Sciences  
Hellbrunner Str. 34, 5020 Salzburg



Tuesday, 2<sup>nd</sup> July 2019, 19:00 – 19:30



The Ice Breaker will take place at the West Terrace of the Faculty.






# SYMPOSIUMS DINNER

 ARGE Beisl  
www.argebeisl.at - Ulrike-Gschwandtner-Straße 5, 5020 Salzburg

 Wednesday, 3<sup>rd</sup> July 2019, 19:30 – 21:00

 Please arrive at the restaurant individually. ARGE Beisl can be reached by foot in 15 Minutes from the Faculty of Natural Sciences (see map).



# SOCIAL EVENTS

## EXCURSION



National Park Berchtesgaden. Visit to "Haus der Berge" and a half day hike through the National Park.  
[www.nationalpark-berchtesgaden.bayern.de](http://www.nationalpark-berchtesgaden.bayern.de) - Hanielstraße 7, 83471 Berchtesgaden, Germany



Sunday, 30<sup>th</sup> June 2019, 09:00 – 18:00



The participants will be picked up by the bus at the Faculty of Natural Sciences in front of the main entrance at 9:00.  
Registration fee for the Excursion includes bus tour, lunch and entrance fee.

### High, wild and beautiful - the Berchtesgaden National Park.

High mountains, deep valleys and crystal clear mountain rivers characterize the protected area directly at the border to Austria. Let nature be nature - this is the motto in the only Alpine National Park of Germany. The tasks of the protected area, which was established in 1978, are diverse: nature conservation, environmental education and public relations, research, recreation and zoning of the area. The National Park covers an area of 210 km<sup>2</sup>, of which 75% are core area and 25% are maintenance zones.

Seeing, hearing, feeling, tasting and making nature understandable - this is the motto in the Berchtesgadener National Park Center „Haus der Berge“. It serves as a museum, information center, educational center and adventure area for the visitors of the National Park.



# PROGRAMM HIGHLIGHTS

## KEYNOTES

<b>Monday, 1<sup>st</sup> July   10:00 – 11:00</b> <b>Session:</b> A1 EARSeL Opening Keynote <b>Location:</b> A - Audimax	“Mainstreaming Knowledge from Data Sources to Policy Indicators: Examples from the Global Human Settlement Layer” <b>Christina Corbane</b> / Joint Research Centre, JRC
<b>Tuesday, 2<sup>nd</sup> July   9:00 – 9:45</b> <b>Session:</b> A6 EARSeL Keynote <b>Location:</b> A - Audimax	“Space Technology to the Power of Hundreds” <b>Agnieszka Lukaszczyk</b> / Planet Labs Germany GmbH
<b>Tuesday, 2<sup>nd</sup> July   17:30 – 19:00</b> <b>Session:</b> A11 GI_Forum Keynote open to EARSeL <b>Location:</b> A - Audimax	“Redefining ‘What is Special about Spatial?’ – Spatiality in the Age of Data Science” <b>Jochen Albrecht</b> / Hunter College, City University of New York
<b>Wednesday, 3<sup>rd</sup> July   10:30 – 12:00</b> <b>Session:</b> A13 EARSeL & GI_Forum Joint Keynote <b>Location:</b> A - Audimax	“Feeling the Pulse of our Planet from Space – the ESA EO Programme” <b>Josef Aschbacher</b> / ESA   Director of Earth Observation Programmes
<b>Thursday, 4<sup>th</sup> July   9:00 – 10:30</b> <b>Session:</b> A17 GI_Forum Keynote open to EARSeL <b>Location:</b> A - Audimax	“Continuity in a Changing Discipline: Transformations of Data Streams” <b>Nicholas R. Chrisman</b> / Laval University, Quebec City

## INVITED TALKS

<b>Tuesday, 2<sup>nd</sup> July   11:00 – 12:30</b> <b>Session:</b> B8 Machine/Deep learning II <b>Location:</b> B – Blauer Hörsaal	“What Artificial Intelligence (AI) and Computer Vision (CV) are and what Deep Learning-from-data (DL) is not: Analytical Thesis Statements and their Pragmatic Consequences” <b>Andrea Baraldi</b> / Italian Space Agency, ASI
<b>Tuesday, 2<sup>nd</sup> July   15:30 – 16:00</b> <b>Session:</b> A10 Postersession II <b>Location:</b> A - Audimax	“The (Missing?) Message of Copernicus” <b>Anna Spiteri</b> / Integrated Resources Management Co Ltd, IRMCo
<b>Thursday, 4<sup>th</sup> July   11:30 – 13:00</b> <b>Session:</b> D18 SDG II <b>Location:</b> D – GI Studio	„Pixel for People - EO Supporting the Global Development Agenda“ <b>Valerie Graw</b> / Center for Remote Sensing of Land Surfaces (ZFL), University of Bonn

## ROUND TABLE

<b>Wednesday, 3<sup>rd</sup> July   13:40 – 14:30</b> <b>Session:</b> C14 Copernicus I <b>Location:</b> C – Grüner Hörsaal	“The Future Uptake of Space – Ready for the Future?” <b>Francesco Sarti</b> / ESA <b>Stéphane Ourevitch</b> / SpaceTec Partners <b>Romana Kofler</b> / UN 2030 <b>Peter Zeil</b> / Spatial Services
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# SPECIAL SESSION - CO4EO WORKSHOP

## Citizen Science and Conventional Earth Observation Interaction

**Tuesday, 2<sup>nd</sup> July | 11:00 – 15:00**

**Session:** F8 & F9

**Location:** F – Dekanatssaal

Organised by the H2020 WeObserve project ([www.weobserve.eu](http://www.weobserve.eu)), this special session/workshop is aiming to explore success stories where citizen science data are combined with conventional sources of Earth observation data. In particular best practices arising from the activities of four current H2020 Citizen Observatories (LandSense, SCENT, GROW, Ground Truth 2.0) as well as from other projects will be demonstrated, illustrating the integration of Earth observation and citizen science data for improved environmental monitoring. Particular emphasis will be given in the field of Land Use and Land Cover (LU/LC), harnessing the power of citizens to create actionable knowledge for participatory governance and policy making. In addition, potential solutions and promotion of policy adoption will be discussed on overcoming limitations of citizen science data in Earth observation applications.



# WORKSHOPS

**Wednesday, 3<sup>rd</sup> July | 13:00 – 16:30**  
**Session: I14 eCognition Workshop**  
**Location: I – HS 433**

**Workshop Instructors:**  
**Keith Peterson and Matthias Staengel (Trimble)**

## **eCognition Workshop | Introduction to object-based image analysis with eCognition**

Object-based image analysis offers techniques to address spatial concepts in the extraction of information from remotely sensed data, especially of very high spatial resolution data. Trimble's eCognition is a powerful analysis tool for object-based image analysis. It offers a toolbox for developing hierarchical rules, which allow to incorporate expert knowledge based on object features, such as spectral values, shape and context, and combines these with machine learning and deep learning techniques as well as existing geoinformation, independent of the data source (images, point clouds etc). This workshop gives an overview about object-based image analysis workflows and data integration strategies.

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**Thursday, 4<sup>th</sup> July | 11:30 – 13:00**  
**Session: I18 M.App Workshop**  
**Location: I – HS 433**

**Workshop Instructors:**  
**Ruth Leska and Brigitta Putzenlechner (Geosystems)**

## **M.App Workshop | Compose your application for web and mobile devices with Hexagon's M.App Portfolio**

You know about spatial data, geo-processing and mapping. Wouldn't it be cool to take these ingredients, use clever-made templates, and compose meaningful digital maps within a fraction of time? Within this workshop we will go for a stroll through Hexagon's Smart M.App technology. By just using your browser we will geo-process Sentinel data and use the results to configure a complete digital map with dynamic content and meaningful business intelligence. We will configure a mobile application and collect new and fresh data, which will be used to update our Smart M.App dynamically. You will get an insight and experience to produce a smart and a mobile application – no programming, just composing!

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**Thursday, 4<sup>th</sup> July | 14:00 – 18:00**  
**Session: I19 RUS Copernicus Training**  
**Location: I – HS 433**

**Workshop Instructors:**  
**Tereza Smejkalova and Miguel Castro Gomez (RUS)**

## **RUS Copernicus Training | Optical and SAR data fusion for Agriculture**

Taking advantage of the high revisit time of Sentinel-1 and Sentinel-2 satellites, new capabilities to monitor land dynamics and characteristics have emerged. Since more frequent optical imagery is available, the chances to avoid the negative impact of cloud presence over a specific area have increased. However, during cloudy periods or over areas with frequent cloud cover, optical data faces its main limitation. In order to improve the data availability and hence the classification results, we can use the all-weather day-and-night imagery acquired by Synthetic Aperture RADAR sensors, in combination with optical data. During this hands-on session, we aim to introduce Optical and SAR data feature level fusion for crop monitoring. Multi-sensor approach will be used in combination with a multi-temporal dataset of Sentinel-2 and Sentinel-1 images, to demonstrate the benefits of the joint use of optical and SAR data.

The session is organized by the Research and User Support (RUS Copernicus), an initiative funded by the European Commission and managed by ESA in order to support the uptake of Copernicus Sentinel data. During the demonstration, participants will be provided with a free RUS Virtual Machine including all the data and software needed for the exercise and a detailed step-by-step guide.

# PRACTICAL INFORMATION

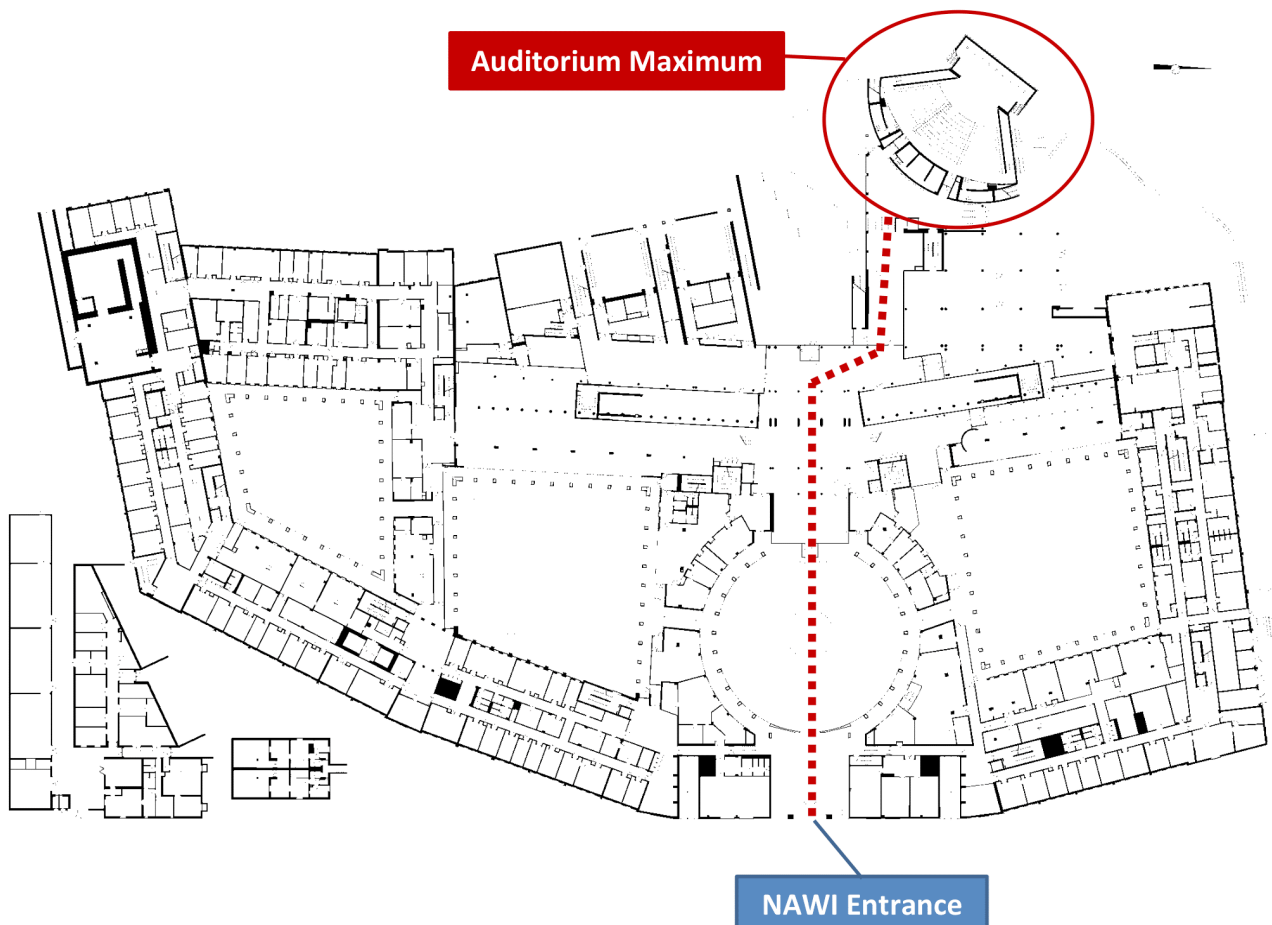
## POSTERS

Mount your poster on Monday, July 1<sup>st</sup> between 13:00 – 16:00 p.m. on the designated pinboards in front of the Auditorium Maximum. Please look up the conference agenda to find out the number of your poster and pin it on the pinboard with the respective number!

### Poster Presentation

Every participant is given 90 seconds and 1 slide to shortly present his/her poster at the poster session. The order of presentations follow the number of your poster.

- > Poster session 1 | Monday July, 1<sup>st</sup> 17:00 – 18:00
- > Poster session 2 | Tuesday July, 2<sup>nd</sup> 16:00 – 17:00



## ORAL PRESENTATIONS

The oral presentations of each session will be **15 minutes**. Additionally consider a discussion of **5 minutes** after every talk. Prior the beginning of your session please provide your presentation to the technical assistant (who can be found in the respective session room) in order to guarantee a smooth process of each session.

## INTERNET

Free WiFi access is available for every participant using the login details given below. Besides, eduroam is also available on the University campus.

Account: **gi-week**  
Password: **20Salzburg19**

## AWARDS

To honour the willingness to actively participate and to discuss their research, the EARSeL Bureau is sponsoring awards for Young Scientist's best oral presentations and best poster presentations. A scientific committee will evaluate the quality of work, innovation of research and the given presentation. The winner of each category will be awarded with EUR 500.

The winners of the prize will be announced and the prize will be handed over at the closing session of the symposium on Thursday July 4<sup>th</sup>, 2019, 9:00 – 10:30

## SPECIAL ISSUE



Following the acceptance of an abstract and registration to the Symposium, authors are welcome to submit full papers to the open access European Journal of Remote Sensing (EuJRS). Each submitted full paper of the symposium participants will be considered for publication in a Special Issue of the EuJRS. The EuJRS has an IF of 1.122, is online and open-access and a special issue will accommodate full paper submissions related to the presentations delivered in the Symposium.

EARSeL will be subsidising 50% of the author's fee for the publication of the full paper in this special issue. Due to a special agreement between EARSeL and Taylor & Francis the participating authors will have to pay only € 217 per paper. The latter will have to be paid by the author as soon as the paper has been accepted by Taylor & Francis and before publication in the EuJRS.

**Title:** Digital | Earth | Observation

**Guest Editors:** Dr. Stefan Lang, Dr. Dirk Tiede, Mag. Barbara Riedler, MSc

**Deadline for submission of manuscripts:** 1<sup>st</sup> of October 2019

**Anticipated deadline for final acceptance of manuscripts:** 28<sup>th</sup> of February 2020



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