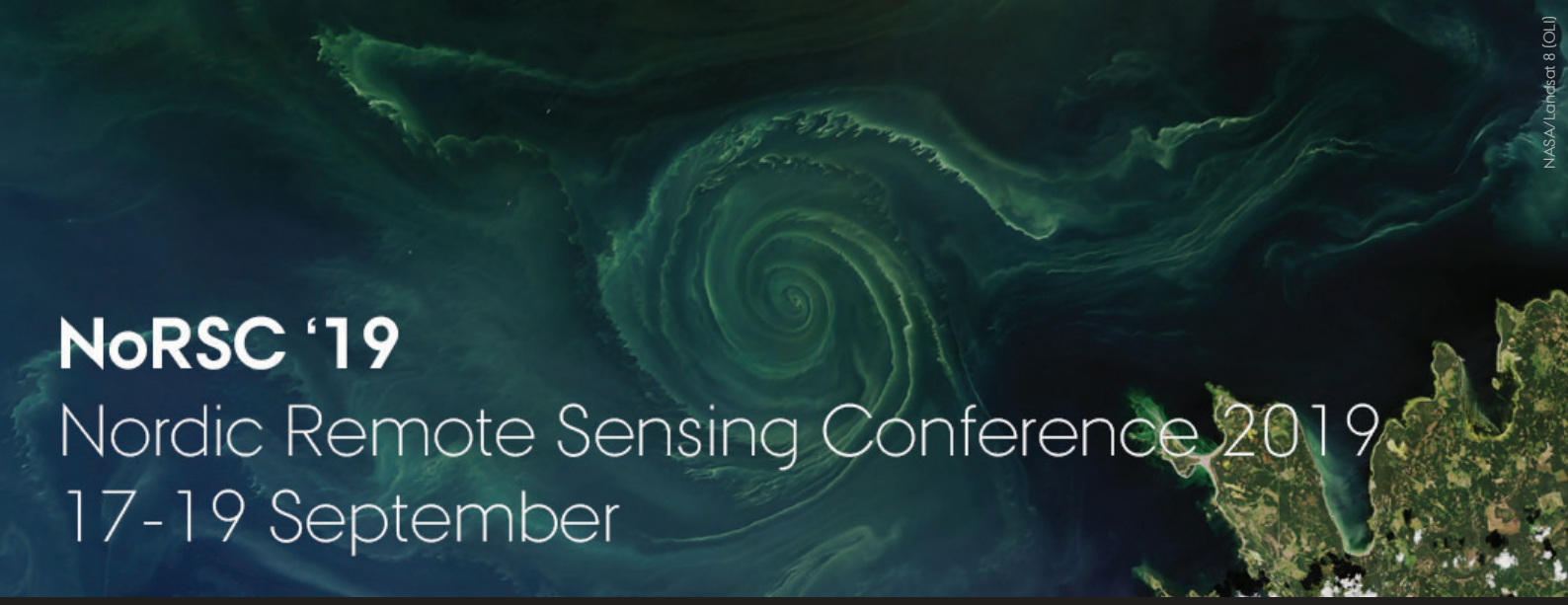


# NoRSC '19

# Nordic Remote Sensing Conference 2019

## 17-19 September

DATA ACQUISITION, ALGORITHMS AND APPLICATIONS

# PROGRAMME OVERVIEW

### 17 September 2019

13:00 PRE-CONFERENCE WORKSHOPS

- WORKSHOP 1: DEEP LEARNING FOR REMOTE SENSING
- WORKSHOP 2: BRIDGING EARTH OBSERVATION DATA AND MACHINE LEARNING IN PYTHON

17:00

17:30 REGISTRATION

18:00 ICEBREAKER RECEPTION
AIAS HALL

### 18 September 2019

08:30 REGISTRATION

09:00 WELCOME

09:15 SESSION I

10:15 COFFEE BREAK

10:45 KEYNOTE 1

11:30 SESSION II

12:15 LUNCH
POSTER SESSION A

13:45 SESSION III

15:00 COFFEE BREAK

15:30 KEYNOTE 2

16:15 SESSION IV

17:00 WALK TO ARoS

17:45 GUIDED TOUR
&

18:30 CONFERENCE DINNER
ARoS ART MUSEUM

### 19 September 2019

09:00 SESSION V

09:45 KEYNOTE 3

10:30 COFFEE BREAK

11:00 SESSION VI

12:15 LUNCH
POSTER SESSION B

13:30 SESSION VII

14:45 COFFEE BREAK

15:15 SESSION VIII

16:15 CONFERENCE CLOSURE

16:30

#NoRSC19

For more information:
http://aias.au.dk/events/aias-conference-nordic-remote-sensing-2019-norsc19/

AIAS
AARHUS INSTITUTE OF ADVANCED STUDIES
HØEGH-GULDBERGS GADE 6B, 8000 AARHUS C, DENMARK
AARHUS UNIVERSITY

## 17 September 2019

13:00 - 17:00 PRE-CONFERENCE WORKSHOPS

**Workshop 1: Deep Learning for Remote Sensing**

Sylvain Lobry & Diego Marcos | Laboratory of Geo-information Science and Remote Sensing, Wageningen University and Research, Netherlands

Ahmed Samy Nassar | IRISA, University of Southern Brittany, France & EcoVision Lab, ETH, Zurich, Switzerland

**Workshop 2: Bridging Earth Observation data and Machine Learning in Python**

Matej Batič & Devis Peressutti | Sinergise Ltd., Ljubljana, Slovenia

17:30 - 18:00 REGISTRATION

18:00 - 20:00 ICEBREAKER RECEPTION

## 18 September 2019

08:30 - 09:00 REGISTRATION & COFFEE

09:00 - 09:15 WELCOME | **Morten Kyndrup**, Director (AIAS) & Organisers | Aarhus University, Denmark

09:15 - 10:15 SESSION I

09:15 - 09:30 **Spring bloom dynamics as predicted by winds and remote sensing**

Frode B Vikebø[1,2*], Kjersti Opstad Strand[1,2], Svein Sundby[1] |1| Institute of Marine Research, PO Box 1870 Nordnes, 5817 Bergen, Norway |2| Bjerknes Centre of Climate Research, Bergen, Norway

09:30 - 09:45 **Improved interpolation scheme for remotely sensed ice sheet elevation changes - a case study in northeast Greenland**

Louise Sandberg Sørensen, Natalia Havelund Andersen, Sebastian B. Simonsen| Technical University of Denmark (DTU), Denmark

09:45 - 10:00 **Automated mapping of cultural heritage in Norway from airborne lidar data using faster-RCNN**

Øivind Due Trier | Norwegian Computing Center, Norway

10:00 - 10:15 **Upscaling vegetation structure from terrestrial laser scanning using satellite imagery**

Robert Buitenwerf, Jens-Christian Svenning | Aarhus University, Denmark

10:15 - 10:45 COFFEE BREAK

10:45 - 11:30 KEYNOTE 1

**MARK DRINKWATER**

Head, Earth and Mission Science Division (EOP-SM) , European Space Agency, European Space, Research & Technology Centre (ESTEC), Noordwijk, The Netherlands

TITLE **ESA Earth Observation: Overview & Future Plans**

11:30 - 12:15 SESSION II

11:30 - 11:45 **Drone data reveals fine-scale variation of tundra greenness and phenology that is missed by satellite and ground-based monitoring**

Jakob J. Assmann[1,2], Isla H. Myers-Smith[1], Andrew M. Cunliffe[1,3], Jeffrey T. Kerby[4] |1|Aarhus University, Denmark |2| The University of Edinburgh, UK |3| University of Exeter, UK |4| Dartmouth College, USA

11:45 - 12:00 **Calibrating temporally transferred models in forest inventory**

Ana Maria de Lera Garrido, Ole Martin Bollandsås, Hans Ole Ørka, Terje Gobakken | Norwegian University of Life Sciences (NMBU), Norway

12:00 - 12:15 **Visual Question Answering from Remote Sensing Images**

Sylvain Lobry, Jesse Murray, Diego Marcos, Devis Tuia | Wageningen University and Research, The Netherlands

12:15 - 13:45 LUNCH

12:45 - 13:45 POSTER SESSION A

## 18 September 2019

13:45 - 15:00 SESSION III

13:45 - 14:00 **Inorganic Suspended Matter as an indicator of terrestrial influence in Baltic Sea coastal areas – algorithm development, validation and ecological relevance**
Susanne Kratzer[1], Dmytro Kyryliuk[1], Carsten Brockmann[2] |1| Stockholm University, Sweden |2| Brockmann Consult, GmbH, Germany

14:00 - 14:15 **Agricultural land cover classification with deep learning**
Joachim Nyborg[1,2], Ira Assent[1] |1| FieldSense A/S |2| Aarhus University, Denmark

14:15 - 14:30 **Simulative assessment of model assisted and hybrid estimation of change using repeated ALS sampling**
Victor F. Strîmbu[1], Liviu T. Ene[2], Terje Gobakken[1], Erik Næsset[1] |1| Norwegian University of Life Sciences (NMBU), Norway |2| Forestry Research Institute of Sweden

14:30 - 14:45 **The use of multi-scale and multi-source remote sensing dataset for geological mapping in the Arctic terrain**
Sara Salehi | Geological Survey of Denmark and Greenland (GEUS), Denmark

14:45 - 15:00 **Change detection in polarimetric synthetic aperture radar data**
Allan A. Nielsen[1], Henning Skriver[1], Knut Conradsen[1] and Morton J. Canty[2] |1| Technical University of Denmark (DTU), Denmark |2| (Formerly) Research Center Jülich, Germany

15:00 - 15:30 COFFEE BREAK

15:30 - 16:15 KEYNOTE 2

**SAMANTHA LAVENDER**
Managing Director, Pixalytics & Honorary Reader in Geomatics, Faculty of Science and Engineering, University of Plymouth, UK

TITLE **Developing Marine Applications: From SeaWiFS to the Copernicus Sentinel Missions**

16:15 - 17:15 SESSION IV

16:15 - 16:30 **Greenland surface elevation change from 25+ years of satellite radar altimetry data**
Sebastian B. Simonsen, Louise Sandberg Sørensen | Technical University of Denmark (DTU), Denmark

16:30 - 16:45 **Earth Observation for coastal monitoring**
Lars Boye Hansen, Mikkel Lydholm Rasmussen, Lisbeth Tangaa Nielsen | DHI GRAS A/S, Denmark

16:45 - 17:00 **A global quantitative analysis of the link between forest structure and land surface albedo**
Sara Alibakhshi[1], Babak Naimi[2], Aarne Hovi[1], Thomas Crowther[3], Miina Rautiainen[1] |1| Aalto University, Finland |2| University of Amsterdam, The Netherlands |3| ETH Zürich, Switzerland

17:45 - 18:30 GUIDED TOUR | ARoS Art Museum

18:30 - 21:00 CONFERENCE DINNER | ARoS Allé 2, 8000 Aarhus C

## 19 September 2019

09:00 - 09:45 SESSION V

09:00 - 09:15 **Remote sensing of snow properties with Sentinel-3**
Rune Solberg, Øivind Due Trier, Øystein Rudjord | Norwegian Computing Center, Norway

09:15 - 09:30 **Remote sensing benchmark dataset of Hekla volcano, Iceland**
Gro B. M. Pedersen[1], Olga K. Vilmundardóttir[1], Fadi Kizel[1,2], Joaquín M.C. Belart[1,3], Nicola Falco[4], Friðþór S. Sigurmundsson[1], Rose Rustowicz[5], Guðrún Gísladóttir[1], Jón A. Benediktsson[1] |1| University of Iceland, Iceland |2| Technion-Israel Institute of Technology, Israel |3| Université de Toulouse, France |4| Lawrence Berkeley National Laboratory, USA |5| Stanford University, USA

09:30 - 09:45 **Multi-temporal land cover mapping using recurrent neural network**
Nima Teimouri, Jørgensen R.N. | Aarhus University, Denmark

## 19 September 2019

09:45 - 10:30 KEYNOTE 3

**LORENZO BRUZZONE**

Director, Remote Sensing Laboratory & Professor of Telecommunications, Department of Information Engineering and Computer Science, University of Trento, Italy

TITLE **Challenges of remote sensing data analysis in the artificial intelligence era**

10:30 - 11:00 COFFEE BREAK

11:00 - 12:15 SESSION VI

11:00 - 11:15 **Changing urban density of Denmark and Taiwan in the past 20 years over horizontal and vertical scales**

Tzu-Hsin Karen Chen[1], Clive E. Sabel[1], Alexander V. Prishchepov[2] |1| Aarhus University-Roskilde, Denmark |2| University of Copenhagen, Denmark

11:15 - 11:30 **Long term interferometric temporal coherence of peatland**

Tauri Tampuu, Jaan Praks |1| University of Tartu, Estonia |2| Aalto University, Finland

11:30 - 11:45 **Predicting tree-level quantitative attributes for the Norway spruce breeding program in Sweden using drone remote sensing**

Liviu Theodor Ene, Mateusz Liziniewicz, Johan Malm | Skogforsk- The Forestry Research Institute of Sweden, Sweden

11:45 - 12:00 **Usages of UAV and multispectral images in the Danish field trial experiments**

Mette Langgaard Jensen | SEGES, Denmark

12:00 - 12:15 **Understanding Arctic cold seep and their impacts on the larger Arctic marine ecosystem through remote technology**

Arunima Sen | UiT The Arctic Uiversity of Norway in Tromsø, Norway

12:15 - 13:30 LUNCH

12:45 - 13:30 POSTER SESSION B

13:30 - 14:45 SESSION VII

13:30 - 13:45 **Remote sensing of tailings storage facilities**

Malte Vöge, Regula Frauenfelder, Øyvind Torgesrud | Norwegian Geotechnical Institute, Norway

13:45 - 14:00 **Surveying seals with spectral aerial imagery**

Eric Jürgen Haase | Aarhus University–Risø, Denmark

14:00 - 14:15 **The Norwegian Public National Ground Motion Service - InSAR.no**

John F. Dehls[1], Yngvar Larsen[2], Petar Marinkovic[3], Tom Rune Lauknes[2], Dag Anders Moldestad[4], Marie Bredal[1], Reginald Hermanns[1] |1| Geological Survey of Norway |2| NORCE |3| PPO.labs |4| Norwegian Space Agency, Norway

14:15 - 14:30 **Ice Maps - Data Fusion of Sentinel 1 and AMSR2 For Sea Ice Segmentation**

David Malmgren-Hansen, Allan Aasbjerg Nielsen, Henning Skriver, Leif Toudal Pedersen | Technical University of Denmark (DTU), Denmark

14:30 - 14:45 **Predicting clover proportion in Danish grasslands using Sentinel 2 satellite data: combining functional principal components and generalized additive models**

Philipp Trénel[1], Torben Spanggaard Frandsen[2], Lars Byrdal Kjær[1] |1| Technological Institute, Denmark |2| SEGES, Denmark

14:45 - 15:15 COFFEE BREAK

## 19 September 2019

15:15 - 16:15 SESSION VIII

15:15 - 15:30 **Area-based mapping of site index in operational forest inventories using bitemporal airborne laser scanner data**
Lennart Noordermeer, Ole Martin Bollandsås, Terje Gobakken, Erik Næsset | Norwegian University of Life Sciences (NMBU), Denmark

15:30 - 15:45 **High resolution mapping on vegetation distribution in Greater Maasai Mara Ecosystem and its environmental drivers**
Wang Li, Robert Buitenwerf, Michael Munk, Katja Jäkle, Jens-Christian Svenning | Aarhus University, Denmark

15:45 - 16:00 **Which set of LiDAR metrics reveals fine-scale habitat structures in wetlands?**
Zsófia Koma, Arie C. Seijmonsbergen, W. Daniel Kissling | The University of Amsterdam, The Netherlands

16:00 - 16:15 **Enhancing water use efficiency using machine learning**
Mads Olander Rasmussen, Radoslaw Marcin Guzinski | DHI GRAS A/S, Denmark

16:15 - 16:30 CONFERENCE CLOSURE

## POSTER SESSIONS

12:45 - 13:45 **18 SEPTEMBER 2019** | POSTER SESSION A

1A **Detecting pioneer trees in the forest-tundra ecotone by digital aerial photogrammetry** | Ida M. Mienna, Steinar G. Stensli, Marie-Claude Jutras-Perreault, Ole Martin Bollandsås | Norwegian University of Life Sciences (NMBU), Norway

2A **Successful semi-automatic count of gulls in a large breeding colony** | Alejandro Corregidor Castro, Thomas Eske Holm, Thomas Bregnballe | Aarhus University, Denmark

3A **Satellites reveal Nitrogen loss** | Ashley Montcalm , Nanna Hellum Kristensen | SEGES, Denmark

4A **Combining LiDAR and citizen science to unravel the effects of land-use and climate change on Denmark's avifauna** | Charlie Davison, Naia Morueta-Holme, Carsten Rahbek | University of Copenhagen, Denmark

5A **Contextual mapping of soil organic carbon and clay content at field extent** | A. Beucher, Y. Peng, M. H. Greve | Aarhus University, Denmark

6A **High precision urban mapping based on machine learning combining airborne lidar and hyperspectral data** | Dagrun Aarsten, Vetle Jonassen | Terratec AS, Norway

7A **Lidar nDSM expression of forest structure patterns for the Danish Biodiversity Map** | Geoff Groom | Aarhus University-Kalø, Denmark

8A **Automated mapping of buildings** | Joachim Höhle | Aalborg University, Denmark

9A **Using machine learning for mapping the distribution of acid sulfate soils in northern Sweden** | Marina Becher, Christian Öhrling, Gustav Sohlenius | Geological Survey of Sweden, Sweden

10A **Decision Support App for PGR use in winter wheat and winter rye includes satellite images** | M.D. Thorsted, J.E. Jensen, C.B. Møller, R. Hørfarter, L.B. Eriksen | SEGES, Denmark

11A **Linking structural variables from terrestrial laser scanning with spectral features from World View3 satellite imagery – mapping freestanding trees in Maasai Mara** | Michael Munk | Aarhus University, Denmark

12A **Data fusion for precision agriculture** | Peter Fogh | SEGES, Denmark

13A **Denmark seen from the air - a unique open-data repository for historical aerial imagery** | Stig Roar Svenningsen, Mette Colding Dahl | Royal Danish Library-Special Collections, Denmark

14A **Combining Sentinel-1 and Sentinel-2 for mapping of Young Forest Stands in Norway** | Vahid Akbari, Svein Solberg | Norwegian Institute of Bioeconomy Research, Norway

15A **3D web visualization of elevation models, oblique images, and city models** | Thomas Kjeldsen, Karsten Noe | The Alexandra Institute, Denmark

12:45 - 13:30 **19 SEPTEMBER 2019** | POSTER SESSION B

1B **Mapping and detecting structural changes in a Cytisus scoparius population using UAS-LiDAR** | Bjarke Madsen[1], Urs A. Treier[1], András Zlinszky[1,2], Arko Lucieer[3], Signe Normand[1] |1| Aarhus University, Denmark |2| Hungarian Academy of Sciences, Hungary |3| University of Tasmania, Australia

2B **Using UAVs for morphometric measurements of harbour porpoises (Phocoena phocoena)** | Emilie Nicoline Stepien[1,2,3], Morten Tange Olsen[2], Henrik Dyrberg Egemose[1], Henrik Skov Midtiby[1], Sara Torres Ortiz[1], Jakob Højer Kristensen[4], Magnus Wahlberg[1] |1| University of Southern Denmark, Denmark |2| University of Copenhagen, Denmark |3| Aarhus University, Denmark |4| Fjord&Bælt, Denmark

3B **From geo-spatial datasets to urban tree inventories** | Cici Alexander | Aarhus University, Denmark

4B **An inventory of ice-marginal lakes in Greenland** | Eva Mätzler[1], Mikkel Høegh Bojesen[1], Kirsty Langley[1], Alexandra Messerli[1], Andreas Wiesmann[2], Tazio Strozzi[2], Maurizio Santoro[2], Andreas Kääb[3], Frank Paul[4] |1| Asiaq Greenland Survey |2| Gamma Remote Sensing, Switzerland |3| University of Oslo, Norway |4| University of Zürich, Switzerland

5B **Object-based frame-wise image analysis of near-surface remote sensing time-lapse image data for study of Arctic plant phenology** | Geoff Groom, Toke T. Høye | Aarhus University-Kalø, Denmark

6B **Assessment of different DEMs in SAR-based forest monitoring to account for topographic effects** | Ignacio Borlaf Mena[1,2], Mihai Andrei Tanase[1,2,3], Ovidiu Badea[1,4], Francisco Javier Salas Rey[2] |1| National Institute for Research and Development in Forestry "Marin Drăcea", Romania |2| Univesity of Alcalá, Spain |3| University of Melbourne, Australia |4| "Transilvania" University of Brașov, Romania

7B **Estimating daily PM2.5 using MAIAC AOD – A case study of Copenhagen, Denmark** | Jibran Khan[1], Pawan Gupta[2,3] |1| Aarhus University-Roskilde, Denmark |2| Universities Space Research Association (USRA), United States |3| NASA Marshall Space Flight Center, United States

8B **Analysis of open remote sensing data using deep learning techniques** | Karsten Noe[1], Thomas Kjeldsen[1], Lee Lassen[1], Morten Henriksen Birk[2], Henrik Pedersen[1] |1| The Alexandra Institute, Denmark |2| FieldSense A/S, Denmark

9B **Estimation of potato biomass by using high-resolution small unmanned aerial vehicle and Sentinel 2 multispectral imagery** | Junxiang Peng, Kiril Manevski, Kirsten Kørup, René Larsen, Mathias Neumann Andersen | Aarhus University, Denmark

10B **Associations between natural surroundings in childhood and schizophrenia later in life – A remote sensing approach to human health** | Kristine Engemann, Jens-Christian Svenning, Lars Arge, Oleguer Plana-Ripoll, Constantinos Tsirogiannis, Preben Bo Mortensen, Carsten Bøcker Pedersen | Aarhus University, Denmark

11B **Site index predictions for precision forest planting combining harvester data and auxiliaries derived from airborne laser scanning** | Rasmus Sörensen, Liviu Theodor Ene, Jon Söderberg, Lars Wilhelmsson | Skogforsk- The Forestry Research Institute of Sweden, Sweden

12B **Estimation of drought stress in winter wheat using UAV thermal images** | Vita Antoniuk, Junxiang Peng, Kiril Manevski, Kirsten Kørup, René Larsen, Mathias Neumann Andersen | Aarhus University, Denmark

[Programme subject to change]

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