



# 1<sup>st</sup> GEOlab–RISH joint workshop on OBSERVATIONS AND MODELS FOR METEOROLOGY

22 – 24 February 2016,  
Politecnico di Milano (Leonardo Campus), Milan, Italy

The GEOlab-RISH joint workshop is an interdisciplinary meeting for the presentation of research activities in the fields of GNSS Meteorology, SAR troposphere analysis and mesoscale NWP models and data assimilation. Japanese research institutes, such as RISH of Kyoto University and the Meteorological Research Institute of JMA, as well as European research and academic institutions, such as GEOlab of Politecnico di Milano, Università di Roma «La Sapienza», Università di Genova and GFZ will contribute to the workshop.

Participation is free and open to all interested parties

## **Monday 22 14:30 – 18:00**

- Foreword
- GNSS meteorology

## **Tuesday 23 10:00 – 13:00**

- Hyper-dense GNSS networks for troposphere analysis
- Innovative GNSS receiver technology and data processing

## **Tuesday 23 14:30 – 17:30**

- Ionospheric delay estimates and models
- SAR troposphere products, analysis and methods

## **Wednesday 24 10:00 – 13:00**

- NWP models
- Innovative GNSS data processing and analyses

## **Wednesday 24 14:30 – 16:30**

- GNSS radio-occultation
- Ground-based measurements (e.g. Raman LiDAR)
- Round table on future collaborations and funding opportunities (e.g. H2020)

### *Workshop organizers:*

*GEOlab – Geomatics and Earth Observation lab (Politecnico di Milano)*

*RISH – Research Institute for Sustainable Humanosphere (Kyoto University)*



### *With the support of:*

*GeoSTARe – Geosynchronous SAR mission*

*GReD – Geomatics Research & Development srl*



For further information please contact: Eugenio Realini [eugenio.realini@g-red.eu](mailto:eugenio.realini@g-red.eu),  
Giovanna Venuti [giovanna.venuti@polimi.it](mailto:giovanna.venuti@polimi.it), Andrea Monti Guarnieri [andrea.montiguarnieri@polimi.it](mailto:andrea.montiguarnieri@polimi.it)

## Monday 22 14:30 – 18:00 DEIB – Conference Room

- **Foreword**

14:30-14:45 RISH presentation (T. Tsuda)

14:45-15:00 GEOLab presentation (G. Venuti)

- **GNSS meteorology**

15:00-15:30 GPS/GNSS Meteorology in Japan: History and Achievements (Y. Shoji)

15:30-16:00 ASI/CGS products and services in support of GNSS-meteorology (R. Pacione)

16:00-16:30 *Coffee break*

16:30-17:00 Ground based water vapor retrieval in Antarctic coastal areas (M. Negusini)

17:00-17:30 PWV time series from 1998 to 2015 on Ligurian area (I. Ferrando)

17:30-18:00 Characteristics of tropical convection in Indonesia from a coordinated campaign with X-band radar, GNSS-PWV, and radiosonde observations (M. Oigawa)

## Tuesday 23 10:00 – 13:00 DEIB – Seminar Room

- **Hyper-dense GNSS networks for troposphere analysis**

10:00-10:30 GNSS meteorology by low-cost equipment (E. Realini)

10:30-11:00 Hyper-dense GNSS networks for troposphere analysis experimental set-up of the Uji network (N. Ito)

11:00-11:30 *Coffee break*

11:30-12:00 PWV variations with the Uji network and data assimilation into a non-hydrostatic numerical model (M. Oigawa)

- **Innovative GNSS receiver technology and data processing**

12:00-12:30 Reconstruction of anisotropic slant total delays from GNSS observations (G. Möller)

12:30-13:00 TBD (A. Consoli)

## Tuesday 23 14:30 – 17:30 DEIB – Seminar Room

- **Ionospheric delay estimates and models**

14:30-15:00 Real-Time Detection of Earthquake Ionospheric Disturbances through a Variometric Approach: a Preliminary Feasibility Demonstration with VADASE (A. Mazzoni)

15:00-15:30 GPS meteorology with single frequency receivers (Z. Deng)

15:30-16:00 Ionosphere corrections for single-frequency GNSS receivers time and spatial variations of TEC observed with the Uji network (Y. Takeda)

16:00-16:30 *Coffee break*

- **SAR troposphere products, analysis and methods**

16:30-17:00 Atmospheric water-vapour from spaceborne Interferometric SAR imaging (N. Pierdicca)

17:00-17:30 Generation of water-vapor maps from geostationary SAR (A. Monti Guarnieri)

## Wednesday 24 10:00 – 13:00 DEIB – Seminar Room

- **NWP models**

10:00-10:30 InSAR data applications in NWP models: past and future (I. Maiello)

10:30-11:00 Preliminary studies on the integration of GPS and ECMWF to derive high spatial and temporal resolution water vapor maps (M. Capponi)

11:00-11:30 *Coffee break*

- **Innovative GNSS data processing and analyses**

11:30-12:00 Atmospheric water vapor monitoring from local GNSS networks: comparisons of GNSS data adjustment strategies (G. Venuti)

12:00-12:30 A non-tomographic estimation of 4D water vapor variation using the ground observation networks of specific humidity and GNSS (Y. Shoji)

12:30-13:00 Multi-GNSS activity at GFZ (Z. Deng)

## Wednesday 24 14:30 – 16:30 DEIB – Seminar Room

- **GNSS radio-occultation**

14:30-15:00 Gravity waves in the stratosphere with COSMIC GPS-RO data (T. Tsuda)

- **Ground-based measurements**

15:00-15:30 Measurements of atmospheric temperature and water vapor with a ground-based Raman lidar (Y. Okatani)

15:30-16:00 *Coffee break*

- **Round table on future collaborations and funding opportunities (e.g. H2020)**

16:00-16:30 Open discussion (moderator: A. Monti-Guarnieri)



## Politecnico di Milano - Dipartimento di Elettronica, Informazione e Bioingegneria- Bldg 20

Conference Room is at ground floor, entrance on the right of the building

### How to reach us by public transportation

- From **Central Station** (train station - FS): take subway line 2 (green line) toward Piola (Cologno/Gobba/Gessate direction). Get off the subway at Piola, leaving the subway station follow the indications toward Politecnico. In piazza Leonardo da Vinci keep going following via Bonardi (the street with cable cars in the middle). At the streetlight, cross the street and turn right in via Ponzio and take the first small closed road on the left - via Ponzio no. 34.
- From **Malpensa airport**: take Malpensa Express train to Milan, Central Station (prices and timetables at <http://www.malpensaexpress.it/>). Once there, take subway line 2 (green line) and follow the above indications. The approximate time to reach the Department is 1 hour and a half. As a further option, there are bus services (<http://www.milanomalpensa1.eu/pullman>) from the airport to Central Station (train station): this second trip usually takes longer.
- From **Linate airport**: Take bus No. 73 to via Campania (ask the driver for the correct stop), then bus No. 93 to via Ponzio (bus direction toward Piazzale Loreto). Get off the bus at Ponzio/Bassini stop. Approximately 20 meters back on the same sidewalk, the first small closed road on the left is via Ponzio no. 34

From **Orio al Serio airport**: Take a shuttle bus (<http://www.orioaeroporto.it/shuttle>) to Milan, Central Station. Once there, take subway line 2 (green line) and follow the above indications "From Central Station".

### How to reach us by taxi

It is a 10-15 min. trip from Linate airport and from Central Station. It takes about 1 hour from Malpensa airport. Approximate costs: about 12-15 Euro from Linate, 90 Euro from Malpensa, about 12-15 Euro from Central Station. Advice the driver that via Ponzio 34/5 is a small road starting from Via Ponzio, behind the Politecnico main buildings, and that the Department is in front