

6th Satellite Soil Moisture Validation and Application Workshop



**June 7-9th
2022
Perugia
Italy**



Consiglio Nazionale delle Ricerche



Istituto di Ricerca per la Protezione Idrogeologica

WELCOME TO PERUGIA!

Dear friends and colleagues,

We are very much honoured to welcome all of you to Perugia, in the very "green" centre of Italy.

The purpose of the 6th Satellite Soil Moisture and Application Workshop is to discuss and reconcile recent methodological advances in the development, validation and application of global satellite soil moisture observations.

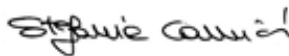
The workshop series is unique as it brings together satellite soil moisture users and developers with the aim of deriving and exploiting soil moisture from passive and active microwave satellite missions/sensors (SMAP, SMOS, ASCAT, AMRS-2, Sentinel-1, and other legacy missions) as well as optical instruments (e.g., MODIS, Sentinel-2, and others).

Please feel free to contact any member of the organizing committee for information or support, to make your stay in Perugia more comfortable and enjoyable!



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PROGRAM

6th Satellite Soil Moisture Validation and Application Workshop

Day 1 - 7th June 2022, 15:00-19:00

Venue: Sala dei Notari, Piazza IV Novembre - Perugia

From 14:00 Registration

PLENARY SESSION Chair : L. Brocca, G. De Lannoy

15:00: Welcome

1. *Subsurface scattering effects on ascat and sentinel-1 soil moisture retrievals*
(**W. Wagner**)
2. *Assimilating passive microwave data from SMOS and SMAP to improve groundwater estimates in boreal and tropical peatlands* (**G. De Lannoy**)
3. *Satellite-derived soil moisture assimilation and Bias correction at ECMWF*
(**D. Fairbairn**, online)
4. *Diagnosing and correcting systematic land modelling errors using remotely sensed soil moisture products* (**W. Crow**, online)
5. *Revisiting the representativeness of microwave radiometry-based soil moisture products* (**D. Entekhabi**, online)
6. *SMOS-lessons learned after more than 12 years in space* (**Y. Kerr**)
7. *The CIMR mission: opportunities for soil moisture remote sensing and applications*
(**M. Piles**, online)
8. *20 years of research in soil moisture* (**L. Brocca**)

19:30 Ice breaker (Tasty appetizers) c/o Umbrò Cafè, Via Sant'Ercolano 4

Day 2 - 8th June 2022, 9:00-18:00

Venue: Sina Brufani, Piazza Italia n.12 - Perugia

SESSION 1:

SATELLITE SOIL MOISTURE RETRIEVAL

Block 1 09:00-10:30 Chair : W. Dorigo, E. Tronquo

1. *ESA CCI Soil moisture (W. Dorigo, Invited)*
2. *Observing soil moisture variation with Sentinel-1 interferometry (N. Mira)*
3. *A dinsar scheme for the retrieval of soil moisture and soil depth in arid soils (K. Morrison)*
4. *A self-adaptive downscaling method for surface soil moisture over mountain areas based on vegetation index-land surface temperature feature space (W. Zhao, online)*
5. *Soil moisture retrieval using multistatic l-band SAR and effective roughness modeling (E. Tronquo)*

10:30-11:00 Coffee Break

Block 2 11:00-12:30 Chair : V. Freeman, J. Brombacher

6. *Soil moisture mapping with spire's GNSS-R satellites enhanced by the fusion of cygnss and smap soil moisture data products (V. Freeman)*
7. *Mapping of soil moisture at hig resolution by using AMSR2, Sentinel-1 and machine learning (E. Santi)*
8. *Measuring soil moisture content through thermal infrared and microwave radiation: a comparison (J. Brombacher)*
9. *Operational and Sustainable Soil Moisture from the Muon Small Satellite Constellation (D. Masters)*
10. *Appraising the applicability of optical and SAR remote sensing imagery for farm level soil moisture content estimation (S. S. F. Ali)*

12:45-13:45 Lunch Break c/o Ristorante del Sole, Via della Rupe 1

SESSION 2:

SATELLITE SOIL MOISTURE VALIDATION AND INTERCOMPARISON

Block 1 14:30-16:00

Chair : C. Montzka, B. Bauer-Marschallinger

1. *Activities of WMO soil moisture Expert Team* (**K. Ehlert**, Invited)
2. *A national operational near-real time in situ soil moisture network for Switzerland* (**S. Bircher-Adrot**)
3. *The international soil moisture network is migrating to a new host* (**W. Korres**)
4. *The soil moisture focus area in the CEOS land parameter validation subgroup* (**C. Montzka**)
5. *Evaluating 1-km soil moisture maps in the framework of the ESA CCI* (**R. Madelon**)

16:00-16:30 Coffee Break

SESSION 3:

SATELLITE SOIL MOISTURE APPLICATIONS

Block 1 16:30-18:00

Chair : H. Genet, L. Ciabatta

1. *Implications of satellite forcing data and high resolution satellite soil moisture product on enhanced flood and drought monitoring and forecasting* (**H. Moradkhani**, Invited)
2. *Consequences of permafrost thaw on arctic-boreal soil moisture dynamics: lessons from long-term in situ monitoring, Alaska, Usa* (**H. Genet**)
3. *Characterizing natural variability in complex hydrological systems using Passive Microwave based Climate Data Records: a case study for the Okavango Delta* (**R. Van der Schalie**)

4. *Assessing the impact of environmental factors and design choices on the performance of satellite soil moisture data assimilation* (**Z. Heyvaert**)
5. *A model for shallow landslides occurrence exploiting satellite maps of soil moisture* (**V. Vivaldi**)

**19:30 Conference Dinner c/o Ristorante del Sole (Via della Rupe,1-
www.ristorantesole.com)**

Day 3 - 9th June 2022, 09:00-17:00

Venue: Sina Brufani, Piazza Italia n.12 - Perugia

SESSION 4:

SATELLITE SOIL MOISTURE APPLICATIONS IN AGRICULTURE

Block 1 09:00-10:30 Chair : S. De Roos, S. Camici

1. *Drought monitoring in the Ebro basin based on high-resolution soil moisture* (**M. J. Escorihuela**, Invited)
2. *Global long-term climatological SM2RAIN datasets derived from ESA CCI soil moisture* (**H. Mosaffa**)
3. *Net irrigation requirement under different climate scenarios using aquacrop over Europe* (**L. Busschaert**)
4. *Optimization of backscatter simulations using a regional version of crop model aquacrop and Sentinel-1* (**S. De Roos**)
5. *Assessing the value of (satellite) soil moisture for the estimation of irrigation timing and water volumes* (**L. Zappa**, online)

10:30-11:00 Coffee Break

Block 2 11:00-12:30 Chair : M. Vreugdenhil, C. Massari

1. *Satellite soil moisture and rainfall for yield prediction in water limited regions* (**M. Vreugdenhil**)
2. *Assessment of remote sensing products over agricultural sites in northern Italy based on cosmic-ray neutrons sensing* (**A. Pirola**)
3. *Sentinel-1 data to detect irrigated fields* (**A. Balenzano**, online)
4. *On the potential of Sentinel-1 backscatter to improve land surface model irrigation estimates* (**S. Modanesi**)
5. *Usability of satellite soil moisture for predicting crop yield in the Pannonian basin* (**W. Dorigo**)

12:45-13:45 Lunch Break c/o Ristorante del Sole, Via della Rupe 1

DISCUSSION

Workshop conclusion and recommendations 14:30-17:00

L. Brocca, G. De Lannoy , W. Dorigo ,K. Ehlert, M.J. Escorihuela ,Y. Kerr, W. Wagner.

Chair: K. Scipal

17:30 Perugia City Tour

8-9th June 2022, 09:00-17:30

Venue: Sina Brufani, Piazza Italia n.12 - Perugia

POSTER SESSION

SESSION 1: SATELLITE SOIL MOISTURE RETRIEVAL

- 1. A disaggregation/assimilation combined approach for estimating soil moisture at high spatio-temporal resolution (N. Ojha)*
- 2. Status of Copernicus operations on C-band soil moisture (B. Bauer-Marschallinger)*
- 3. Downscaling the ESA CCI soil moisture: high-resolution and long-term soil moisture data over Europe (L. Zappa)*
- 4. Soil moisture estimation using combined high-resolution C-band Sentinel-1 and I-band alos-2 SAR timeseries over the Apulian tavoliere test Site (D. Mengen)*
- 5. Combining coherent and incoherent change detection for soil moisture retrieval (D. Palmisano)*

SESSION 2:

SATELLITE SOIL MOISTURE VALIDATION AND INTERCOMPARISON

- 1. Influence of in-situ probes characteristics on smos validation results (F. Gibon)*
- 2. Assessing the spatial variability of soil moisture in the proximity of road networks on a large alluvial fan in the himalayan foreland (A. Singh)*
- 3. Fiducial Reference Measurements for Soil Moisture (FRM4SM): towards traceable error characterization of in situ soil moisture data for satellite validation (I. Himmelbauer)*
- 4. Evaluation of satellite-based microwave soil moisture data (SMAP and SMOS) over Iran (M. Jamei)*
- 5. QA4SM - an online validation tool for satellite soil moisture data (W. Preimesberger)*
- 6. Using soil moisture spatiotemporal variability information for mitigating hydrogeological risk: the MITIGO project experience (T. Lacava)*

SESSION 3:

SATELLITE SOIL MOISTURE APPLICATIONS

- 1. Intercomparison of current soil moisture products from remote sensing and modeling over cosmos field sites in Germany (T. Schmidt)*
- 2. Hydrological model calibration using ASCAT derived soil moisture: the impact on discharge predictions (D. Dayal)*
- 3. Evaluating remotely sensed soil moisture for event-based rainfall-runoff model in Godavari basins (I. Sharma)*
- 4. Integrating satellite-based soil moisture to improve the accuracy of real-time precipitation and streamflow estimates (S. Swain)*
- 5. The HSAF operational soil moisture-derived rainfall product (L. Ciabatta)*

SESSION 4:

SATELLITE SOIL MOISTURE APPLICATIONS IN AGRICULTURE

- 1. How much information on irrigation dynamics can be retrieved by satellite soil moisture? (J. Dari)*
- 2. Classification of irrigation systems using soil moisture and actual evapotranspiration (G. Paolini)*

SCIENTIFIC COMMITTEE

Tom Jackson – USDA

Luca Brocca - CNR IRPI

Stefania Camici - CNR IRPI

Michael Cosh – USDA

Wade Crow – USDA

Richard De Jeu – VANDERSAT

Gabrielle De Lannoy – KU-LEUVEN

Dara Entekaby – NASA

Yann Kerr – CESBIO

Viviana Maggioni – GEORGE MASON UNIVERSITY

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Zhiliang Zhu - USGS

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Chiara Corallini - 20evènti

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remote sensing

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