



Mariarosaria Manzo (Naples, Italy, 1973 - 2022) received the Laurea degree (summa cum laude) in mathematics from the University of Naples Federico II, Naples, in 1998, and the Ph.D. degree in methods and technologies for environmental monitoring from the

University of Basilicata, Potenza, Italy, in 2008.

She joined the Istituto per il Rilevamento Elettromagnetico dell'Ambiente (IREA), Italian National Research Council (CNR), Naples, in 2002, where she held the position of Researcher in 2010 and First Researcher in 2021.

She was a Visiting Researcher with the German Aerospace Center (DLR), Oberpfaffenhofen, Germany, in 2004, and the Geodesy Laboratory, University of Miami, Coral Gables, FL, USA, in 2007.

She has been involved in several national and international research projects.

Her research interests were mainly focused on differential SAR interferometry (DInSAR), particularly, on the development of algorithms for the generation of velocity maps and corresponding time series, the applications of such algorithms for the monitoring of surface displacements, such as those produced by subsidence, volcano activity, earthquakes, and landslides, and the development of optimization/inversion algorithms for the analytical modeling of seismic and volcanic sources by using DInSAR and geodetic measurements.

Honorary Session
in Memory of
Mariarosaria Manzo



16 April 2024
Vienna, Austria



Differential Synthetic Aperture Radar
Interferometry for the Investigation of
Earth Surface Dynamics

Intelligence, competence, passion,
courage, poise, firmness, gentleness,
determination and sweetness,
all enclosed in a wonderful smile and
two amazing blue eyes.
All this, and much more, represents
Mariarosaria's legacy



Differential Synthetic Aperture Radar Interferometry for the Investigation of Earth Surface Dynamics

The session is inspired by the themes that characterize the 20-year research activity of Mariarosaria Manzo. Particularly, her scientific contributions were mainly focused on the exploitation of Synthetic Aperture Radar (SAR) data for Earth surface deformation retrieval and investigation through the application of the original Differential SAR Interferometry (DInSAR) technique and the development of advanced DInSAR methods, focused on generation of deformation time series, as for the Small BAseline Subset (SBAS) approach. Several application scenarios and test sites are investigated in the works of Mariarosaria Manzo, focused on Earth deformations induced by: Earthquakes, Volcanic activities, landslides and anthropic activities, such as excavations, just to quote some examples. Moreover, her activities were also devoted to the assessment of the performance of advanced DInSAR techniques and on the development of new algorithmic solutions. The session thus focuses on the latest analyses achieved through the development and/or the exploitation of DInSAR methods for Earth observation.

Oral contributions

A brief overview of the 20-year research activity of Mariarosaria Manzo on Differential SAR Interferometry
R. Lanari

Characterizing volcano deformation with DInSAR and GNSS data: the Sotará Volcano case study
P. A. Euillades, R. Alpala, L. D. Euillades, J. Alpala, P. Rosell, Y. Roa, and M. Battaglia

Rapid geomorphological changes on Stromboli volcano monitored by multi-platform remote sensing data
F. Di Traglia and the Stromboli 2022 research group

New perspectives and challenges on geodetic volcano monitoring using InSAR and last generation interpretation tools
J. Fernandez and A. G. Camacho

Monitoring Based on Differential Radar Interferometry (DInSAR) of the Activity of San Miguel Volcano, El Salvador
A. M. Villalobos, C. Tolomei, P. Euillades, C. Bignami, L. Euillades, and E. Trasatti

Investigating surface deformation with C-Band satellite interferometry in landslide complexes: insights from the Brienz/Brinzauls slope instability, Swiss Alps
A. Manconi, N. Jones, S. Loew, T. Strozzi, R. Caduff, and U. Wegmueller

DInSAR analysis to detect local and regional coseismic ground deformation: insights from the 2016 central Italy Earthquake
M. Porreca, F. Carboni, M. Manzo, E. Valerio, C. De Luca, M. Occhipinti, and M. Ercoli

Cluster analysis of InSAR data for the investigation of groundwater production effects
C. Eid, A. M. G. Navarro, C. Benetatos, and V. Rocca

National programs, achievements and current perspectives at the Italian Space Agency to promote SAR missions, InSAR scientific research and downstream applications
D. Tapete, A. Montuori, M. Virelli, A. Coletta, F. Longo, and S. Zoffoli

Enabling the Forthcoming ROSE-L Sensor for Global Scale 3-D Earth Surface Deformation Retrieval Through a Two-Look ScanSAR Mode Configuration
S. Perna, F. Longo, S. Zoffoli, M. Davidson, L. Iannini, and R. Lanari

Posters on site

The legacy of Mariarosaria Manzo
M. Manunta, P. Berardino, M. Bonano, F. Casu, C. De Luca, R. Lanari, A. Pepe, S. Pepe, S. Perna, P. Tizzani, and G. Zeni

Detailed Slip Distribution Model of the Türkiye-Syria 2023 Seismic Event exploiting SAOCOM-1, Sentinel-1 and ALOS-2 Satellite Imagery
N. Svingkas, P. Striano, S. Atzori, M. Bonano, C. Tolomei, N. Vavlas, A. Kiratzi, F. Casu, C. Bignami, C. De Luca, M. Polcari, M. Franzese, A. Antonioli, M. Manunta, F. Monterroso, Y. Roa, and R. Lanari

SNAP2DQuake: an implemented and automatic tool of ESA SNAP's Python module for DInSAR technique on ground deformation estimation from Sentinel-1 data
M. Occhipinti, F. Carboni, S. Amorini, C. López-Martínez, N. Paltriccia, and M. Porreca

Three-dimensional InSAR displacement profiles exploiting multi-platform SAR acquisitions: Application to the slow-varying landslide of Gorgoglione (Italy)
F. Falabella, A. Perrone, T. A. Stabile, and A. Pepe

Mauna Loa and Kīlauea Elastic volcanic interaction detected via independent component analysis
P. Tizzani, M. Przeor, L. D'Auria, S. Pepe, and I. Cabrera-Pérez

Analysis of DInSAR measurements in volcanic framework through an integrated multiscale approach: the Yellowstone caldera case-study
A. Barone, M. Fedi, A. Pepe, P. Tizzani, and R. Castaldo

Monitoring volcanic areas through the IREA-CNR airborne SAR infrastructure
A. Natale, P. Berardino, A. Di Vincenzo, C. Esposito, R. Lanari, and S. Perna

Identification of phase unwrapping errors through the extension of the temporal coherence factor for redundant sequences of small baseline DInSAR interferograms
G. Onorato, C. De Luca, F. Casu, M. Manunta, M. Yasir, and R. Lanari

National scale full-resolution P-SBAS processing for the investigation of critical infrastructure deformations related to the built-up environment
P. Striano, S. Buonanno, F. Casu, C. De Luca, F. Cotugno, M. Franzese, A. Fusco, M. Manunta, G. Onorato, Y. Roa, M. Virelli, M. Yasir, G. Zeni, I. Zinno, R. Lanari, and M. Bonano

10 Years of Sentinel-1 data exploitation to monitor volcanic and seismic areas through DInSAR techniques
F. Casu and the IREA-CNR Team

