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Francesco Casu

Personal Information

Date of birth: 13/02/1978.

Place of birth: Cagliari (Italy).

Education

02/26/2009 PhD in Electronic and IT Engineering, University of Cagliari (Italy). Advisors Giuseppe Mazzarella and Riccardo Lanari. Dissertation: "The Small BAseline Subset technique: performance assessment and new developments for surface deformation analysis of very extended areas";

04/10/2003 MS in Electronic Engineering (summa cum laude), University of Cagliari (Italy).

Research Experience

- 09/2007 – present** Research Staff, IREA-CNR, Napoli, Italy;
- 07-08/2009** Exchange Visitor, Stanford University (Prof. P. Segall), Palo Alto, California;
- 10/2005** Exchange Visitor, JPL (Dr. P. Lundgren), Pasadena, California;
- 06/2005 - 09/2007** Research Fellowship, IREA-CNR, Napoli, Italy. "Algorithm development and validation to generate deformation time series from interferometric SAR data";
- 11/2004** Exchange Visitor, UT Austin (Prof. S. Buckley), Austin, Texas;
- 05/2004 – 04/2005** Research Fellowship, CRdC-AMRA, Napoli, Italy. "Advanced differential SAR interferometry techniques to monitor Earth's surface deformation";
- 12/2003 – 04/2004** Scholarship, IREA-CNR, Napoli, Italy. "Algorithm development to process multi-pass SAR data to generate high precision DEM";
- 12/2002 - 05/2003** Internship IREA-CNR and University of Cagliari, Italy. "Differential SAR interferometry techniques to monitor Earth's surface deformation".

Teaching Experience

- 09/2012** 12 hours short course on multi-temporal differential SAR interferometry processing, EURAC, Bozen, Italy;
- 05/2011** Lectures in the Remote Sensing and Electromagnetic Diagnostic course, University of Cagliari, Italy;
- 2010** 20 hours short course (IFTS/CIPE) on Active Remote Sensing, Istituto Salesiano "Sacro Cuore" di Napoli Vomero, Napoli, Italy;

- 2009** 20 hours short course (IFTS/CIPE) on InSAR and Advanced-InSAR techniques, Istituto Salesiano "Sacro Cuore" di Napoli Vomero, Napoli, Italy;
- 12/2008** Lectures in the Remote Sensing and Electromagnetic Diagnostic course, University of Cagliari, Italy;
- 12/2006** Lectures in the Remote Sensing and Electromagnetic Diagnostic course, University of Cagliari, Italy;
- 03/12/2004** Tutorial on "Introduction to Synthetic Aperture Radar (SAR systems and SAR Interferometry", IRPI-CNR, Perugia, Italy;
- 02/13/2004** Tutorial on "Training professional on methods and techniques to Earth's observation - COS (OT)", Potenza, Italy.

Recent Activities

Main research interests are in the DInSAR field and in particular in the multi-pass interferometry for what concerns algorithm development and DInSAR time series measurement assessment. I am also involved in the development and application of DInSAR techniques to data acquired by novel generation satellites such as COSMO-SkyMed, TerraSAR-X.

I participated to the research activities of several national and international project (PSIC4, ASI-SIGRIS, ASI-SRV) and I was also the scientific responsible for the IREA-CNR activities carried out in the project "Development and integration of novel EO's techniques to monitor deformation phenomena in the Val d'Agri area" (funded by ENI).

I currently am the IREA-CNR scientific responsible for the activities to be carried out in the FP7 "Helix Nebula - The Science Cloud" and I am also involved in porting the IREA-CNR SBAS software into the cloud platform provided by the ESA CIOP project.

Most relevant ISI Journal Articles

Manconi, A., **Casu, F.** (2012): "Joint analysis of displacement time series retrieved from SAR phase and amplitude: impact on the estimation of volcanic source parameters", *Geophys. Res. Lett.*, 39, L14301, doi: 10.1029/2012GL052202

Casu, F., Manconi, A., Pepe, A., Lanari, R., (2011): "Deformation time-series generation in areas characterized by large displacement dynamics: the SAR amplitude Pixel-Offset SBAS technique", *Trans. Geosci. Remote Sens.*, 49, 8, doi: 10.1109/TGRS.2010.2104325

Shanker, P., **Casu, F.**, Zebker, H. A., Lanari, R. (2011): "Comparison of Persistent Scatterers and Small Baseline Time-Series InSAR Results: A Case Study of the San Francisco Bay Area", 8, 4, *Geosci. Remote Sens. Lett.*, pp. 592-596, doi: 10.1109/LGRS.2010.2095829.

Sansosti, E., **Casu, F.**, Manzo, M., Lanari, R. (2010): "Space-borne radar interferometry techniques for the generation of deformation time series: an advanced tool for Earth's surface displacement analysis", *Geophys. Res. Lett.*, 37, L20305, doi:10.1029/2010GL044379.

Lanari, R., Berardino, P., Bonano, M., **Casu, F.**, Manconi, A., Manunta, M., Manzo, M., Pepe, A., Pepe, S., Sansosti, E., Solaro, G., Tizzoni, P., Zeni, G. (2010): "Surface displacements associated with the L'Aquila 2009 Mw 6.3 earthquake (Central Italy): new evidence from DInSAR time series analysis", *Geophys. Res. Lett.*, 37, L20309, doi:10.1029/2010GL044780.

- Trasatti, E., Cianetti, S., Giunchi, C., Bonafede, M., Piana Agostinetti, N., **Casu, F.**, Manzo, M. (2009): "Bayesian source inference of the 1993-97 deformation at Mount Etna (Italy) by numerical solutions", *Geophys. J. Int.*, 177, pp. 806-814, doi: 10.1111/j.1365-246X.2009.04093.x.
- Neri, M., **Casu, F.**, Acocella, V., Solaro, G., Pepe, S., Berardino, P., Sansosti, E., Caltabianco, Lundgren, P., Lanari, R. (2009): "Deformation and eruptions at Mt. Etna (Italy): A lesson from 15 years of observations", *Geophys. Res. Lett.*, 36, ISSN: 0094-8276, doi: 10.1029/2008GL036151.
- Trasatti, E., **Casu, F.**, Giunchi, C., Pepe, S., Solaro, G., Tagliaventi, S., Berardino, P., Manzo, M., Pepe, A., Ricciardi, G. P., Sansosti, E., Tizzani, P., Zeni, G., and Lanari, R. (2008): "The 2004-2006 uplift episode at Campi Flegrei caldera (Italy): Constraints from SBAS-DInSAR ENVISAT data and Bayesian source inference", *Geophys. Res. Lett.* 35, L073078, doi: 10.1029/2007GL033091.
- Casu, F.**, Manzo, M., Pepe, A., and Lanari, R. (2008): "SBAS-DInSAR Analysis of Very Extended Areas: First Results on a 60,000 km² Test Sites", *IEEE Geosci. Remote Sens. Letters*, vol. 5, no. 3, doi: 10.1109/LGRS.2008.916199.
- Lanari, R., **Casu, F.**, Manzo, M., and Lundgren, P. (2007): "Application of the SBAS-DInSAR technique to fault creep: a case study of the Hayward fault, California", *Remote Sensing of Environment*, 109, pp. 20-28, doi: 10.1016/j.rse.2006.12.003.
- Gourmelen, N., Amelung, F., **Casu, F.**, Manzo, M., and Lanari, R. (2007): "Mining-related ground deformation in Crescent Valley, Nevada: Implications for sparse GPS networks", *Geophys. Res. Lett.*, 34, L09309, doi:10.1029/2007GL029427.
- Tizzani, P., Berardino, P., **Casu, F.**, Euillades, P., Manzo, M., Ricciardi, G. P., Zeni, G., and Lanari, R. (2007): "Surface deformation of Long Valley caldera and Mono Basin, California, investigated with the SBAS-InSAR approach", *Remote Sensing of Environment*, 108, pp. 277-289, doi: 10.1016/j.rse.2006.11.015.
- Lanari, R., **Casu, F.**, Manzo, M., Zeni, G., Berardino, P., Manunta, M., and Pepe, A. (2007): "An Overview of the Small BAseline Subset Algorithm: a DInSAR Technique for Surface Deformation Analysis", *Pure Appl. Geophys.*, 164, pp. 637-661, doi: 10.1007/s00024-007-0192-9.
- Casu F.**, Manzo M., and Lanari R. (2006): "A quantitative assessment of the SBAS algorithm performance for surface deformation retrieval from DInSAR data", *Remote Sensing of Environment*, 102, 3-4, pp. 195-210, doi: 10.1016/j.rse.2006.01.023.
- Borgia, A., Tizzani, P., Solaro, G., Manzo, M., **Casu, F.**, Luongo, G., Pepe, A., Berardino, P., Fornaro, G., Sansosti, E., Ricciardi, G. P., Fusi, N., Di Donna, G., and Lanari, R. (2005): "Volcanic spreading of Vesuvius, a new paradigm for interpreting its volcanic activity", *Geophys. Res. Lett.*, 32, L03303, doi: 10.1029/2004GL022155.
- Lundgren, P., **Casu, F.**, Manzo, M., Pepe, A., Berardino, P., Sansosti, E., and Lanari, R. (2004): "Gravity and magma induced spreading of Mount Etna volcano revealed by satellite radar interferometry", *Geophys. Res. Lett.*, 31, L04602, doi: 10.1029/2003GL018736.