



Laura Dente

EDUCATION AND TRAINING

PhD

University of Twente, ITC department [01/09/2006 – 28/04/2016]

Address: Enschede (Netherlands)

Thesis: Title of thesis: "Microwave remote sensing for soil moisture monitoring: synergy of active and passive observations and validations of retrieved products"

Laurea in Physics (equivalent to Master's Degree)

University of Bari [09/1992 – 06/2000]

Address: Bari (Italy)

Thesis: Title of thesis: "Cassini Radar: analysis of Earth flyby data and simulation of Titan flybys' data"

WORK EXPERIENCE

Research fellow (Assegno di ricerca)

Tor Vergata University [01/05/2016 – 15/07/2022]

Address: Via del Politecnico 1, 00133 Rome (Italy)

City: Rome

Country: Italy

Main activities:

- Modelling of GNSS-R data from airborne and spaceborne sensors for land applications
- Development and validation of electromagnetic scattering model and signal simulator (Soil And VEgetation Reflection Simulator)
- Validation of SAVERS against TDS-1 and CYGNSS data
- Development and validation of HSAVERS for the End-To-End Simulator of Hydrognss
- Contribution to external projects:
 - 1) COREGAL Combined Positioning-Reflectometry Galileo Code Receiver for Forest Management (Horizon 2020, 2015-2017)
 - 2) Potential of Spaceborne GNSS-R for Land Applications (ESA/ESTEC n. 4000120299/17/NL/AF/hh)
 - 3) ECOLOGY Exploiting CYGNSS GNSS-R over Land and Ocean for Geophysics (ESA/ESTEC project)
 - 4) HydroGNSS Scout Study (ESA/ESTEC n. 4000129140/19/NL/CT)

Trainee Research Assistant/PhD researcher (AIO)

University of Twente [01/10/2006 – 15/05/2012]

Address: Hengelosestraat 99, 7514AE Enschede (Netherlands)

City: Enschede

Country: Netherlands

Name of unit or department: Faculty of Geo-Information Science and Earth Observation (ITC) Water Resources Department - **Business or sector:**

Main activities:

- Research in the topic: synergistic use of satellite active and passive microwave data to retrieve soil moisture
- Fieldwork, set up and maintenance of large soil moisture networks in China and The Netherlands
- Processing and analysis of in situ and satellite data time series
- Validation of soil moisture products obtained from ASCAT, ERS, AMSR-E, SMOS satellite
- Study and application of Tor Vergata microwave scattering model

- Contribution to external projects:

- 1) CEOP-AEGIS Coordinated Asia-European long-term Observing system of Qinghai – Tibet Plateau hydrometeorological processes and the Asian-monsoon system with Ground satellite Image data and numerical Simulations (EU FP7, 2008-2012)
 - 2) Drought monitoring, prediction and adaptation under climatic changes (ESA-MOST Dragon Programme II, 2008-2011)
- Taking courses (spatial and temporal statistics, IDL programming, teaching and learning in high education, SMOS data training course)
- Supervising MSc students, presenting lectures, preparing and supervising practical exercises for MSc students and training courses

Research fellow (Assegno di ricerca)

Italian National Research Council- Istituto di Studi sui Sistemi Intelligenti per l'Automazione (CNR) [07/01/2003 – 15/09/2006]

Address: Via Amendola 122/D, 70126 Bari (Italy)

City: Bari

Country: Italy

Main activities:

- Retrieval of bio- and geophysical parameters from C-band SAR data.
- Assimilation of the information retrieved from radar data into agronomical models.
- Processing and analysis of SAR data.
- Participation and organisation of measurement campaigns over agricultural fields and analysis of in situ data.
- Study of microwave scattering models over bare and vegetated fields.
- Contribution to external projects:
 - 1) Development of SAR inversion algorithms for land applications (ESA/ESTEC n. 17011/02/NL/JA, 2003-2005)
 - 2) Exploiting longer wavelength SAR data for the improvement of surface process modelling (ESA/ESTEC n. 19558/06/NL/HE, 2006-2007)
 - 3) AQUATER Resources at irrigation district scale in Southern Italy using remote sensing information: an integrated project (Italian Ministry of Agricultural and Forestry Policies n. 209/7303/05, 2005-2008)

Young Graduate Trainee

European Space Agency (ESA-ESTEC), Earth Observation Future Programmes Department [01/10/2001 – 01/10/2002]

City: Noordwijk

Country: Netherlands

Main activity:

- Processing of ERS SAR data timeseries over Flevoland and retrieval of soil moisture.

Software engineer

Advanced Computer Systems (ACS), Earth Observation Division [01/01/2001 – 01/08/2001]

City: Rome

Country: Italy

Main activities:

- Training on IDL/ENVI programming
- Development of software for SAR image processing.

Research fellow

Bari University, Physics Department Remote Sensing Group [01/07/2000 – 15/12/2000]

City: Bari

Country: Italy

Main activity:

- Analysis of acquired and simulated data of Cassini Radar.

LANGUAGE SKILLS

Mother tongue(s): **Italian**

Other language(s):

English

LISTENING B2 READING C1 WRITING C1

SPOKEN PRODUCTION C1 SPOKEN INTERACTION C1

Dutch

LISTENING B1 READING B1 WRITING B1

SPOKEN PRODUCTION B1 SPOKEN INTERACTION B1

DIGITAL SKILLS

My Digital Skills

Microsoft Office / Programming languages: Matlab, IDL/ENVI

PUBLICATIONS

1) Pierdicca N., Comite D., Camps A., Carreno-Luengo H., Cenci L., Clarizia M.P., Costantini F., Dente L., Guerriero L., Mollfulleda A., Paloscia S., Park H., Santi E., Zribi M., Flourey N., "The potential of spaceborne GNSS reflectometry for soil moisture, biomass, and freeze-thaw monitoring : summary of a European Space Agency-funded study"

IEEE Geoscience and Remote Sensing Magazine, vol. 10, no. 2, pp. 8-38, 2022

2) Santi E., Clarizia M.P., Comite D., Dente L., Guerriero L., Pierdicca N., "Detecting fire disturbances in forests by using GNSS reflectometry and machine learning : A case study in Angola"

Remote Sensing of Environment, vol. 270, 112878, 2022

3) Dente L., Guerriero L., Comite D., Pierdicca N., "Space-borne GNSS-R signal over a complex topography: modelling and validation"

IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing, vol. 13, 2020

4) Comite D., Dente L., Guerriero L., Pierdicca N., "Electromagnetic modeling of scattered signals of opportunity: Challenges and approaches"

URSI Radio Science Bulletin, vol. 373, 2020

5) Santi E., Paloscia S., Pettinato S., Fontanelli G., Clarizia M.P., Comite D., Dente L., Guerriero L., Pierdicca N., Flourey N., "Remote sensing of forest biomass using GNSS Reflectometry"

IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing, vol. 13, 2020

6) Comite D., Ticconi F., Dente L., Guerriero L., Pierdicca N., "Bistatic Coherent Scattering from Rough Soils with Application to GNSS Reflectometry,"

IEEE Transactions on Geoscience and Remote Sensing, vol. 58, 2019

7) Dente L., Ferrazzoli P., Su Z., van der Velde R., Guerriero L., "Combined use of active and passive microwave data to constrain a discrete scattering model"

Remote Sensing of Environment, vol. 155, 2014

8) Dente L., Vekerdy Z., de Jeu R., Su Z., "Seasonality and autocorrelation of remotely sensed soil moisture products"

International Journal of Remote Sensing, vol. 34, 9-10, 2013

9) Dente L., Vekerdy Z., Wen J., Su B., "Maqu network for validation of satellite-derived soil moisture products"

International Journal of Applied Earth Observation and Geoinformation, vol. 17, 2012

10) Dente L., Su Z. and Wen J., "Validation of SMOS soil moisture products over the Maqu and Twente regions"

Sensors, open access, vol. 12, 8, 2012

11) Su Z., Wen J., Dente L., van der Velde R., Wang L., Ma Y., Yang K., Hu Y., "A plateau scale soil moisture and soil temperature observatory for quantifying uncertainties in coarse resolution satellite products"

Hydrology and Earth System Sciences Discussion, 8, 2011

12) Dente L., Satalino G., Mattia F., Rinaldi M., "Assimilation of leaf area index derived from ASAR and MERIS data into CERES - wheat model to map wheat yield"

Remote sensing of environment, vol. 112, 2008

13) Dente L., Rinaldi M., Mattia F., Satalino G., "Assimilation of polarimetric C-band radar data into CERES-Wheat model"

AITinforma, Rivista Italiana di Telerilevamento, n. 35, 2006

14) Mattia F., Satalino G., Dente L., Pasquariello G., "Using a priori information to improve soil moisture retrieval from ASAR AP data in semi-arid regions"

IEEE Trans. on Geosc. Rem. Sens., vol. 44, no. 4, 2006

15) Della Vecchia A., Ferrazzoli P., Guerriero L., Blaes X., Defourny P., Dente L., Mattia F., Satalino G., Strozzi T., Wegmuller U., "Influence of geometrical factors on crop backscattering at C band"

IEEE Trans. on Geosc. Rem. Sens., vol. 44, no. 4, 2006

16) R.D. Lorenz, C. Elachi, R.D. West, W.T.K. Johnson, M.A. Janssen, M. Moghaddam, G.A. Hamilton, O. Liepack, A. Bunker, L.E. Roth, S.D. Wall, L. Dente, D. Casarano, F. Posa, "Cassini Radio Detection and Ranging (RADAR): Earth and Venus Observations"

Journal of Geophysical Research, vol. 106, No. A12, 2001