

# Donato Amitrano

Research Associate  
Surrey Space Centre  
University of Surrey

## Personal information

Birth  
Address

## Education

- 4/2016 **PhD in Electronic and Telecommunication Engineering**, *University of Napoli Federico II, Department of Electrical Engineering and Information Technology, Napoli, Italy.*  
Thesis title: *An End-User Oriented Framework for the Understanding of Synthetic Aperture Radar Images.* Advisor: Prof. Daniele Riccio
- 4/2013 **Industrial Engineer Licence**, *University of Napoli Federico II, Napoli, Italy.*
- 3/2012 **Master's degree in Aerospace and Astronautical Engineering**, *University of Napoli Federico II, Napoli, Italy.*  
Thesis title: *Interferometric processing of high resolution COSMO-SkyMed data for DEM generation: a case study in Burkina Faso.* Advisors: Prof. Antonio Moccia and Prof. Giuseppe Ruello.
- 1/2009 **Bachelor's degree in Aerospace Engineering**, *University of Napoli Federico II, Napoli, Italy.*  
Thesis title: *Ricostruzione ed analisi di incidenti aerei: il caso studio dell'aliante acrobatico Grob G103C Twin Astir Acro.* Advisor: Prof. Agostino De Marco

## Training

- 9/2015 6th ESA Advanced Land Training Course, *Bucharest, Romania.*
- 9/2014 International Summer School on "Data Fusion of Risk-related Remotely Sensed and Geospatial Data", *Pavia, Italy.*

## Experience

- From 5/2018 **Research Associate**, *Surrey Space Centre, University of Surrey, Guildford, UK.*
- Supervision of PhD and Master students
  - Preparation and delivering of academic and training courses to private companies and projects' stakeholders
  - S-band SAR remote sensing: Preliminary evaluation NovaSAR data exploitability in applications
  - Glaciers and landslides monitoring using frequency domain SAR pixel-offset tracking
  - Developed Detected Level-1 $\alpha$  products, a new family of model-based, end-user-oriented multitemporal SAR products for change-detection applications built starting from detected images
  - Monitoring of natural land cover and natural hazards through SAR and multispectral data fusion

- From 5/2016 to 4/2018 **Research Fellow**, *University of Naples Federico II, Department of Electrical Engineering and Information Technology*, Napoli, Italy.
- Developed Level-1 $\beta$  products, a new family of model-based, end-user-oriented multitemporal SAR products for classification applications
  - EO techniques for railway monitoring
  - Application of object-based image analysis to SAR data
  - New techniques for flood mapping using single SAR images and change-detection frameworks
  - Landslide monitoring using sub-pixel offset tracking
  - Shallow networks for information extraction from SAR data, integration of GEOBIA and computer vision methodologies with classic SAR practices
- From 4/2013 to 4/2016 **Phd Student**, *University of Naples Federico II, Department of Electrical Engineering and Information Technology*, Napoli, Italy.
- Developed Level-1 $\alpha$  products, a new family of model-based, end-user-oriented multitemporal SAR products for change-detection applications
  - Remote sensing techniques for developing countries: water resources management and environmental monitoring, small reservoirs bathymetry, water bodies detection
  - Multitemporal SAR: Fusion, representation, visualization, mining and interpretation of time series data, change-detection
  - SAR classification: design of an end-users-oriented framework based on the Level-1 $\alpha$  products and simple decision rules
  - SAR interferometry and differential interferometry: development of a free automatic processing chain for Digital Elevation Models (DEMs) generation and deformation mapping
  - Machine learning and machine intelligence: image understanding systems, Marr's computational theory of vision, unsupervised data clustering, self-organizing maps
- 10/2015 **Lecturer**, *Centro Regionale Information Communication Technology, CeRICT srl*, Benevento, Italy.
- Lecturer for a 34-hours course on remote sensing and synthetic aperture radar data processing. The course has been supplied to MBDA Italia scholarship fellows under the aegis of the project "TELEMACO - Formazione di personale di ricerca esperto di Tecnologie abilitanti e sistemi innovativi a scansione elettronica del fascio in banda millimetrica e centimetrica per applicazioni radar a bordo di velivoli" (PON03PE\_00112)
- From 9/2012 to 4/2013 **Consultant**, *University of Naples Federico II, Department of Electrical Engineering and Information Technology*, Napoli, Italy.
- Intelligent Data Extraction System (IDES) Project: detection and prevention of environmental crimes through remotely sensed data
  - Code development and optimization
- From 9/2011 to 3/2012 **Intern**, *University of Naples Federico II, Department of Electrical Engineering and Information Technology*, Napoli, Italy.
- Extracted a high resolution DEM from COSMO-SkyMed data
  - SAR interferometry
- From 9/2008 to 1/2009 **Intern**, *University of Naples Federico II, Department of Aerospace Engineering*, Napoli, Italy.
- Simulated dynamic loads acting on the horizontal and vertical tails during acrobatic maneuvers on a sailplane.
  - Built a SIMULINK model for flight simulation of a sailplane
  - Reconstruction and analysis of air crashes

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## Projects

- 2019 SAR Monitoring of a Hydrocarbon Release Test. Funded by a worldwide leader oil corporation.

- 2018-19 UK Space Agency International Partnership Programme - Space Enabled Monitoring of Illegal Gold Mining. Funded by the UK Space Agency.
- 2017 POR Campania FSE 2014-2020 - Sviluppo di Metodologie e Tecniche per Applicazioni di Telerilevamento al Monitoraggio Ferroviario (English title: Development of new remote sensing methods and techniques for railway monitoring). Funded by Regione Campania.
- 2016 MoDiSTA - Soluzioni innovative per il monitoraggio e la diagnostica preventiva di infrastrutture e flotte di veicoli da remoto al fine di elevare i livelli di disponibilità, efficienza e sicurezza dei sistemi ferroviari (English title: Innovative solution for remote monitoring and diagnostics of infrastructures and fleet of vehicles with the purpose of increasing availability, effectiveness, and security of railway systems). Funded by the Italian Ministry of University and Research.
- 2015 Models and techniques for COSMO-SkyMed data use in water management applications in semi-arid regions. Funded by the Italian Space Agency.
- 2014-15 WARM-SAR - Water resources management in semi-arid environment using synthetic aperture radar. Funded by the Italian Space Agency.
- 2014 IDES - Intelligent data extraction system. Funded by Regione Campania.

## Bibliometric data

Citations Scopus: 256, Google Scholar: 305  
 h-index Scopus: 10, Google Scholar: 11

## Languages

Italian Mother tongue  
 English Professional working proficiency

## Computer skills

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|-----------|-----------------------------|-----------|---------------------|
| Excellent | MATLAB, IDL, ENVI, SARscape | Very Good | $\LaTeX$ , ESA snap |
| Good      | ArcGIS,eCognition           | Basic     | SIMULINK            |

## Expertise

- Remote sensing
- Multitemporal SAR
- SAR interferometry and differential interferometry, offset tracking
- SAR data processing, understanding, fusion, interpretation, and mining
- Machine learning and machine intelligence
- Code development and optimization

## Teaching

- 3/2019 Lecturer for the course "Earth Observation and Synthetic Aperture Radar Training" provided to Colombian stakeholders in the framework of the UK-IPP Project "Space Enabled Monitoring of Illegal Gold Mining", *Universidad del Rosario, Bogota, Colombia*.

- 9/2018 Lecturer for the course "Spaceborne SAR System Technology and Advanced Techniques Workshop" provided to a leader Asian space corporation, *University of Surrey, Guildford, UK*.
- 10/2015 Lecturer for a 34-hours course on remote sensing and synthetic aperture radar data processing, *MBDA, Bacoli, Italy*.

## Service

Member of the scientific committee for the conferences

- IEEE Global Humanitarian Technology Conference 2019 (IEEE GHTC 2019)
- 3rd International Forum on Research and Technologies for Society and Industry (IEEE RTSI 2017)

Invited reviewer for the journals: *IEEE Transactions on Geoscience and Remote Sensing, IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing, IEEE Geoscience and Remote Sensing Letters, IEEE Signal Processing Letters, Remote Sensing, International Journal of Remote Sensing, Remote Sensing Letters, European Journal of Remote Sensing, International Journal of Applied Earth Observation and Geoinformation, International Journal of Geo-Information*.

- 2015 Invited reviewer in the framework of the "STEREO III - Support to the Exploration and Research of Earth Observation Data" Programme of the Belgian Science Policy Office.

From 10/2014 to 4/2016 Elected member of the "Commissione Paritetica" of the Department of Electrical Engineering and Information Technology, University of Napoli Federico II, for evaluation and quality control of didactics and services provided by the Institution.

From 5/2014 to 4/2016 Elected member of the Council of the Department of Electrical Engineering and Information Technology, University of Napoli Federico II, as delegate of PhD students.

## Awards

- 4/2018 Seal of excellence received (with team) from the European Commission in the framework of the H2020 SME Instrument call for presenting a proposal scored as a high-quality project proposal in a highly competitive evaluation process.
- 9/2017 Second place (with team) in the 2017 ESA Copernicus Masters challenge "University Challenge".
- 9/2017 Finalist (with team) in the 2017 ESA Copernicus Masters challenge "Disaster Management Challenge by Astrosat".
- 5/2017 Winner (with team) of the ESA BIC Lazio Selection Campaign n.50 for the best business idea in the space sector.
- 9/2016 Finalist (with team) in the 2016 ESA Copernicus Masters challenge "The BMVI Earth Observation Challenge for Digital Transport Applications".
- 9/2014 Finalist (with team) in the 2014 ESA Copernicus Masters challenge "Radar Constellation Challenge".

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## Talks

- 10/2017 Telerilevamento e cambiamento climatico (English title: Remote sensing and climate change), *Fab Space 2.0 Training*, ESA BIC Lazio, Rome, Italy.
- 3/2017 New perspectives for multitemporal SAR data analysis: Representation, understanding, and value-added-products, *Remote Sensing Colloquium*, University of Zurich, Zurich, Switzerland.

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## Publications

### Journal articles

- [1] D. Amitrano, R. Guida, and G. Ruello, "Multitemporal SAR RGB Processing for Sentinel-1 GRD Products: Methodology and Applications," *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, vol. 12, no. 5, pp. 1497–1507, 2019.
- [2] D. Amitrano, R. Guida, D. Dell'Aglio, G. D. Martino, D. D. Martire, A. Iodice, M. Costantini, F. Malvarosa, and F. Minati, "Long-Term Satellite Monitoring of the Slumgullion Landslide Using Space-Borne Synthetic Aperture Radar Sub-Pixel Offset Tracking," *Remote Sensing*, vol. 11, no. 3, p. 369, 2019.
- [3] D. Amitrano, R. Guida, G. D. Martino, and A. Iodice, "Glacier Monitoring Using Frequency Domain Offset Tracking Applied to Sentinel-1 Images: A Product Performance Comparison," *Remote Sensing*, vol. 11, no. 11, p. 1322, 2019.
- [4] D. Amitrano, F. Cecinati, G. D. Martino, A. Iodice, P.-P. Mathieu, D. Riccio, and G. Ruello, "Feature Extraction From Multitemporal SAR Images Using Selforganizing Map Clustering and Object-Based Image Analysis," *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, vol. 11, no. 5, pp. 1556–1570, 2018.
- [5] D. Amitrano, G. D. Martino, A. Iodice, D. Riccio, and G. Ruello, "Unsupervised Rapid Flood Mapping Using Sentinel-1 GRD SAR Images," *IEEE Transactions on Geoscience and Remote Sensing*, 2018.
- [6] D. Amitrano, G. D. Martino, A. Iodice, D. Riccio, and G. Ruello, "Small Reservoirs Extraction in Semiarid Regions Using Multitemporal Synthetic Aperture Radar Images," *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, vol. 10, no. 8, pp. 3482–3492, 2017.
- [7] F. Mitidieri, M. N. Papa, D. Amitrano, and G. Ruello, "River morphology monitoring using multitemporal SAR data: preliminary results," *European Journal of Remote Sensing*, vol. 49, pp. 889–898, 2016.
- [8] D. Amitrano, G. Di Martino, A. Iodice, D. Riccio, and G. Ruello, "RGB SAR Products: Methods and Applications," *European Journal of Remote Sensing*, vol. 49, pp. 777–793, 2016.
- [9] D. Amitrano, F. Cecinati, G. Di Martino, A. Iodice, P.-P. Mathieu, D. Riccio, and G. Ruello, "Multitemporal Level-1 $\beta$  Products: Definition, Interpretation, and Applications," *IEEE Transactions on Geoscience and Remote Sensing*, vol. 54, no. 11, pp. 6545–6562, 2016.
- [10] D. Amitrano, V. Belfiore, F. Cecinati, G. Di Martino, A. Iodice, P.-P. Mathieu, S. Medagli, D. Poreh, D. Riccio, and G. Ruello, "Urban Areas Enhancement in Multitemporal SAR

RGB Images Using Adaptive Coherence Window and Texture Information," *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, vol. 9, no. 8, pp. 3740–3752, 2016.

- [11] D. Amitrano, G. Di Martino, A. Iodice, D. Riccio, and G. Ruello, "An end-user-oriented framework for the classification of multitemporal SAR images," *International Journal of Remote Sensing*, vol. 37, no. 1, pp. 248–261, 2016.
- [12] A. Errico, C. V. Angelino, L. Cicala, G. Persechino, C. Ferrara, M. Lega, A. Vallario, C. Parente, G. Masi, R. Gaetano, G. Scarpa, D. Amitrano, G. Ruello, L. Verdoliva, and G. Poggi, "Detection of environmental hazards through the feature-based fusion of optical and SAR data: a case study in southern Italy," *International Journal of Remote Sensing*, vol. 36, no. 13, pp. 3345–3367, 2015.
- [13] D. Amitrano, G. Di Martino, A. Iodice, D. Riccio, and G. Ruello, "A New Framework for SAR Data RGB Multitemporal Representation: Rationale and Products," *IEEE Transactions on Geoscience and Remote Sensing*, vol. 53, no. 1, pp. 117–133, 2015.
- [14] D. Amitrano, G. Di Martino, A. Iodice, F. Mitidieri, M. N. Papa, D. Riccio, and G. Ruello, "Sentinel-1 for Monitoring Reservoirs: A Performance Analysis," *Remote Sensing*, vol. 6, no. 11, pp. 10676–10693, 2014.
- [15] D. Amitrano, F. Ciervo, G. Di Martino, M. N. Papa, A. Iodice, Y. Koussoube, F. Mitidieri, D. Riccio, and G. Ruello, "Modeling Watershed Response in Semi-Arid Regions with High Resolution Synthetic Aperture Radars," *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, vol. 7, no. 7, pp. 2732–2745, 2014.
- [16] R. Gaetano, D. Amitrano, G. Masi, G. Poggi, G. Ruello, L. Verdoliva, and G. Scarpa, "Exploration of Multitemporal COSMO-SkyMed Data Via Tree-Structured MRF Segmentation," *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, vol. 7, no. 7, pp. 2763–2775, 2014.
- [17] D. Amitrano, G. Di Martino, A. Iodice, D. Riccio, G. Ruello, M. N. Papa, F. Ciervo, and Y. Koussoube, "Effectiveness of high resolution sar for water resource management in low-income semi-arid countries," *International Journal of Remote Sensing*, vol. 35, no. 1, pp. 70–88, 2014.

#### Confernece proceedings

- [1] D. Amitrano, R. Guida, and P. Iervolino, "High-Level Semantic Land Cover Classification of Multitemporal SAR Images Using Synergic Pixel-Based and Object-Based Methods," in *IEEE International Geoscience and Remote Sensing Symposium*, (Yokohama, Japan), August 2019.
- [2] P. Iervolino, R. Guida, D. Amitrano, and A. Marino, "SAR Ship Detection for Rough Sea Conditions," in *IEEE International Geoscience and Remote Sensing Symposium*, (Yokohama, Japan), August 2019.
- [3] F. Cecinati, D. Amitrano, L. Benevides Leoncio, E. Walugendo, R. Guida, P. Iervolino, and S. Natarajan, "Exploitation of ESA and NASA Heritage Remote Sensing Data for the Monitoring of the Heat Island Evolution in Chennai with the Google Earth Engine," in *IEEE International Geoscience and Remote Sensing Symposium*, (Yokohama, Japan), August 2019.

- [4] D. Amitrano, G. Di Martion, A. Iodice, D. Riccio, and G. Ruello, "Flood mapping using Sentinel-1 SAR detected images," in *XXII Riunione Nazionale di Elettromagnetismo*, (Cagliari, Italy), September 2018.
- [5] D. Amitrano, M. Costantini, D. Dell'Aglio, A. Iodice, F. Malvarosa, F. Minati, D. Riccio, and G. Ruello, "Landslide monitoring using SAR sub-pixel offset tracking," in *IEEE 4th International Forum on Research and Technologies for Society and Industry*, (Palermo, Italy), September 2018.
- [6] D. Amitrano, F. Cecinati, G. Di Martino, A. Iodice, P.-P. Mathieu, D. Riccio, and G. Ruello, "Integration of SAR and GEOBIA for the analysis of time-series data," in *IEEE International Geoscience and Remote Sensing Symposium*, (Valencia, Spain), July 2018.
- [7] D. Amitrano, G. Di Martino, A. Iodice, D. Riccio, and G. Ruello, "A novel tool for unsupervised flood mapping using Sentinel-1 images," in *IEEE International Geoscience and Remote Sensing Symposium*, (Valencia, Spain), July 2018.
- [8] D. Amitrano, G. Di Martino, F. Mitidieri, A. Iodice, M. N. Papa, D. Riccio, and G. Ruello, "Mapping small reservoirs in semi-arid regions using multitemporal SAR: methods and applications," in *9th International Workshop on the Analysis of Multitemporal Remote Sensing Images (MultiTemp)*, (Bruges, Belgium), June 2017.
- [9] D. Amitrano, G. Di Martino, A. Iodice, D. Riccio, and G. Ruello, "RGB SAR product exploiting multitemporal: general processing and applications," in *9th International Workshop on the Analysis of Multitemporal Remote Sensing Images (MultiTemp)*, (Bruges, Belgium), June 2017.
- [10] D. Amitrano, F. Cecinati, G. Di Martino, A. Iodice, P.-P. Mathieu, D. Riccio, and G. Ruello, "Multitemporal Synthetic Aperture Radar for Urban Planning and Critical Infrastructure Monitoring," in *IEEE Joint Urban Remote Sensing Event*, (Dubai, UAE), March 2017.
- [11] D. Amitrano, G. Di Martino, A. Iodice, F. Mitidieri, M. N. Papa, D. Riccio, and G. Ruello, "Water resource monitoring in semi-arid environment through the synergic use of SAR data and hydrological models," in *SPIE Remote Sensing*, (Edinburgh, UK), September 2016.
- [12] D. Amitrano, F. Cecinati, G. Di Martino, A. Iodice, P.-P. Mathieu, D. Riccio, and G. Ruello, "An end-user-oriented framework for RGB representation of multitemporal SAR images and visual data mining," in *SPIE Remote Sensing*, (Edinburgh, UK), September 2016.
- [13] D. Amitrano, G. Di Martino, A. Iodice, D. Riccio, and G. Ruello, "Color-Coding of SAR Images Using Multitemporal," in *XXI Riunione Nazionale di Elettromagnetismo (RiNEM)*, (Parma, Italy), September 2016.
- [14] D. Amitrano, F. Cecinati, G. Di Martino, A. Iodice, P.-P. Mathieu, D. Riccio, and G. Ruello, "Model-Based Multitemporal SAR RGB Products For Land and Water Management," in *ESA Living Planet Symposium*, (Prague, Czech Republic), May 2016.
- [15] D. Amitrano, G. Di Martino, A. Iodice, Y. Koussoube, F. Mitidieri, M. N. Papa, D. Riccio, and G. Ruello, "Hydrological Modeling in Ungauged Basins Using SAR Data," in *IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, (Milan, Italy), pp. 2747–2750, July 2015.
- [16] D. Amitrano, F. Cecinati, G. Di Martino, A. Iodice, D. Riccio, and G. Ruello, "Sentinel-1 Multitemporal SAR Products," in *IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, (Milan, Italy), pp. 3973–3976, July 2015.



- [17] D. Amitrano, F. Cecinati, G. Di Martino, A. Iodice, D. Riccio, and G. Ruello, "Urban areas extraction from multitemporal SAR RGB images using interferometric coherence and textural information," in *ESA Fringe Workshop*, (Frascati, Italy), March 2015.
- [18] D. Amitrano, G. Di Martino, A. Iodice, D. Riccio, and G. Ruello, "Urban Areas Enhancement in Multitemporal SAR RGB Images Through a Feedback System," in *IEEE Joint Urban Remote Sensing Event (JURSE)*, (Lausanne, Switzerland), March 2015.
- [19] A. Errico, C. V. Angelino, L. Cicala, D. P. Podobinski, G. Persechino, C. Ferrara, M. Lega, A. Vallario, C. Parente, G. Masi, R. Gaetano, G. Scarpa, D. Amitrano, G. Ruello, L. Verdoliva, and G. Poggi, "SAR/multispectral image fusion for the detection of environmental hazards with a GIS," in *SPIE Remote Sensing*, (Amsterdam, The Netherlands), October 2014.
- [20] D. Amitrano, G. Di Martino, A. Iodice, D. Riccio, and G. Ruello, "Electromagnetic-Based Approach for RGB Representation of SAR Multitemporal Data," in *XX Riunione Nazionale di Elettromagnetismo (RiNEm)*, (Padova, Italy), September 2014.
- [21] A. Verdoliva, D. Amitrano, R. Gaetano, G. Ruello, and G. Poggi, "SAR Despeckling Guided by an Optical Image," in *IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, (Quebec City, Canada), pp. 3698–3701, July 2014.
- [22] R. Gaetano, D. Amitrano, G. Masi, G. Poggi, G. Ruello, A. Verdoliva, and G. Scarpa, "Interactive Segmentation of High Resolution Synthetic Aperture Radar Data by Tree-Structured MRF," in *IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, (Quebec City, Canada), pp. 3734–3737, July 2014.
- [23] D. Amitrano, G. Di Martino, A. Iodice, D. Riccio, and G. Ruello, "A New Perspective for Multitemporal SAR Data Analysis," in *IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, (Quebec City, Canada), pp. 4695–4698, July 2014.
- [24] D. Amitrano, G. Di Martino, A. Iodice, D. Riccio, G. Ruello, M. N. Papa, F. Ciervo, and Y. Koussoube, "Use of High Resolution SAR Images for Modeling Watershed Response in Semi-Arid Regions," in *IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, (Quebec City, Canada), pp. 2201–2204, July 2014.
- [25] D. Amitrano, G. Di Martino, A. Iodice, D. Riccio, and G. Ruello, "A New User-Centered Paradigm for Multitemporal SAR Data Representation," in *IEEE Graduate Of Last Decade (GOLD)*, (Berlin, Germany), June 2014.
- [26] D. Amitrano, G. Di Martino, A. Iodice, D. Riccio, G. Ruello, M. N. Papa, F. Ciervo, and Y. Koussoube, "Synthetic Aperture Radar for humanitarian purposes: products and opportunities," in *IEEE Global Humanitarian Technology Conference (GHTC)*, (San Jose, CA, USA), pp. 457–462, October 2013.
- [27] D. Amitrano, G. Di Martino, A. Iodice, D. Riccio, G. Ruello, M. N. Papa, F. Ciervo, and Y. Koussoube, "High resolution SAR for monitoring of reservoirs sedimentation and soil erosion in semi arid regions," in *IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, (Melbourne, Australia), pp. 911–914, July 2013.

#### Book chapters

- [1] D. Amitrano, F. Ciervo, P. Di Bianco, G. Di Martino, A. Iodice, F. Mitidieri, D. Riccio, G. Ruello, M. N. Papa, and Y. Koussoube, "Monitoring Soil Erosion and Reservoir Sedimentation in Semi-arid Region Through Remote Sensed SAR Data: A Case Study



in Yatenga Region, Burkina Faso," in *Engineering Geology for Society and Territory* (G. Lollino, M. Arattano, M. Rinaldi, O. Giustolisi, J.-C. Marechal, and G. E. Grant, eds.), vol. 3, pp. 539–542, Springer, 2015.