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Istituto di Ricerca per la Protezione Idrogeologica

Consiglio Nazionale delle Ricerche

<http://www.irpi.cnr.it/scheda-personale/?ids=177>**A. BRIEF NARRATIVE SUMMARY**

Alessandro C. Mondini is a research scientist with the Italian Consiglio Nazionale delle Ricerche (CNR). He has participated in a number of national, European and International projects.

His research activities are in the framework of international and national projects:

- From November 2016: member of the four years NERC project Landslip: "Landslide multi-hazard risk assessment, preparedness and early warning in south Asia integrating meteorology, landscape and society".
- From October 2016 member of the two years Provincia Autonoma di Bolzano project ALPSMOTION: "ALPine Slow slope Movement monitoring and detection with remote and proximal sensing".
- From April 2016, Co-PI of the two years JAXA project: Landslide Monitoring at Vegetated Areas Using L-band SqueeSAR Interferometry.
- From March 2015: member of the two years ESA project MEMpHIS: "Multi Scale and Multi Hazard Mapping Space Solutions".
- From October 2014: CNR Scientific Investigator of the ESA SEOM Project "Land cover change detection and monitoring methodologies based on the combined use of S1 and S2 for natural resources and hazard management".
- From June 2014: Prime Investigator of a Cat-1 Formosat II with the Taiwanese Space Agency (NSPO) titled Spectral signatures library for semi-automatic event landslide recognition and mapping.
- From February 2013: Prime Investigator of a Cat-1 TSX-Archive-2012 project with the German Space Agency (DLR) titled "SAR change detection methodologies for event landslide mapping".
- 2013 - 2015: member of the two years FP7 LAMPRE (LAndslide Modelling and tools for vulnerability assessment Preparedness and REcovery Management) project Team, www.lampre-project.eu. I was leader of a research-working package called "Research and tools for triggered event landslide mapping".
- 2012 - 2013: Prime Investigator of a bilateral project between the National Science Council of Taiwan and the CNR titled "Unravelling the links between rainfall, seismicity, landsliding, slope denudation and sediment discharge in mountain belts with the aid of remotely sensed data".
- In 2011: consultant for the project "Development and validation of a dynamic simulation model of landslide and debris flow" for Taiwan's Soil and Water Conservation Bureau.
- 2010 - 2013: member of the DORIS (Ground Deformations Risk Scenarios: an Advanced Assessment Service) project Team, www.doris-project.eu, financed by EU, the European Union.
- From June 2010 to August 2010: Summer Program in Taiwan 2010 for Italian Graduate Students in the Geography department of the National Taiwan University.
- From 2007 to 2010: member of the MORFEO (Monitoraggio del Rischio da Frana con tecnologie EO) project Team, www.morfeoproject.it. Financed by ASI, the Italian Space Agency.

Mondini has authorship on 18 peer-review publications, including publications in *Planetary and Space Science*, *Earth Science Review*, *Geomorphology*, *Remote Sensing of Environment*, *Remote Sensing*, *NHESS*, *Environmental Management*, *Geological Society of London*, *Journal of Maps*, *Journal of Applied Remote Sensing* and *Physical Review*, with 605 citations (Google Scholar, H-index = 11) to his publications from 2010.

B. RESEARCH ACTIVITIES

- Implementation of new algorithms based on remotely sensed data, including Optical and SAR amplitude, and image analysis for semi-automatic event landslide mapping. Methods include statistical frameworks to assimilate geo-environmental elements in the classification, multiple change detection indices combination, and the preparation and use of modelled spectral

fingerprints for automatic training of supervised classifiers in a Monte Carlo framework for the error management.

- Exploitation of thermal satellite images and in situ data for the assessment of the Land Surface Temperature (LST) and Soil Moisture for the landslide susceptibility evaluation at catchment scale.
- Land cover changes impact on susceptibility models.
- Cluster analysis for statistic characterization of rainfall events associated to landslide occurrence.
- Analysis of the admittance to model gravitational anomalies and mass concentrations on Earth and planets.

B. EDUCATION

- 6 February 2013: “Dottore di Ricerca in Scienze della Terra e Geotecnologie” (PhD), XXV Ciclo. Tutor: dott. F. Guzzetti. Thesis title: “Remote Sensing data and methodologies for event landslide recognition and mapping at catchment scale”.
- 23 November 1995: “Laurea di Dottore in Fisica”, (108/110) – Facoltà di Scienze Matematiche, Fisiche, e Naturali, Università degli Studi di Milano, Milano. Tutor: prof. F. Casagrande; co-tutor: dott. F. Castelli. Dissertation in Quantum optics titled: “dinamica non lineare di un micromaser a regime mesoscopico”.

C. PROFESSIONAL EXPERIENCE

- (2008 - present) CNR Research Scientist at CNR IRPI
- (2005 - 2008) Researcher at Carlo Gavazzi Space (CGS)
- (2004 - 2005) Technologist at the Agenzia Regionale per la Protezione dell'Ambiente (ARPA – Lombardia)
- (2000 - 2004) Technologist at Bruker S.r.l.
- (1997 - 2000) Researcher at Pirelli Tyres S.p.A.
- (1995 - 1997) Information Technology specialist at DhL S.p.A.

D. TEACHING

- 2104 “Applicazioni del monitoraggio satellitare al dissesto idrogeologico” at the IInd level Master “Analisi e Mitigazione del Rischio Idrogeologico” A.A. 2013/2014. Centro di Ricerca CERI, Previsione, Prevenzione e Controllo dei Rischi Geologici, Facoltà di Scienze Matematiche, Fisiche e Naturali, Sapienza Università di Roma.
- 2105 “Applicazioni del monitoraggio satellitare al dissesto idrogeologico” at the IInd level Master “Analisi e Mitigazione del Rischio Idrogeologico” A.A. 2014/2015. Centro di Ricerca CERI, Previsione, Prevenzione e Controllo dei Rischi Geologici, Facoltà di Scienze Matematiche, Fisiche e Naturali, Sapienza Università di Roma.
- 2106 “Telerilevamento Ottico: teoria e pratica” at the IInd level Master “Analisi e Mitigazione del Rischio Idrogeologico” A.A. 2015/2016. Centro di Ricerca CERI, Previsione, Prevenzione e Controllo dei Rischi Geologici, Facoltà di Scienze Matematiche, Fisiche e Naturali, Sapienza Università di Roma.

E. REPRESENTATIVE PUBLICATIONS

- Mancinelli, P., Mondini, A.C., Pauselli, C., and Federico, C. (2015) Impact and admittance modelling of the Isidis Planitia, Mars. *Planetary and Space Science*. doi:10.1016/j.pss.2015.04.019.
- A.C. Mondini, A. Viero, M. Cavalli, L. Marchi, G. Herrera, and F. Guzzetti (2014). Comparison of event landslide inventories: the Pogliaschina catchment test case, Italy. *Nat. Hazards Earth Syst. Sci.* 14, 1749-1759, 2014.
- Mondini A.C., Chang K-T. (2014). Combining spectral and geoenvironmental information for probabilistic event landslide mapping. *Geomorphology* 213 183-189. <http://dx.doi.org/10.1016/j.geomorph.2014.01.007>.
- Mancinelli P., Minelli F., Mondini A., Pauselli C., Federico C. (2014). A downscaling approach for geological characterization of the Raditladi basin of Mercury. *Geological Society of London, Special Publications* “Volcanism and Tectonism Across the Inner Solar System”. doi:10.1144/SP401.10.
- Mondini A.C., Marchesini I., Rossi M., Chang K-T., Pasquariello G., Guzzetti F. (2013). Bayesian framework for mapping and classifying shallow landslides exploiting remote sensing and topographic data. *Geomorphology* 201 135-147. doi:10.1016/j.geomorph.2013.06.015.

- Del Ventisette C., Ciampalini A., Manunta M., Calò F., Paglia L., Ardizzone F., Mondini A.C., Reichenbach P., Mateos R.M., Bianchini S., Garcia I., Füsi B., Deák Z.V., Rádi K., Graniczny M., Kovalski Z., Piatkovska A., Przylucka M., Retzo H., Strozzi T., Colombo D., Mora O., Sánchez F., Herrera G., Moretti S., Casagli N., Guzzetti F. (2013). Exploitation of Large Archives of ERS and ENVISAT C-Band SAR Data to Characterize Ground Deformations. *Remote Sensing* 5, 3896-3917; doi: 10.3390/rs5083896.
- Guzzetti F., Mondini A., Cardinali M., Fiorucci F., Santangelo M., Chank K-T. (2012). Landslide inventory maps: new tools for an old problem. *Earth-Science Reviews* 112 42-66. doi:10.1016/j.earscirev.2012.02.001.
- Mondini A.C., Chang K., Yin H.Y. (2011). Combining Multiple Change Detection Indices for Mapping Landslides Triggered by Typhoons. *Geomorphology* 134 440-451. doi:10.1016/j.geomorph.2011.07.021.
- Mondini A.C., Guzzetti F., Reichenbach P., Rossi M., Cardinali M., Ardizzone F. (2011). Semi-automatic recognition and mapping of shallow landslides using optical satellite images. *Remote Sensing of Environment* 115 1743-1757. doi:10.1016/j.rse.2011.03.006.
- Notarnicola C., and Mondini A.C. (2010). Use of historical orthophotos and digital elevation model to link watershed land use changes and storm flow response in a Karst environment. *Journal of Applied Remote Sensing* Vol. 3, 033574, doi: 10.1117/1.3284717.

F. REPRESENTATIVE GRANTS

- ESA SEOM Project “Land cover change detection and monitoring methodologies based on the combined use of S1 and S2 for natural resources and hazard management”, CNR unit responsible (2014 - 2015)
- DLR Cat-1 TSX-Archive-2012 “SAR change detection methodologies for event landslide mapping” principal investigator (2013 - 2015).
- NSPO Cat-1 “Spectral signatures library for semi-automatic event landslide recognition and mapping” principal investigator (2014 - 2015).
- EC LAMPRE Project: *Landslide modeling and tools for vulnerability assessment, preparedness and recovery management*. EC, FP7-SPACE-2012-1, WP Leader, (2013 - 2015).
- CNR (Italy) and NSC (Taiwan) bilateral exchange project: *Unravelling the links between rainfall, seismicity, landsliding, slope denudation and sediment discharge in mountain belts with the aid of remotely sensed data*. Italian project leader, (2012 - 2013).

Perugia, 26 January 2016