PERSONAL INFORMATION

Monia Santini

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WORK EXPERIENCE

March 2013 to present	**Senior Researcher (permanent position)** CMCC Foundation (formerly CMCC s.c.a r.l.) Researcher at the Division on Impacts on Agriculture, Forests and Ecosystem Services (IAFES). Research Team coordination on climate change impacts' modelling. **Director of the Division from 2015 to 2016 and from July 2019 to present**. Business or sector Research Development
October 2016 – August 2017	**Consultant** Far East Federal University (FEFU) – Vladivostok, Russia Business or sector Research Development
June 2010 - February 2013	**Junior Researcher** CMCC S.c.a r.l. Researcher on climate change impacts. Research Project and Consultancy Management. Publication of results. Projects: FUME; EU-Forest, ETC-CCA, Nigeria (see www.cmcc.it) Business or sector Research Development
2012	**Consultant** University of Tuscia (Viterbo, Italy) Developing a GIS database on global soil carbon sequestration potentials and gaps using a number of available global products. Business or sector Consulting service
2012	**Consultant** Tevere River Basin Authority Consultancy for the development of GIS models for the definition of hydraulic risk for urban areas on first and second order streams, optimizing available data and assuming alternative protection measures. Business or sector Consulting service
Feb 2012	**Lecturer** Mediterranean Agronomic Institute of Zaragoza (Spain) Lecturer for the Advanced Course "Forest fires in the perspective of global change". Session: Landuse and landcover change modelling Business or sector Education
2010 to 2014	**Consultant** WWF Italia Hydrological modelling for water footprint accounting and monitoring for a food industry in Northern Italy Business or sector Consulting service
2009, 2010	**Lecturer** Polytechnic of Milan, Italy Lecturer at the course "Methods for hydrologic simulations" Business or sector Education
Apr 2008 – May 2010	**Research assistant** University of Tuscia, Italy Researcher on GIS modelling for studying climate change impacts on land degradation/desertification Business or sector Education and Research Development
Jul 2009	**Lecturer** University of Catania, Italy

Lecturer at the SANTANDER summer school "Recent developments for modelling environmental systems"
Business or sector Education

Summer 2007, 2008, 2009   **Lecturer**

Columbia University (2007) and Polytechnic Institute at New York University (2008, 2009), NY, USA
Lecturer at the summer course "GIS Terrain Analysis for hydrogeomorphic applications".
Development of GIS compatible software routines for terrain analysis and hydrological purposes.
Business or sector Education

2007   **Consultant**

Agriconsulting S.p.A. (Rome, Italy)
Professional Collaboration on "Realization of a Geographic Information System to monitor areas at risk of desertification in Sardinia (Italy)". Project funded by Sardinia Regional Government and developed by Agriconsulting S.p.A. (Rome) and ESRI Italia. Development of GIS models (hydrology, vegetation, soil)
Business or sector Consulting service

2005   **Consultant**

Terrasystem - Society of Geomatics and Remote Sensing (Viterbo, Italy)
Professional collaboration for the implementation of vegetation and soil productivity models into GIS environment
Business or sector Consulting service

2003 to 2004   **Consultant**

GeoTevere - Society of Geology (Rome, Italy)
Geological, hydrogeological and geotechnical consultancies, geotechnical and hydrogeological campaigns.
Business or sector Consulting service

Since 2004   **Registered Professional Geologist**

Umbria Region (Italy)
Business or sector Consulting Service

EDUCATION AND TRAINING

Jan 2005 – Apr 2008   **Doctoral Degree in Forest Ecology**

University of Tuscia – Viterbo, Italy

PhD dissertation title: A new GIS-based spatial modelling approach for desertification risk assessment in the Mediterranean area. An Italian case study: Sardinia island

2004   **Post-Lauream Master on General and Applied Geophysics**

University of Pisa (Pisa, Italy) and National Institute of Geophysics and Volcanology (INGV; La Spezia, Italy)

Dissertation title: Utility of integrating remote sensed images and GIS in erosion modelling applications

Academic Years 1996/97 - 2001/2002   **Master's degree in Geological Sciences (5 year course), Grade: 110/110 cum laude**

"Sapienza" University of Rome

Graduation thesis (in Italian) on: Application of GPR (Ground Penetrating Radar) methodology at an archaeological site: data acquisition, elaboration and interpretation by means of 3D time-slices. Instrument and software used: Radar Pulse Ekko 100, Ekko 3D, Gradix (Interpex).

Sept 1991 – July 1996   **Scientific High School diploma at "Liceo Scientifico Gandhi" in Narni (Terni, Italy) with 60/60 marks**

Jul 2007   **Summer Course**

University of Cagliari (Italy)

Distributed Hydrological modelling: Use of Geospatial Data and Tools for Watershed Studies

Jan 2006, Apr 2006, Oct 2006   **Professional Courses**

University of Urbino (Italy) (1) and CE.R.I. Valmontone (Italy) (2, 3)

ArcGIS rel. 9.x – Base (1), Advanced (2) and Spatial Analyst and 3D Analyst extensions of ArcGIS rel. 9.x (3)

June 2006	**Summer Course**
	University of Tuscia (Italy), CNR (Italy), MIT (US)
	Landscape form and processes: models and applications in watershed analysis
2006	**Academic Course**
	University of Tuscia (Italy)
	Course on Remote Sensing and Forest Information Systems
2004	**Professional Course**
	Perugia (Italy)
	Soil dynamic characterization and methodological approach to evaluate local seismic response

PERSONAL SKILLS

Mother tongue(s)   Italian

Other language(s)

UNDERSTANDING		SPEAKING		WRITING
Listening	Reading	Spoken interaction	Spoken production	

English	C2*	C2*	C1	C1	C1

C2*

*Based on EF SET https://www.efset.org/cert/joM7Jd

Organisational / managerial skills   Highly respected team member and coordinator, skilled in Research Project and Consulting Service Management

Job-related skills   Very high skills in distributed hydrological model development and GIS integration of related terrain analysis procedures. High skills in geospatial and climate data analysis and in ecosystems' data analysis.

Computer skills   Skilled in using Microsoft Office suite, GIS and Remote Sensing software (ArcGIS, IDRISI, ErMAPPER), statistics' tools and software (SPSS) and high skills in Programming Languages (Fortran, Python, Visual Basic) and climate data analysis tools (CDO, NCO).

Driving licence   B

ADDITIONAL INFORMATION

Publications
Peer reviewed

1. Sánchez-García E, Rodríguez-Camino E., Bacciu V., Chiarle M., Costa-Saura J., Garrido M.N., Lledó L., Navascués B., Paranunzio R., Terzago S., Bongiovanni G., Mereu V., Nigrelli G., Santini S., Soret A., von Hardenberg J. (2022) Co-design of sectoral climate services based on seasonal prediction information in the Mediterranean. Climate Services, 28, 100337. Doi: https://doi.org/10.1016/j.cliser.2022.100337
2. Costa-Saura J.M., Mereu V., Santini M., Trabucco A., Spano D., Bacciu V. (2022) Performances of climatic indicators from seasonal forecasts for ecosystem management: The case of Central Europe and the Mediterranean. Agricultural and Forest Meteorology, 319, 108921. https://doi.org/10.1016/j.agrformet.2022.108921
3. Santini, M., Noce, S., Antonelli, M., Caporaso L. (2022) Complex drought patterns robustly explain global yield loss for major crops. Sci Rep 12, 5792. https://doi.org/10.1038/s41598-022-09611-0
4. Passamonti, M.M., Somenzi, E., Barbato, M, Chillemi, G., Colli, L., Joost, S, Milanesi, M., Negrini, R., Santini, M., Vajana, E., Williams, J.L., Ajmone‐Marsan, P. (2021) The Quest for Genes Involved in Adaptation to Climate Change in Ruminant Livestock. Animals 2021, 11, 2833. https://doi.org/10.3390/ani11102833
5. Raffa M., Reder A., Marras G.F., Mancini M., Scipione G., Santini M., Mercogliano, P. (2021) VHR-REA_IT Dataset: Very High Resolution Dynamical Downscaling of ERA5 Reanalysis over Italy by COSMO-CLM. Data, 6, 88. https://doi.org/10.3390/data6080088
6. Padulano, R., Rianna G., Santini M. (2021) Datasets and approaches for the estimation of rainfall erosivity over Italy: A comprehensive comparison study and a new method. Journal of Hydrology: Regional Studies 34 (2021) 100788. Doi: https://doi.org/10.1016/j.ejrh.2021.100788.
7. Noce S., Caporaso L., Santini M. (2020) A new global dataset of bioclimatic indicators. Scientific Data, 7, 398. Doi: 10.1038/s41597-020-00726-5
8. Rizzo A., Banovec P., Cilenšek, A., Rianna, G., Santini, M. (2020) An Innovative Tool for the Management of the Surface Drinking Water Resources at European Level: GOWARE—Transnational Guide Towards an Optimal WAter REgime. Water, 12, 370. Doi: https://doi.org/10.3390/w12020370
9. Noce S., Caporaso L., Santini M. (2019) Climate change and geographic ranges: the implications for Russian forests. Frontiers in Ecology and Evolution, 7. Doi: https://doi.org/10.3389/fevo.2019.00057

10. Santini M., Caporaso L. (2018) Evaluation of freshwater flow from rivers to the sea in CMIP5 simulations: insights from the Congo river basin. Journal of Geophysical Research – Atmospheres, 123(18), 10278-10300. Doi: 10.1029/2017JD027422.

11. Pesce M., Critto A., Torresan S., Giubilato E., Santini M., Zirino A., Ouyang W., Marcomini A. (2018) Modelling climate change impacts on nutrients and primary production in coastal waters. Science of the Total Environment, 628-629, 919-937. Doi: 10.1016/j.scitotenv.2018.02.131.

12. Noce S., Collalti A., Santini M. (2017) Likelihood of changes in forest species suitability, distribution and diversity under future climate: the case of Southern Europe. Ecology and Evolutions, 7(22), 9358-9375. Doi: 10.1002/ece3.3427.

13. Gariano S.L., Petrucci O., Rianna G., Santini M., Guzzetti F. (2017) Impacts of past and future land changes on landslides in southern Italy. Regional Environmental Change, 18(2), 437-449. Doi: 10.1007/s10113-017-1210-9.

14. Ronco P., Zennaro F., Torresan S., Critto A., Santini M., Trabucco A., Zollo A. L., Galluccio G., Marcomini A. - (2017). A risk assessment framework for irrigated agriculture under climate change. Advances in Water Resources, 110, 562-578. Doi: 10.1016/j.advwatres.2017.08.003.

15. Saunois, M., …, Santini, M., et al. (2017) Variability and quasi-decadal changes in the methane budget over the period 2000-2012. Atmospheric Chemistry and Physics, 17, 11135-11161. Doi: 10.5194/acp-17-11135-2017.

16. Di Paola A., Rulli M.C., Santini M. (2017) Human food vs. animal feed debate. A thorough analysis of environmental footprints. Land Use Policy, 67: 652-659. Doi: 10.1016/j.landusepol.2017.06.017.

17. Rulli M.C., Santini M., Hayman D.T.S, D'Odorico P. (2017) The nexus between forest fragmentation in Africa and Ebola virus disease outbreaks. Scientific Reports, 7: 41613. Doi: 10.1038/srep41613.

18. Saunois, M., …, Santini, M., et al. (2016) The global methane budget 2000–2012, Earth Syst. Sci. Data, 8, 697-751. Doi: 10.5194/essd-8-697-2016.

19. Noce S., Collalti A., Valentini R., Santini M. (2016) Hot Spot maps of forest presence in the Mediterranean Basin. Iforest, 9: 766-774. Doi: 10.3832/ifor1802-009.

20. Collalti, A., Marconi, S., Ibrom, A., Trotta, C., Anav, A., D'Andrea, E., Matteucci, G., Montagnani, L., Gielen, B., Mammarella, I., Grünwald, T., Knohl, A., Berninger, F., Zhao, Y., Valentini, R., and Santini, M. (2016) Validation of 3D-CMCC Forest Ecosystem Model (v.5.1) against eddy covariance data for 10 European forest sites (2016) Geosci. Model Dev., 9, 479-504. Doi: 10.5194/gmd-9-479-2016.

21. Di Paola A., Valentini R., Santini M. (2016) An overview of available crop growth and yield models for studies and assessments in agriculture. Journal of the Science of Food and Agriculture 96(3), 709-714. Doi: 10.1002/jsfa.7359.

22. Santini M., Di Paola A. (2015) Changes in the world rivers' discharge projected from an updated high resolution dataset of current and future climate zones. Journal of Hydrology, 531(3), 768-780. Doi: https://doi.org/10.1016/j.jhydrol.2015.10.050.

23. Santini M., Collalti A., Valentini R. (2014) Climate change impacts on vegetation and water cycle in the Euro-Mediterranean region, studied by a likelihood approach. Regional Environmental Change, 14(4), 1405-1418. Doi: 10.1007/s10113-013-0582-8.

24. Collalti A., Perugini L., Santini M., Chiti T., Nolè A., Matteucci G., Valentini R. (2014) A process-based model to simulate growth in forests with complex structure: Evaluation and use of 3D-CMCC Forest Ecosystem Model in a deciduous forest in Central Italy. Ecological Modelling, 272, 362-378. Doi: 10.1016/j.ecolmodel.2013.09.016.

25. Valentini, R., …, Santini, M. et al. (2014) A full greenhouse gases budget of Africa: synthesis, uncertainties, and vulnerabilities, Biogeosciences, 11, 381-407. Doi:10.5194/bg-11-381-2014.

26. Santini M., Valentini R., Cervigni R. (2013) Climate projection ensemble as support to water management and irrigation in Nigeria. Journal of Water and Climate Change 4(3), 287-301. Doi: 10.2166/wcc.2013.039.

27. Kirschke S., …, Santini M. et al. (2013) Three decades of methane sources and sinks: budgets and variations. Nature Geoscience. Doi: 10.1038/ngeo1955.

28. Rulli M.C., Offeddu L., and Santini M. (2013) Modeling post-fire water erosion mitigation strategies, Hydrol. Earth Syst. Sci., 17, 2323-2337. Doi: 10.5194/hess-17-2323-2013.

29. Santini M., Valentini, R. Predicting Hot-Spots of Land Use Changes in Italy by Ensemble Forecasting. Reg Environ Change (2011) 11:483-502. Doi: 10.1007/s10113-010-0157-x.

30. Santini M., Caccamo G., Laurenti A., Noce S., Valentini R. (2010) A multi-model GIS framework for desertification risk assessment. Applied Geography, 30(3), 394-415. Doi: 10.1016/j.apgeog.2009.11.003.

31. Santini M., Taramelli A., Sorichetta A. (2010) ASPHAA: a GIS-based algorithm to calculate cell area on a latitude-longitude (geographic) regular grid. Transactions in GIS, 14(3), 351-377. Doi: 10.1111/j.1467-9671.2010.01200.x.

32. Fratini G., Santini M., Ciccioli P., Valentini R. (2009) Evaluation of a wind erosion model in a desert area of Northern Asia by Eddy Covariance. Earth Surface Processes and Landforms, 34, 1143-1157. Doi: 10.1002/esp.1857.

33. Santini M., Grimaldi S., Nardi F., Petroselli A., Rulli M.C. (2009) Pre-processing algorithms and landslide modelling on remotely sensed DEMs. Geomorphology, 113(1-2), 110-125. Doi: 10.1016/j.geomorph.2009.03.023.

34. Nardi F., Grimaldi S., Santini M., Petroselli A., Ubertini L. (2008) Hydrogeomorphic properties of simulated drainage patterns using DEMs: the flat area issue. Hydrological Sciences Journal, 53(6): 1176-1193. Doi: 10.1623/hysj.53.6.1176.

Publications
Books, Technical Reports

AA.VV., FAO and CMCC (2017) Global Soil Organic Carbon Database (at 30 arcsec), 47 pp. ISBN 978-92-5-109762-5 © FAO, 2017. Available at: http://www.fao.org/documents/card/en/c/9cfc39c3-2950-4691-aa8d-4eaf23a7ba3c/; 10.25424/CMCC/GLOBALCARBON30ARCSEC.

Cervigni, R., Valentini, R, Santini, M. eds. (2013) Toward Climate-Resilient Development in Nigeria. Directions in Development. Washington, DC: World Bank. doi:10.1596/978-0-8213-9923-1.

Ramieri E., Hartley A., Barbanti A., Duarte Santos F., Gomes A., Hilden M., Laihonen P., Marinova N., Santini M. (2011) Methods for assessing coastal vulnerability to climate change. ETC CCA Technical Paper 1/2011. ETC/CCA, Bologna, IT, October 2011, 93 pp.

Publications
Chapters, Other

Rulli M.C., D'Odorico P., Santini M. Dell'Angelo J., Seabra J.E.A (2021) THE NEXUS: WATER-LAND-BIOFUELS. In: Roadmap to 2050: The Land-Water-Energy Nexus of Biofuels. New York: Sustainable Development Solutions Network (SDSN) and Fondazione Eni Enrico Mattei (FEEM).

Santini, M. (2021) The land use–food–coronavirus nexus. Nat Food 2, 390–391. https://doi.org/10.1038/s43016-021-00290-0.

Valentini, R., Zamolodchikov, D., Reyer, C., Noce, S., Santini, M., & Lindner, M. (2020). Climate change in Russia–past, present and future. In: Russian forests and climate change. What Science Can Tell Us 11. European Forest Institute.

Padulano R., Lama G.F.C., Rianna G., Santini M., Mancini M., Stojiljkovic M. (2020) Future rainfall scenarios for the assessment of water availability in Italy. 2020 IEEE International Workshop on Metrology for Agriculture and Forestry (MetroAgriFor). Doi: 10.1109/MetroAgriFor50201.2020.9277599

Caporaso L., Santini M., Noce S., De Sanctis A., Caracciolo L., Antonelli M. (2019) Drivers of Migration in the Trans-Mediterranean Region: The Likely Role of Climate Change and Resource Security in the Geopolitical Context. In: Achieving the Sustainable Development Goals Through Sustainable Food Systems, Springer. ISBN: 978-3-030-23968-8.

Santini M., Caporaso L., Barbato G., Noce S. (2017) Climate Change and Human Migrations. In: Food & Migration: Understanding the geopolitical nexus in the Euro-Mediterranean. Macrogeo and Barilla Center for Food and Nutrition report.

Mereu V., Santini M., Cervigni R., Augeard B., Bosello F., Scoccimarro E., Spano D., and Valentini R. (2017) Robust Decision Making for a Climate-Resilient Development of the Agricultural Sector in Nigeria. In: Lipper, L., McCarthy, N., Zilberman, D., Asfaw, S., Branca, G. (Eds.) Climate Smart Agriculture: Building Resilience to Climate Change.

Picarelli L., Comegna L., Gariano S.L., Guzzetti F., Mercogliano P., Rianna G., Santini M., Tommasi P. (2016) Potential climate changes in Italy and consequences on land stability. In: Ho K., Lacasse S., Picarelli L. (eds.), Slope Safety Preparedness for Impact of Climate Change, pp. 151-198, CRC press, ISBN 9781138032309.

Santini M., Valentini R. (2015) Calculating the Water Footprint of an Agri-Food Company's Supply Chain: The Mutti Case. In: The Water We Eat (M. Antonelli, F. Greco eds.). Springer Water 2015, pp 243-256.

Santini M., Rulli M.C. (2015) Water Resources in Italy: The Present Situation and Future Trends. In: The Water We Eat (M. Antonelli, F. Greco eds.). Springer Water 2015, pp 139-143.

Rulli M.C., Gobattoni F., Santini, M. (2013) GALLIUS: GeomorphohydrologicAl Model for LandsLide Initiation Under Snowmelting. In: Margottini C., Canuti P., Sassa K. (eds.) Landslide Science and Practice 4, 409-415.

Santini M., Valentini R. (2013) Volume 2: Agriculture, Forests and Ecosystem Services and People. Introduction. In: Regional Assessment of Climate Change in the Mediterranean, Advances in Global Change Research Volume 51, 2013, pp 3-7.

Santini M., Valentini R. (2013) Volume 2: Agriculture, Forests and Ecosystem Services and People. Summary and Major findings. In: Regional Assessment of Climate Change in the Mediterranean, Advances in Global Change Research Volume 51, 2013, pp 157-160.

Santini M., Valentini R. (2013) Calcolo dell'impronta idrica della filiera produttiva di un'azienda agroalimentare: il caso Mutti. In: L'acqua che mangiamo (M. Antonelli, F. Greco eds.). Edizioni Ambiente, Milano, Italia. (*in italian*)

Santini M., Rulli M.C. (2013) La risorsa idrica in Italia: situazione attuale e trend futuri. In: L'acqua che mangiamo (M. Antonelli, F. Greco eds.). Edizioni Ambiente, Milano, Italia. (*in italian*)

AA.VV. Libro bianco. Sfide ed opportunità dello sviluppo rurale per la mitigazione e l'adattamento ai cambiamenti climatici. Ministero delle politiche agricole e forestali. Settembre 2011. (*in italian*)

Taramelli A., Pasqui M., Melelli L., Santini M. and Sorichetta A. (2011) Modelling Hurricane Related Hazards and Risk through GIS for Early Warning Systems, Recent Hurricane Research - Climate, Dynamics, and Societal Impacts, Anthony Lupo (Ed.), ISBN: 978-953-307-238-8, InTech.

Valentini R., Petriccione B., Sezzi E., Santini M., Vannini A., Vettraino A. M., Spano D. (2010) Foreste e cambiamenti climatici. In: I cambiamenti climatici in Italia: evidenze, vulnerabilità e impatti. Sergio Castellari e Vincenzo Artale (Eds.). CMCC & Bononia University Press.

Corona P., Monteverdi M.C., Barbati A., Beritognolo I., Balzarolo M., Santini M., Da Canal S., De Dato G., Fratini g., Kuzminsky E., Abbruzzese G., Sabatti M., De Angelis P., Valentini R. (2007) Linee di ricerca forestale a supporto della lotta alla desertificazione. Rendiconti Accademia Nazionale delle Scienze (dei XL) – Memorie di Scienze Fisiche e Naturali, 125°, Vol. XXXI, P. II, t. I, pp. 311-328.

Valentini R., Santini M. (2008) Climate impact scenarios on forest biodiversity and land use changes in Alpine zone. In: Climate Change Report, ClimChAlp Project.

Petroselli A., Nardi F., Santini M., Grimaldi S. and Ubertini L. (2008) Confronto tra alcuni metodi per l'estrazione del reticolo idrografico da DEM affetti da aree piane. L'Acqua, vol. 5.

Fratini G., Da Canal S., Monteverdi C., Santini M., Valentini R. and Zompanti R. (2005) Lotta alla desertificazione e sviluppo rurale: l'esempio di un progetto integrato in Cina, Geotema, 25, pp. 68-81.

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