

**UNIVERSITÀ DEGLI STUDI DI MILANO**

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settore scientifico-disciplinare GEO/12 - OCEANOGRAFIA E FISICA DELL'ATMOSFERA presso il Dipartimento di Scienze della Terra Ardito Desio, (avviso bando pubblicato sulla G.U. n. 3198/2023 del 19/06/2023) Codice concorso 5331

## **Fabio Oriani**

### **CURRICULUM VITAE**

**(N.B. IL CURRICULUM NON DEVE ECCEDERE LE 30 PAGINE E DEVE CONTENERE GLI ELEMENTI CHE IL CANDIDATO RITIENE UTILI AI FINI DELLA VALUTAZIONE.**

**LE VOCI INSERITE NEL FACSIMILE SONO A TITOLO PURAMENTE ESEMPLIFICATIVO E POSSONO ESSERE SOSTITUITE, MODIFICATE O INTEGRATE)**

#### **INFORMAZIONI PERSONALI (NON INSERIRE INDIRIZZO PRIVATO E TELEFONO FISSO O CELLULARE)**

<b>COGNOME</b>	<b>ORIANI</b>
<b>NOME</b>	<b>FABIO</b>
<b>DATA DI NASCITA</b>	<b>18.03.1984</b>

#### **TITOLI**

##### **TITOLO DI STUDIO**

*(indicare la Laurea conseguita inserendo titolo, Ateneo, data di conseguimento, ecc.)*

MSc Degree in Geoscience (magna cum laude), Università degli Studi di Milano, 19/04/2011.

Bachelor Degree in Geoscience (score: 102/110), Università degli studi di Milano, 16/06/2008.

##### **TITOLO DI DOTTORE DI RICERCA O EQUIVALENTI, OVVERO, PER I SETTORI INTERESSATI, DEL DIPLOMA DI SPECIALIZZAZIONE MEDICA O EQUIVALENTE, CONSEGUITO IN ITALIA O ALL'ESTERO**

*(inserire titolo, ente, data di conseguimento, ecc.)*

Doctor of Science, University of Neuchâtel, Switzerland 17/09/2015. Thesis title: "Stochastic simulation of rainfall and climate variables using the direct sampling technique". PhD Advisor: Prof. Philippe Renard, University of Neuchâtel.

## CONTRATTI DI RICERCA, ASSEGNI DI RICERCA O EQUIVALENTI

(per ciascun contratto stipulato, inserire università/ente, data di inizio e fine, ecc.)

Postdoc Researcher - Agroscope (Swiss Confederation) 01/06/2022 - PRESENT  
Statistical analysis and modeling of mountain pasture vegetation by means of ground and satellite data.

Senior SNF Researcher - University of Lausanne, 01/02/2021 - 31/12/2021  
Statistical analysis and modeling of hydrological, remote sensing, and vegetation data.  
Geostatistical Algorithms and Image Analysis Group, Institute of Earth Surface Dynamics.

Junior Lecturer - University of Lausanne, 01/09/2017 - 31/01/2021  
Statistical analysis and modeling of remote sensing and climate data. Geostatistical Algorithms and Image Analysis Group, Institute of Earth Surface Dynamics.

Postdoc researcher - Danish Ministry of Energy and Climate, 01/03/2016 - 31/08/2017  
Stochastic and physical modeling of hydroclimate data, research and consultancy. SPACE group (Dr. Simon Stisen), Hydrology department, Geological Survey of Denmark and Greenland.

## ATTIVITÀ DIDATTICA A LIVELLO UNIVERSITARIO IN ITALIA O ALL'ESTERO

(inserire periodo [gg/mm/aa inizio e fine], anno accademico, ateneo, corso laurea, numero ore, ecc.)

[01/03/2023, 03/03/2023] University of Neuchâtel, Addressing hydrological problems with massive satellite data using Google Earth Engine, lecturer, 16 hours, 16 PhD students.

[10/11/2021, 31/11/2021] University of Lausanne, Remote Sensing for Earth Systems (UNIL), assistant, 28 hours, 42 graduate students.

[01/02/2021, 31/03/2021] University of Lausanne, Quantitative Data Analysis in Matlab (UNIL), lecturer, 20 hours, 20 graduate students.

[01/02/2021, 28/04/2021] University of Lausanne, Remote Sensing (UNIL), lecturer, 26 hours, 100 undergraduate students.

[01/09/2020, 31/10/2020] Université de Lausanne (UNIL), Remote Sensing of Earth Systems (G. Mariethoz), assistant, 36 hours, 35 graduate students.

[01/01/2020, 31/05/2020] École polytechnique fédérale de Lausanne (EPFL), semester project on Machine Learning, Mathematics section, mentor, 40 hours, one graduate student.

[01/02/2020, 28/04/2020] University of Lausanne, Remote Sensing (UNIL), lecturer, 26 hours, 100 undergraduate students.

[01/10/2014, 31/03/2015] University of Neuchâtel (UNINE): Simulation of rainfall remote sensing imagery (PROVOC project), mentor, 80 hours, 1 undergraduate student.

[01/10/2014, 31/10/2014] University of Neuchâtel (UNINE): Sedimentary and metamorphic rocks, practical classes, assistant, 16 hours, 10-15 undergraduate students.

[01/02/2013, 31/03/2013] University of Neuchâtel (UNINE): Quantitative data analysis and stochastic modeling, practical classes (P. Renard), assistant, 10 hours, 30 undergraduate students.

[12/04/2019, 12/04/2019] European Geoscience Union General Assembly 2019 (EGU), short course: A hands-on introduction to Multiple Point Statistics, lecturer, 2 hours, 50 attendants.

[14/08/2017, 14/08/2017] Geological Survey of Denmark and Greenland (GEUS), PhD course: Introduction to the theory and practice of Multiple-Point Statistics, lecturer , 8 hours, 15 graduate students.

## **DOCUMENTATA ATTIVITÀ DI FORMAZIONE O DI RICERCA PRESSO QUALIFICATI ISTITUTI ITALIANI O STRANIERI;**

*(inserire anno accademico, ente, corso, periodo, ecc.)*

Summer School on Alpine Plant Life 16-22 July 2023, Furka pass, University of Basel, participant.

## **PUBBLICAZIONE DI SOFTWARE**

Oriani F., Eodal Sentinel-2 query example for pixel analysis (2023)  
[https://github.com/EOA-team/eodal\\_notebooks/blob/master/notebooks/Sentinel-2/sentinel2\\_data\\_download\\_to\\_array.ipynb](https://github.com/EOA-team/eodal_notebooks/blob/master/notebooks/Sentinel-2/sentinel2_data_download_to_array.ipynb)

Oriani F., WLcount - semi-automatic laminae counting in raster images (2021),  
<https://bitbucket.org/orianif/wlcount/src/master/>

Oriani F., Vector Sampling (VS) - A data-driven resampling scheme for multisite missing-data imputation, Geological Survey of Denmark and Greenland (2019),  
<https://bitbucket.org/orianif/vs/src/master/>

Oriani F., GAOptimize - A python implementation of the Genetic Algorithm for optimization of mixed-integer problems, Geological Survey of Denmark and Greenland (2017),  
<https://bitbucket.org/orianif/gaoptimize/src/master/>

Oriani F., Tutorial: time-series simulation and analysis using the multiple-point algorithm g2s, an example on daily rainfall time-series,  
[https://bitbucket.org/orianif/g2s\\_time\\_series\\_tutorial/src/master/](https://bitbucket.org/orianif/g2s_time_series_tutorial/src/master/)

Oriani F., Autocorrelation and Partial Autocorrelation with NaNs for Matlab,  
<https://doi.org/10.5281/zenodo.3518227>

## **REALIZZAZIONE DI ATTIVITÀ PROGETTUALE**

*(indicare, data, progetto, ecc.)*

01/06/2022, ongoing, GrassSense: Monitoring Mountain pasture habitats using satellite images, participant, Agroscope, Federal Office for Agriculture, Swiss Confederation, approved.

01/04/2021 (12 month, 99k CHF) More Uncertainties for More Certainty: Using uncertainties to connect fossil pollen records in space and time and better reconstruct past climate dynamics, participant, Swiss National Science Foundation CRSK-2\_195875, approved.

01/03/2016 (18 months, 75k CHF), Multiple scale simulation of rainfall and temperature using the direct sampling technique, responsible applicant, Swiss National Science Foundation P2NEP2\_162040, approved.

01/08/2011 (4 years, 280k CHF), Stochastic simulation of climatic data with the Direct Sampling method, participant, Swiss National Science Foundation 200021\_134614, approved.

## **ATTIVITÀ EDITORIALE PER RIVISTE SCIENTIFICHE SPECIALIZZATE**

Associate Editor - Computers & Geosciences (Elsevier), 01/2020 - PRESENT  
<https://www.journals.elsevier.com/computers-and-geosciences>

Guest Editor - Remote Sensing (MDPI) 12/2019 - PRESENT  
Special issue, Remote Sensing for Distributed Hydrologic Models: New Satellite Data, Model Parametrization and Spatial Metrics to Calibrate and Evaluate Models,  
<https://www.mdpi.com/journal/remotesensing>

Assitant Editor - Computers & Geosciences (Elsevier), 06/2018 - 12/2019  
<https://www.journals.elsevier.com/computers-and-geosciences>

Reviewer 10/2016- PRESENT, for the following journals:  
Computers & Geosciences (Elsevier)  
Remote Sensing (MDPI)  
Environmental Modelling and Software  
Journal of Hydrology (Elsevier)  
Stochastic Env. Res. and Risk Ass. (Springer)  
Hydrology and Earth Sys. Sci. (EGU)  
Journal of Earth Sci. (Springer)

Member - Centre Interdisciplinaire de Recherche sur la Montagne (CIRM) - 2018- PRESENT  
<https://www.unil.ch/centre-montagne/home.html>

Member - Swiss Geocomputing Centre - 2019- PRESENT  
<https://wp.unil.ch/geocomputing>

## **ATTIVITÀ DI RELATORE A CONGRESSI E CONVEGNI NAZIONALI E INTERNAZIONALI** (inserire titolo congresso/convegno, data, ecc.)

Oriani F., Aasen H., Schneider M., Monitoring pasture vegetation using satellite remote sensing: which images and workflow? The Life Pastoralp final conference, Bard, 16/03/2023.

Oriani F., Mariethoz G., Applying MPS to point data merging using Pattern-to-Point (P2P) catalogs, Geoenvironment 2022, Parma, 07-2022.

Oriani F., Mariethoz G., Advanced MPS to explore unobserved heterogeneity: Incomplete training images, 2D to 3D, and pattern-to-point data merging, invited speaker, EGU 2021 Webinar, 04-2021.

Oriani F., Mariethoz G., Missing data imputation for incomplete multisite time series: a data pattern-based approach, 18th Swiss Geoscience Meeting, Zurich 09/2020.

Oriani et al, Missing data imputation for multisite rainfall networks: a comparison between geostatistical interpolation and data-mining estimation on different terrain types, EGU 2020 Webinar, 06-2020

Oriani et al, Downscaling multi-band satellite images without co-located high-resolution data: a new approach based on training images, EGU 2019, Vienna, 04-2019

Oriani et al., Recovering missing rainfall data by resampling the historical dataset: a simple

technique to improve the estimation of basin recharge, AGU Fall Meeting, Washington DC, 12-2018

Oriani et al., Recovering missing rainfall data for distributed hydrological model input: can resampling lead to a more realistic hydrological response?, Geoenv 2018, Belfast, 06-2018

Oriani, Simulating the complex output of rainfall and hydrological processes using the information contained in large data sets: the Direct Sampling approach, invited speaker, EGU 2017, Vienna, 04-2017

Oriani and Stisen, Improving a spatial rainfall product using multiple-point geostatistical simulations and its effect on a national hydrological model, AGU 2016, San Francisco, December 12-17 2016

Oriani et al., A simple simulation approach to generate complex rainfall fields conditioned by elevation: example of the eastern Mediterranean region, EGU 2016, Vienna, April 17-22 2016

Oriani et al., Spatial Rainfall Simulation: Trading Time for Space with Multiple Point Statistics, AGU Fall Meeting, San Francisco, December 15-19, 2014

Oriani, Daily rainfall simulation: reproducing high-order statistics with the Direct Sampling technique, SWG workshop, Avignon, September 17-19, 2014

Oriani et al., Reproducing Chaos And Persistence In A Daily Rainfall Time-Series: A Comparison Between A Markov-Chain Approach And Multiple-Point Statistics, geoENV2014, Paris, July 9-11, 2014

Oriani, Stochastic rainfall simulation: reproducing high-order statistics with the Direct Sampling technique, Research Seminar in Applied Statistics, University of Zurich, April 10, 2014

Oriani et al., Modeling daily rainfall time-series using multiple point geostatistics, 15th Annual conference of the international association for mathematical geosciences, Madrid, September 2-6, 2013

Oriani et al., Modeling future climatic time-series according to climate change scenarios. The Water Cycle in a Changing Climate, ETH Zurich, July 1-2, 2013

Oriani et al., Binary upscaling of complex heterogeneities, a fast approximation based on image analysis. GeoENV2012, Valencia, September 19-21, 2012

## **CONSEGUIMENTO DI PREMI E RICONOSCIMENTI NAZIONALI E INTERNAZIONALI PER ATTIVITÀ DI RICERCA**

*(inserire premio, data, ente organizzatore, ecc.)*

Prix Guébbard-Séverine - 01/09/2016 - Université de Neuchâtel

Early post-doc mobility fellowship - 01/04/2015 - Swiss National Science Foundation

IAMG Student travel grant - 01/09/2013 - International Association for Mathematical Geosciences.

Erasmus student exchange scholarship - 10/2010 - Education, Audiovisual and Culture Executive Agency, European Commission.

## **PRODUZIONE SCIENTIFICA**

### **PUBBLICAZIONI SCIENTIFICHE**

*(per ciascuna pubblicazione indicare: nomi degli autori, titolo completo, casa editrice, data e luogo di pubblicazione, codice ISBN, ISSN, DOI o altro equivalente)*

15. Oriani F., Mariethoz G., Chevalier M. (2023) EUPollMap: The European atlas of contemporary pollen distribution maps derived from an integrated Kriging interpolation approach, Submitted to ESSD, Preprint: <https://essd.copernicus.org/preprints/essd-2022-364/essd-2022-364.pdf>
14. Oriani F., Treble P., Baker A., Mariethoz G., (2022) WICount: Geological lamination detection and counting using an image analysis approach, Computers & Geosciences, <https://doi.org/10.1016/j.cageo.2022.105037>
13. Wang H. Treble P., Baker A., Rich A.M., Bhattacharyya S., Oriani F., Akter R., Chinu K., Wainwright I., Marjo C., (2021) Sulphur Variations in Annually Layered Stalagmites Using Laboratory Micro-XRF, Spectrochimica Acta B., <https://doi.org/10.1016/j.sab.2022.106366>
12. Giaccone E., Oriani F., Tonini M., Labiel C., Mariethoz G., (2021) Using data-driven algorithms for semi-automated geomorphological mapping. Stoch Environ Res Risk Assess, (2021) <https://doi.org/10.1007/s00477-021-02062-5>
11. Baker A., Scheller M., Oriani F., Mariethoz G., Hartmann A., Wang Z., Cuthbert M.O., (2020) Quantifying temporal variability and spatial heterogeneity in rainfall recharge thresholds in a montane karst environment, Journal of Hydrology, <https://doi.org/10.1016/j.jhydrol.2021.125965>
10. Oriani F., Stisen S., Demirel M.C., Mariethoz G. (2020) Missing Data Imputation for Multisite Rainfall Networks: A Comparison between Geostatistical Interpolation and Pattern-Based Estimation on Different Terrain Types, AMS Journal of Hydrometeorology, <https://doi.org/10.1175/JHM-D-19-0220.1>
9. Oriani F., Matthew F. McCabe, Grégoire Mariethoz, (2020) Downscaling multispectral satellite images without colocated high-resolution data: a stochastic approach based on training images, IEEE Transactions on Geoscience and Remote Sensing, <https://doi.org/10.1109/TGRS.2020.3008015>
8. Dembélé M., Oriani F., Mariéthoz G., Tumbulto J., Schaefli B., (2018) Gap-filling of daily streamflow time series using Direct Sampling in various hydroclimatic settings, Journal of Hydrology, <https://doi.org/10.1016/j.jhydrol.2018.11.076>
7. Oriani F., Ohana-Levi N., Marra F., Straubhaar J., Mariéthoz G., Renard P., Karnieli A., Morin E., (2017) Simulating small-scale rainfall fields conditioned by weather state and elevation: A data-driven approach based on rainfall radar images, Water Resources Research, <https://doi.org/10.1002/2017WR020876>
6. Oriani F. , Mehrotra R., Straubhaar J., Mariethoz G., Sharma A., Renard P. (2017) Simulating the complexity of rainfall time-series: how to account on variability at multiple scales?, Stochastic Environmental Research and Risk Assessment, <http://dx.doi.org/10.1007/s00477-017-1414-z>
5. Oriani F., Borghi A., Straubhaar J., Mariethoz G., Renard P. (2016) Missing data simulation inside flow rate time-series using multiple-point statistics. Environmental Modelling & Software, <http://dx.doi.org/10.1016/j.envsoft.2016.10.002>

4. Oriani F., Straubhaar J., Renard P., Mariethoz G. (2014) Simulation of rainfall time-series from different climatic regions using the Direct Sampling technique, Hydrology and Earth System Sciences, <http://dx.doi.org/10.5194/hess-18-3015-2014>
3. Oriani F., Renard P., (2013) Binary upscaling on complex heterogeneities: the role of geometry and connectivity , Advances in Water Resources, <http://dx.doi.org/10.1016/j.advwatres.2013.12.003>
2. Kessler T. C., Comunian A., Oriani F., Renard P., Nilsson B., Klint K. E. and Bjerg, P. L. (2012) Modeling Fine-Scale Geological Heterogeneity—Examples of Sand Lenses in Tills, Ground Water, <http://dx.doi.org/10.1111/j.1745-6584.2012.01015.x>
1. Oriani F. (2015) Stochastic simulation of rainfall and climate variables using the direct sampling technique, PhD Thesis, Faculty of Sciences Center for Hydrogeology and Geothermics (CHYN) University of Neuchâtel, Switzerland  
<https://libra.unine.ch/handle/123456789/5535>

Data

24.07.2023

Luogo

Lugano