

Fabio Veronesi, PhD

Education and Training

Dates: 6 June 2013
Title of qualification awarded: **Degree of Doctor of Philosophy**

Principal subject: 3D Advanced Mapping of Soil Properties

Institution: Cranfield University
National Soil Resources Institute

Supervisors: Dr. Thomas Mayr (t.mayr@cranfield.ac.uk)
Dr. Ron Corstanje (roncorstanje@cranfield.ac.uk)

Dates: July 2007 - December 2007
Title of qualification awarded: **Certificate of attendance**

Principal subject: Creation of a rocks and fossils database

Institution: ISMAR - CNR

Supervisor: Dr. Marco Taviani (marco.taviani@bo.ismar.cnr.it)

Dates: 23rd March 2007
Title of qualification awarded: **Master Degree in Geology**

Principal subject: Geological survey and stratigraphic characteristics of Conca di Agordo (Eastern Dolomites)

Institution: University of Ferrara
Department of Geology and Petrography

Supervisor: Dr. Piero Gianolla (piero.gianolla@unife.it)

Work Experience

Dates: October 2014 - active
Occupation or position held: **Post-Doctoral Researcher**

Main activities and responsibilities: Transmission line siting and identification of potential sites for building new Pumped-Hydro Storage facilities. Wind resource assessment and siting of new renewable power plants

Name and address of employer: ETH Zurich
Institute of Cartography and Geoinformation
Stefano-Franscini-Platz 5
8093 Zurich

Supervisor: Prof. Martin Raubal (mraubal@ethz.ch)

Dates: October 2012 - September 2014
Occupation or position held: **Post-Doctoral Researcher**

Main activities and responsibilities: Geomorphological mapping and relief shading

Name and address of employer: ETH Zurich
Institute of Cartography and Geoinformation
Stefano-Franscini-Platz 5
8093 Zurich

Supervisor: Prof. Lorenz Hurni (lhurni@ethz.ch)

Dates: July 2012 - September 2012
Occupation or position held: **Research assistant**

Main activities and responsibilities: Exploring and comparing Digital Soil Mapping methods

Name and address of employer: Cranfield University
National Soils Resources Institute
Wharley End, Cranfield
MK43 0AL, Beds.

Supervisors: Dr. Thomas Mayr (t.mayr@cranfield.ac.uk)
Dr. Ron Corstanje (roncorstanje@cranfield.ac.uk)

Dates: July 2007 - June 2009
Occupation or position held: **External consultant**

Main activities and responsibilities: Geophysical field data surveys and analysis.

Name and address of employer: Dr. Enrico Farinatti,
via Miani 4 - 45100 Rovigo (enrico.farinatti@tiscali.it)

Projects

Dates: 2014 - 2017
Institution: ETH Zurich
Title of the Project: **SCCER-FURIES**
Brief description: This is a highly multidisciplinary project, with several industrial partners, which aims at guiding policy makers in the process of shifting the current reliance on nuclear energy toward a future of renewables.
Additional Info: Here I am responsible for two deliverables on transmission line and hydro storage siting.

Funding: *Commission of Technology and Innovation CTI*

Dates: 2014 - 2017
Institution: ETH Zurich
Title of the Project: **Assessing Future Electricity Markets (AFEM)**
Brief description: This is another highly multidisciplinary project that aims at assessing the future changes in the Swiss energy market caused by the increase in renewable energy production.
Additional Info: Here I am collaborating for delivering wind speed and solar irradiation maps of Switzerland, and for transmission line siting.

Funding: *Commission of Technology and Innovation CTI*

Dates: 2012 - 2014
Institution: ETH Zurich
Title of the Project: **Terrain analysis, feature extraction and model deformation for cartographic generalisation and visualisation**
Brief description: Development of improved methods for 2D and 3D for cartographic terrain visualization.
Additional Info: Here I was one of the two project leaders.

Funding: *Swiss National Science Foundation*

Dates: 2009 - 2012
Institution: Cranfield University
Title of the Project: **iSOIL**
Brief description: Development and improvement of technologies for data collection in (digital) soil mapping.
Additional Info: This was a project with seven work packages and 19 partners from academia and private sector. I was part of WP2, which dealt specifically with digital soil mapping.

Funding: *EU – FP7*

Teaching

Dates: 2014
Institution: ETH
Title of the course: **Geostatistics Lecture and Exercise**
Brief description: Theoretical lecture on spatial statistics with particular focus of point pattern analysis and kriging interpolation.
Practical exercise on ArcGIS.
Level: **Master**

Dates: 2011 - 2012
Institution: Cranfield University
Title of the course: **Geostatistics Lab**
Brief description: Practical exercise on the use of geostatistical techniques in ArcGIS (geospatial analyst) and briefly in R.
Level: **Master**

Supervising

Institution: ETH
Brief description: Supervision of a master thesis entitled "Comparison of Machine Learning algorithms for Wind Resource Assessment"

Institution: ETH
Brief description: Supervision of two interdisciplinary projects focused on estimating the global energy potential for wind and solar energy.

Institution: ETH
Brief description: Supervision of a Master thesis entitled "Automatic Adjustment of Image Sharpness in Relief Shading"

Institution: Cranfield University
Brief description: Helping supervising two Master thesis on geostatistical analysis of soil properties.

Personal Skills and Competences

Language knowledge:

- Italian: mother tongue
- English: fluent
- German: basic

Research Interests:

- Digital Soil Mapping
- Soil Monitoring
- Quantitative Geography and Geomorphology
- Spatio-Temporal Data Analysis
- Renewable Energy
- Sensors and Open Data

Theoretical knowledge:

- Point Pattern Analysis:
Descriptive statistics for point patterns; spatial randomness; cluster analysis.
- Time-Series Analysis
Time-wise filtering; trends, seasonality and decomposition; forecasting.
- Geostatistics
Determinist interpolation; kriging; multi-variate kriging.
- Geostatistics for Spatio-Temporal Data
Spatio-temporal kriging.
- Statistical and Machine Learning (regression and classification)
Linear regression; variable selection; regression trees and random forest; support vector machines.

Computer Skills:

	Level	Years of Experience
R Programming Language	Expert	6
Python	Advanced	2
ArcGIS 10.x	Expert	8
SAGA GIS	Expert	6
Microsoft Word, Excel	Expert	8
WebGIS	Advanced	3
Parallel Computing	Advanced	6
Cloud Computing	Advanced	6
Javascript	Advanced	3
HTML/CSS	Advanced	3
Google Maps API	Advanced	3
Adobe Photoshop	Advanced	6

Service

Manuscript Reviewer

Journal: Geoderma

Years: 2012, 2013

Journal: Water Resources Research

Years: 2012, 2013

Journal: Journal of Computational Science

Year: 2013

Journal: Computers & Geosciences

Year: 2014

Journal: Spatial Cognition and Computation: An Interdisciplinary Journal

Year: 2015

Journal: Geomorphology

Year: 2015

List of Publications

Journal Papers

- Veronesi, F.; Grassi, S.; Raubal, M. (2015). "Statistical learning approach for wind resource assessment". *Renewable & Sustainable Energy Reviews*, in press.
- Korfiati, A.; Gkonos, C.; Veronesi, F.; Gaki, A.; Grassi, S.; Schenkel, R.; Volkwein, S.; Raubal, M.; Hurni, L. (2015). "Estimation of the Global Solar Energy Potential and Photovoltaic Cost with the use of Open Data". *International journal of Sustainable Energy Planning and Management*, in press.
- Veronesi, F.; Hurni, L. (2014). "A GIS tool to increase the visual quality of relief shading by automatically changing the light direction". *Computers & Geosciences* 74, 121-127
- Veronesi, F.; Hurni, L. (2014). "Changing the light azimuth in shaded relief representation by clustering aspect". *The Cartographic Journal* 51 (4), 291-300
- Patroncini, D.; Veronesi, F.; Rawson, D. (2014). "Evaluation of River Water Quality: A Case Study of the Lea Navigation (NE London)". *Water, Air & Soil Pollution* 225 (9), 1-16
- Veronesi, F.; Hurni, L. (2014). "Random Forest with semantic tie points for classifying landforms and creating rigorous shaded relief representations". *Geomorphology* Vol 224, pp. 152-160.
- Veronesi, F.; Corstanje, R.; Mayr, T. (2014). "Landscape scale estimation of soil carbon stock using 3D modelling". *Science of the Total Environment* Vol 487, pp. 578-586.
- Veronesi, F. (2013). "3D Advance mapping of soil properties". Ph.D Thesis, Cranfield University.
- Kral, F.; Corstanje, R.; White, J.R. and Veronesi, F. (2012). "A Geostatistical Analysis of Wetland Soil Properties in the Davis Pond Mississippi River Freshwater Diversion". *Soil Science Society of America Journal* Vol 76, pp. 1107-1118.
- Veronesi, F.; Corstanje, R.; Mayr, T. (2012). "Mapping soil compaction in 3D with depth functions". *Soil and Tillage Research* Vol 124, pp. 111-118.

Conference Papers

- Veronesi, F.; Grassi, S. (2015). "Comparison of hourly and daily wind speed observations for the computation of Weibull parameters and power output". 3rd International Renewable and Sustainable Energy Conference, Marrakech – December 2015

- Veronesi, F; Grassi, S; Raubal, M (2015). "Satellite data to improve the accuracy of statistical models for wind resource assessment". European Wind Energy Association (EWEA) Annual Event, Paris – November 2015
- Veronesi, F; Grassi, S; Schenkel, R; Korfiati, A; Gkonos, C; Gaki, A; Volkwein, S; Raubal, M; Hurni, L. (2015). "Evaluating the use of open data to estimate the global solar energy potential". 2nd International Conference on Energy and Environment, Guimaraes – June 2015
- Grassi, S; Veronesi, F; Schenkel, R; Peier, C; Neukom, J; Volkwein, S; Raubal, M; Hurni, L. (2015). "Mapping of the global wind energy potential using open source GIS data". 2nd International Conference on Energy and Environment, Guimaraes – June 2015
- Veronesi, F; Grassi, S.; Raubal, M; Hurni, L (2015). "Statistical learning approach for wind speed distribution mapping: the UK as a case study". In: Geographic information science as an enabler of smarter cities and communities, Publisher: AGILE, Editors: F. Bacao, M. Y. Santos, and M. Painho
- Veronesi, F; Hurni, L. (2013). "Automated geomorphological classification for the creation of rigorous shaded relief maps". IAG 8th International Conference on Geomorphology, Paris
- Veronesi, F.; Corstanje, R.; Rickson, J. And Mayr, T. (2012). "Landscape scale estimation of soil carbon stock in three-dimensions for creating a carbon loss risk map". EGU General Assembly 2012, Vienna
- Veronesi, F.; Corstanje, R. (2011). "IntR - Interactive GUI for R". The R Users Conference - UseR 2011, Warwick.
- Veronesi, F.; Corstanje, R.; Mayr, T. (2011). "3D soil compaction mapping with a three-coefficients polynomial". Proceedings of the second global workshop of proximal soil sensing, Montreal.