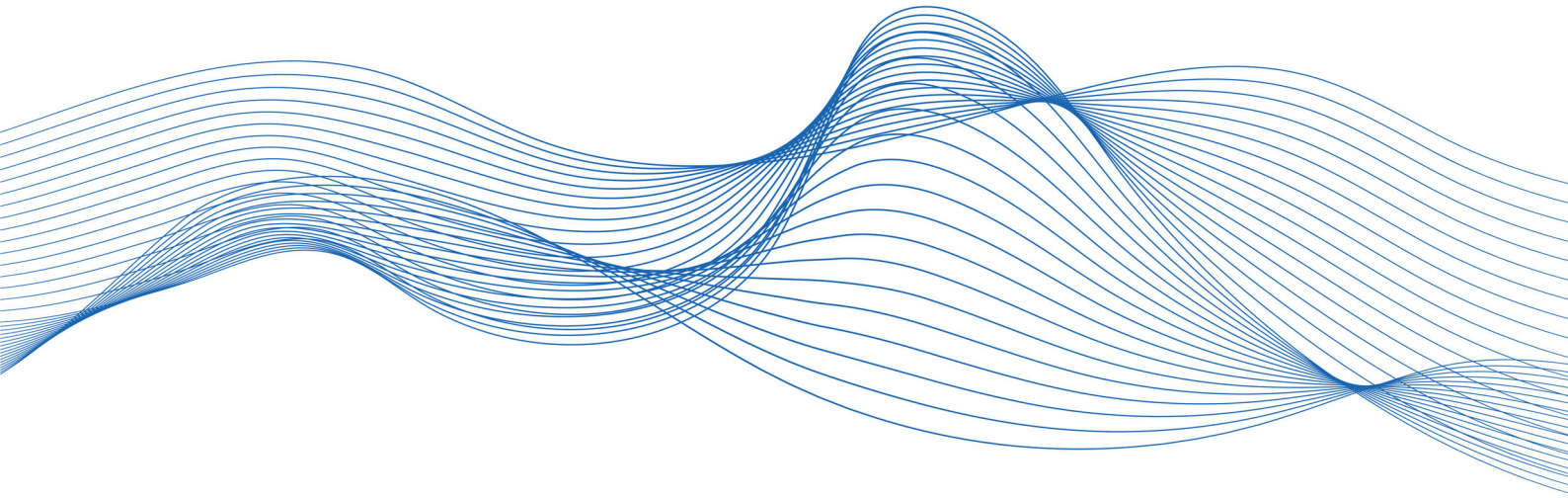
13TH INTERNATIONAL CONFERENCE ON GEOSTATISTICS FOR ENVIRONMENTAL APPLICATIONS

geoENV 2020

PARMA

JUNE 18, 2021



PROCEEDINGS OF geoENV2020

Andrea Zanini & Marco D'Oria, Editors

UNIVERSITÀ DI PARMA

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Preface

The 13th International Conference on Geostatistics for Environmental Applications (geoENV2020) was scheduled in Parma, Italy on July 2020. The international health crisis affected the conference, which was initially postponed to June 2021 and eventually replaced by a one-day virtual event on June 18, 2021 with the presentations of the keynote lecturers.

This book contains the abstracts and extended abstracts submitted to the conference and focusing on geostatistics applied to different fields such as: climate change, ecology, natural resources, forestry, agriculture, geostatistical theory and new methodologies, health, epidemiology, ecotoxicology, inverse modeling, multiple point geostatistics, remote sensing, soil applications, spatio-temporal processes and surface and subsurface hydrology. The Scientific Committee initially selected about 100 abstracts and 68 contributions were confirmed to be published in these proceedings.

The next geoENV conference (geoENV2022) will be held in Parma, Italy on June 2022. We expect more colleagues from all over the world to join this international event next year.

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Amilcar Soares – CERENA, Instituto SuperiorTécnico – Portugal
Emmanouil Varouchakis – Technical University of Crete – Greece
Hans Wackernagel – Mines Paris Tech, PSL University – France

Keynote lectures

Peter Atkinson, Lancaster University

Implications of the Point Spread Function for downscaling and data fusion in remote sensing

Alessandra Menafoglio, Politecnico di Milano

An object oriented approach to the analysis of spatial complex data

Paula Moraga, King Abdullah University of Science and Technology

How geostatistics can help with decision making in global health – case studies in tropical disease mapping

* Extended abstract

* Extended abstract

* Extended abstract

* Extended abstract

IMPACT OF DIFFERENT VARIOGRAM MODELS OF TOTAL ORGANIC CARBON ON SAMPLING SCHEME OPTIMIZATION AND POTENTIALITY OF COVARIATE INFORMATION IN THE PRECISION AGRICULTURE FRAMEWORK

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Abstract

Assessment at field scale of soil organic carbon (TOC) is of primary interest for agronomic management, particularly, in the precision agriculture framework. The knowledge about the spatial distribution of TOC is invaluable to implement strategies for improving the crop yield. However, the assessment of TOC spatial distribution requires the collection and the analysis of a large number of samples that is a costly and time-consuming activity.

In the present work, a strategy is proposed to optimize a sampling scheme of the considered soil property by means of an indirect auxiliary variable coming from the proximal geophysical sensing survey (GPR data). This variable has a greater spatial continuity than the soil organic carbon, then can be straightforwardly modelled in the geostatistical fashion. This allows to apply the spatial simulated annealing as an efficient mean for reducing optimally the sampling scheme. In addition, two different variogram models are derived by an automatic method. Such models are compared for assessing i) which is more suited as a descriptor of the indirect variable spatial behaviour and ii) allows the efficient reduction of the sampling scheme discarding all the redundant sampling points and saving those truly informative.