1st day 22/04/2015:

Location: Ceremony Hall - Faculty of Civil Engineering, Bulevar kralja Aleksandra 73, second floor

Time: 13:00

Invited lecture by Prof. Gerard Heuvelink,

Wageningen University, Department of Soil Geography and Landscape

http://www.isric.org/users/gerard-heuvelink

Topic:

Uncertainty propagation in spatial environmental modelling

2nd day 23/04/2015

Workshop day
Gerard Heuvelink and Tomislav Hengl will give one day workshop.

	Daily programme **Selected topics in spatial environmental modelling**
9:00-11:00	Heuvelink, Gerard: **Analysing uncertainty propagation in a vegetation index using Taylor series and Monte Carlo methods** Summary: The Normalized Difference Vegetation Index (NDVI) is a commonly used index that indicates the amount of vegetation in an area. It is derived from the reflectance fractions in the near-infrared (NIR) and visible red (RED) spectral bands in a non-linear way. In this workshop we will analyse how uncertainties in NIR and RED propagate to NDVI for a study area in the Belgian Lorraine region. We will assume that the workshop participants had joined the Ceremony Hall lecture the previous day so that the theory need only be briefly repeated, with focus on the mathematics. Participants will calculate the propagation of uncertainty themselves using prepared R scripts. Also, differences between the Taylor and Monte Carlo results will be interpreted and explained.
Coffee break	

11:30-13:00	Hengl, T.: **Spatiotemporal prediction in 3D+T (with examples in Google Earth)** Summary: Gasch et al. (in review) have recently implemented a full 3D+T spatiotemporal regression-kriging framework based on a combination of random forests models and spatiotemporal residual kriging (for the purpose of mapping soil moisture, temperature and electrical conductivity based on the sensor network data). This is one of the first applications of geostatistics using dynamic 3D+T data. The presenter will address the complexity of fitting 3D+T geostatistical models and show examples of 3D+T predictions visualized in Google Earth (spatiotemporal stacks) based on the Cookfarm data set. Optional: participants of the workshop will try to run some code examples of spatiotemporal overlay and aggregation and plotting of data and predictions from R to Google Earth.
Lunch break	
14:30-15:30	Guided exercises
Coffee break	
16:00-17:00	Discussion (Q & A's)

Requirements: Software (Will be defined latter), Internet, or something more.
Audience: 20 to 25 PhD students/researchers mostly from our Faculty, Mathematics and Geology.

3rd day: 24/04/2015
Consultation with PhD students.
Consultation with stuff related to some research projects or project proposal.
Discussion on potential collaboration with WUR or ISRIC.