Geospatial analysis with ArcGIS : last novelties and applications

Thursday 22 September 2022, 14:45 – 17:30

Géopolis building (UNIL) – Room 2121

Programme

14:45 – 16:15 First part

- **Introduction** (Marj Tonini, Faculty of Geosciences and Environment)

- **"Professional applications of ArcGIS"**, by Katia Valenza Lyons, Program Manager, Esri Suisse. From NGOs to administrations and engineering offices, we will see how Esri tools are used for a wide range of applications in the private, academic and public sectors.

- **"GIS for humanitarian demining"**, by Wendi Pedersen, Geneva International Centre for Humanitarian Demining. IMSMA Core is a system of tools and processes that can be configured to fit national programmes' specific operational and reporting requirements, which provide access to information to a wide range of stakeholders, foster information sharing and provide real time maps and reports on the extent of contamination.

- **"ArcGIS and Artificial Intelligence"**, by Cédric Despierre Corporon, Solution Architect, Esri Suisse. Machine Learning is playing an increasingly important role in solving spatial problems, from image classification to object detection and multivariate prediction. We propose an introduction to Machine Learning and Deep Learning capabilities in the ArcGIS system, the use of Python scripting for automation and the integration with existing AI frameworks; we will see the ready-to-use tools and pre-trained models proposed by Esri, as well as concrete use cases.

16:15   Coffee Break

16:30 – 17:30 Second part

- **"Watershed and river network analysis with GIS"**, by Virginia Ruiz-Villanueva, Faculty of Geosciences and Environment. This presentation will summarize the application of GIS technologies to various hydrogeomorphological problems, such as bio-geomorphological mapping, geomorphometry computation, change detection, and hazard and risk assessment. I will focus on the specific use of GIS to: acquire and analyze geodata (e.g., mapping, change detection), geoprocessing and modelling, pre-process and input data for models, and post-process and analysis of model results.

- **"Archaeological surveys and GIS: contribution of ArcGIS Pro and 123 Survey"**, by Chloé Chezeaux et Sylvian Fachard, Institute of Archeology and Classical Studies. GIS technology has been increasingly used in archaeology since the 1980s. It allows archaeologists to manipulate geographic and archaeological datasets, georeference maps, conduct remote sensing and draw thematic maps. Archaeologists have also used spatial analysis tools to produce least-cost paths, cost allocations and spatial tessellation, visibility analysis, agricultural catchments, networks, interconnectivity, and LiDAR data. Today, landscape archaeology is simply impossible without GIS. Here we will present our latest archaeological survey project in Greece (the Eretria-Amarynthos Survey Project) and the ways by which we collect and manage archaeological data using 123Survey and ArcGIS Pro. We will also expose some of the limitations we currently experience, paving the way for future solutions and potential improvements.

- **"Use of drone in the search for missing persons"**, by Quentin Millet, Faculty of Law, Criminal Justice and Public Administration)