NATIONAL INSTITUTE FOR RESEARCH AND DEVELOPMENT IN FORESTRY "MARIN DRĂCEA"
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PhD Positions

on forest monitoring through active/passive remote sensing within the project *Prototyping an Earth-Observation based monitoring and forecasting system for the Romanian fores*ts (EO-ROFORMON, POC-A1-A.1.1.4-E-2015, SMIS 105058, contract no. 90/09.09.2016)

EO-ROFORMON aims to prototype a novel forest monitoring and forecasting system based on the integration of active (radar) and passive (optical) Earth-Observation (EO) sensors calibrated with *in situ* data and terrestrial laser scanning. EO-ROFORMON takes advantage of ESA`s Sentinel 1/2 missions characterized by a high temporal resolution, free access data policy, long life time span, and complementary active and passive sensor constellations which provides the perfect opportunity for prototyping an integrated monitoring system. The project combines EO data with an extensive set of concurrent ground-based monitoring activities to provide a spatially explicit and consistent picture of the state and changes in forest condition which is closely related to biodiversity, natural capital and ecosystem services. EO-ROFORMON aims at differentiating natural disturbances from human-induced degradation (e.g. logging) by taking advantage of the temporal dimension of changes in the remote sensing signal. Spatially explicit information on forest condition, logging extent, intensity and their timelines shall be recovered.

The first PhD position shall focus on developing novel algorithms based on active/passive data synergies to retrieve forest variables (e.g., forest canopy cover and density; forest total biomass; forest type, canopy water content) relevant to a forest monitoring system. The second position shall focus on the use of dense active/passive temporal series. Methods that simultaneously consider the signal from multiple images shall be developed based on radar/optical data fusion and used to evaluate forest disturbance extent, intensity and dynamics.

The positions are supported by a large team focused on field data collection. The field work focuses on retrieving indicators related to forest condition/status (e.g. defoliation) and degradation (e.g. logging activity, wind throws, fires). Changes in canopy/trunk water content would be monitored to provide information on forest condition trends. Algorithm development and validation is supported by top researchers from Oregon State University, Gamma Remote Sensing, the University of Melbourne, and University Paul Sabatier (e.g., co-supervision, training courses, internships).

We are looking for highly-motivated students with a strong interest in environmental and forest monitoring, remote sensing and, and with strong numerical skills. Applicants should have a Master in Forestry, GIS and Remote Sensing, Environmental Sciences, or similar disciplines. Selection criteria for the positions are: experience in programming and numerical modelling (e.g., Python, Matlab, R), statistical skills, innate curiosity, enthusiasm for reading scientific literature, good writing and communication skills in English, and willingness to closely collaborate with colleagues. Working knowledge of synthetic aperture radar (SAR) and/or high resolution optical satellite datasets, experience in the analysis and modelling of spatial environmental data, and experience with time-series analysis are advantageous. Funding is guaranteed for three years at competitive rates.

To receive full consideration, applications must be submitted before July 15, 2017, but the positions will stay open until filled. Applications should include a CV, a statement of research experience and interests (max. 2 pages), an academic transcript of your studies, a web link (or similar) to the master thesis/project, and the names and addresses of two references as a single pdf file to Dr. Mihai Tanase (mihai@tma.ro) or Dr. Ovidiu Badea (obadea@icas.ro). For further information about the positions contact Dr. Mihai Tanase. Candidates are encouraged to discuss the position with the contact person before applying.

The start of the PhD projects is scheduled for September-October 2017.