CReScenDo - Combining Remote Sensing Technologies for Peatland Detection and Characterization

CReScenDo aims at quantifying the extent and thickness of peatlands from the local to the regional scale, to accurately define their importance in the global carbon cycle. Peatlands are extraordinary reservoirs of organic carbon (almost matching, according to some estimates, the atmospheric carbon pool), which is currently being released into the atmosphere due to a number of often anthropogenic degradation processes (e.g. soil drainage, fires, etc.). The conservation of peatlands is therefore a key measure to reduce CO2 emissions and to mitigate climate change (e.g. according to the Intergovernmental Panel on Climate Change). However, regional and global estimates of peat deposits remain highly uncertain and an effective quantification methodology is still missing, negatively impacting our ability to plan effective conservation strategies. The innovative approach proposed by CReScenDo combines passive and active satellite remote sensing and geophysical data collected from airborne platforms to map extent and thickness of peat deposits at regional scale. The proposed methodology will yield a set of integrated observations providing the first large-scale picture of the relations among peat deposits, geomorphological features, and soil and environmental characteristics. Three peatland areas (two in Europe and one in Asia) are selected to implement and test the methodology, using field observations to improve the accuracy and quantify the uncertainty. The ability of the methodology to characterize/classify different peat types will also be tested and used to map the carbon pool stored at the three study sites. The applicant has a solid background in optical remote sensing and ecological modelling applied to salt-water wetlands. The hands-on training performed at the host institution and at a private company (Secondment) will provide her with new scientific competences in topographic and geophysical data analysis tools with tremendous impact on her mid/long-term career.

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