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Analysis of radar and thermal satellite data time-series for understanding the long-term impact of land surface temperature changes on forests

Maria Prodromou^{1,2}, Anastasia Yfantidou^{1,2}, **Christos Theocharidis**^{1,2}, Milto Miltiadou^{1,2}, and Chris Danezis^{1,2}

¹Laboratory of Remote Sensing and Geo-Environment, Eratosthenes Research Centre, Department of Civil Engineering and Geomatics, School of Engineering and Technology Cyprus University of Technology, Limassol, Cyprus

²Eratosthenes Centre of Excellence of the Cyprus University of Technology, Limassol, Cyprus

Forests are globally an important environmental and ecological resource since they retrain water through their routes and therefore limit flooding events and soil erosion from moderate rainfall. They also act as carbon sinks, provide food, clean water and natural habitat for humans and other species, including threatened ones. Recent reports stressed the vulnerability of EU forest ecosystem to climate change impacts (EEA, 2012) (IPPC, et al., 2014). Climate change is a significant factor in the increasing forest fires and tree species being unable to adapt to the severity and frequency of drought during the summer period. Consequently, the possibility of increased insect pests and tree diseases is high as trees have been weakened by the extreme weather conditions. In Cyprus, there are two types of pine trees that exists on Troodos mountains, *Pinus Nigra* and *Pinus Brutia*, that may have been influenced by the reduced snowfall and extended summer droughts during the last decades.

The overarching aim of this project is to research the impact of Land Surface Temperature on Cypriot forests on Troodos mountains by analysing time-series of radar and thermal satellite data. Impacts may include forest decline that does not relate to fire events, decreased forest density and alternations to timing of forest blooming initiation, duration and termination. Radar systems emitted pulses that can penetrate forest canopy due to the size of its wavelength and, therefore, collect information between tree branches without being affected by clouds. This presentation will focus on radar analysis conducted; testing of various methods, and how the processing pipeline has been automated.

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