Olivier Desenfans

MISTRALE: Soil moisture mapping service based on a RPAS-embedded GNSS-Reflectometry sensor

Abstract

The objective of the MISTRALE project (**M**onitoring so**I**l moi**S**ture and wa**T**e**R**-flooded **A**reas for agricu**L**ture and **E**nvironment) is to provide RPAS-based soil moisture maps. To do so, MISTRALE project relies on an innovative use of the GNSS signals, named reflectometry (GNSS-R). This approach consists in comparing the direct signal, i.e. the signal received directly from satellites, with those reflected by the ground. In the context of the MISTRALE project, both GPS and GALILEO signals will be used, which will improve the system performances.

In July 2015, two experimental flights were conducted in the South of France with the aim to validate the technical feasibility of the project concept. The analysis of the data collected has shown very promising results: high reflectivity values were observed for rivers, basins or irrigation canals, whereas the low reflectivity values were associated with dryer areas or with a higher presence of vegetation.

This extended abstract presents the results of this early analysis. The paper will be complemented by comparison between the MISTRALE data with other soil moisture measurements (in situ probes and near infrared measurements that have also been used to collect data during the July experimental flights).

Bio

Olivier Desenfans graduated in mechanical engineering from the « Université catholique de Louvain » (UCL, Belgium) in 2004. He is specialized in aeronautical engineering. From 2004 to 2010, he was involved in numerous European project related to Air Traffic Management and Air Traffic Control improvement as system engineer. He has joined M3 Systems in 2010 as project manager being in charge of developing M3 Systems in Belgium. Particularly, he is involved in Location-Based Services projects as well as in signal processing studies.