Title of the topic	First Guess Root zone soil moisture estimation from Remote Sensing Data application to agriculture and drought monitoring
Host	isardSAT (http://www.isardsat.cat/en.html)
Responsibles	Pere Quintana-Seguí (Obs. Ebre/URL) and Maria Jose Escorihuela (isardSAT)
Financial Framework	**MICINN Industrial Doctorate** **Co-funding supported** by H2020 REC project (2015-2019) : « Root zone soil moisture Estimates at the daily and agricultural field scales for Crop irrigation management and water use impact – a multi-sensor remote sensing approach »
Profile of applicant	Physics or Engineering Degree, optional Master degree in Remote Sensing. The candidate should be able to enrol in PhD programme by September/October 2017. Applicants must be able to pursue data-oriented computational research as well as experimental approaches and fieldwork to validate model predictions. Good numerical skills and literacy in programming is an asset. A good standard of written and spoken English is required. The position is linked to the MICINN grant and is limited to 3 years.
Short description of the topic: context, applied methodology, expected results.	Agriculture is an important pressure on water resources, especially in the Mediterranean countries where irrigation represents up to 80% of the consumptive uses of water. It now becomes necessary to improve on-farm irrigation management by adjusting water supplies to crop water requirements along the growing season. Modern irrigation agencies rely on in situ root zone soil moisture measurements to detect the onset of crop water stress and to trigger irrigations. However, in situ point measurements are generally not available over extended areas and may not be representative at the field scale. The H2020-funded REC project proposes a remote sensing-based solution to the need of root-zone soil moisture at the crop scale for irrigation management. The methodology relies on the coupling between a surface model representing the water fluxes at the land surface atmosphere interface, and remote sensing data composed of land surface temperature (thermal infrared), surface reflectances (visible and near infrared) and near-surface soil moisture (passive and active microwaves). In this PhD program, we propose to implement a simple bucket model to estimate root zone soil moisture. The model will be constraint by surface soil moisture estimated from SMOS or SMAP satellites. The comparison of model surface soil moisture and EO might help improving LSM by detecting irrigation dates and quantity. The PhD candidate will be mainly based at isardSAT (Barcelona), will participate in field campaigns over two irrigated areas in Spain and Morocco, and will have secondment opportunities (up to 12 months) to the partner organizations of REC (France and Morocco). A top-up allowance of 2000€ per month will be payed to the PhD student during the mobility periods.
Application	To apply send an application package containing: • Cover letter • Academic CV • Name and contact of three referees who can comment on the applicant capacities and abilities (please inform them that, if you are shortlisted, we might contact them asking for a reference) To: info@isardSAT.cat Deadline for receiving the documents is 31 December 2016