1SC2691 – Biomass and deforestation

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Department: DOMINANTE - PHYSIQUE ET NANOTECHNOLOGIES
Language of instruction: FRANCAIS
Campus: CAMPUS DE PARIS - SACLAY
Workload (HEE): 40
On-site hours (HPE): 27,00

Description

Forests are an important ecosystem from an environmental and climatic point of view. Their protection but also the control of their contribution in terms of CO2 regulation are fundamental. Protection involves both detecting and monitoring the sources of deforestation (clear cuts to sell wood, transformation into agricultural areas, etc.) and estimating their health (infestation of pines by butterfly larvae in Canada for example) . The CO2 absorption capacity is a function of the biomass. In 2022, ESA will launch a BIOMASS mission, the objective of which is to enable the inventory of global biomass.
Students can choose to work on one of these aspects, either to estimate the biomass of forests, to detect deforested areas or to follow the evolution of an area infested by insects.

Quarter number
ST2

Prerequisites (in terms of CS courses)
none

Syllabus
To understand the physical links between the signal measured by a radar and a forest (biomass in particular).
To propose a model to link the two.
To study the robustness of this model according to the type of forest, topography and polarization.

Grading
The session will be evaluated with an oral presentation.
Skills C4, C7 and C8 are evaluated during the oral defense.

Resources
ESA computing platform

Learning outcomes covered on the course

To understand the physical links between the signal measured by a radar and a forest (biomass in particular).
To propose a model to link the two.
To study the robustness of this model according to the type of forest, topography and polarization.

Description of the skills acquired at the end of the course

C4-1 Identify and reformulate the need
C4-2 Define and present one or more solutions
C7-1 Structure your ideas and arguments, be synthetic (assumptions, objectives, expected results, approach, and value created)
C7-2 Understand in an evolving way the needs and expectations of your interlocutors. Encourage interactions, be an educator, and create a climate of trust.
C7-4 Master spoken, written, and body language and master basic communication techniques