

# Abstract

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**Abstract** The University of Liege is convinced that CubeSats are particularly well suited for Earth observation from space. CubeSats are cheap nanosatellites which can be duplicated to create constellations. These multiple CubeSats are redundant and have a high rate of revisit compared to classical satellites. Therefore, the University of Liege is developing a project which objective is to detect hydric stress in agricultural fields. It would permit to manage more efficiently water resources through irrigation and evaluate yielding of crops. To this end, a technology demonstrator called OUFTI-Next must first be developed. The objective of this thesis is to assess the legitimacy and feasibility of the mission. The feasibility study of OUFTI-Next is carried out by performing different analyses. They cover several aspects such as lifetime, constellation, orbits, data and link budgets... At the end, certain points which must be carefully watched out are highlighted.

**Keywords** OUFTI-Next, CubeSat, Hydric Stress, Constellation, Feasibility Study, Orbit

# Demonstrative images

This first figure displays how it is possible to obtain a daily coverage with only two orbits and eight satellites

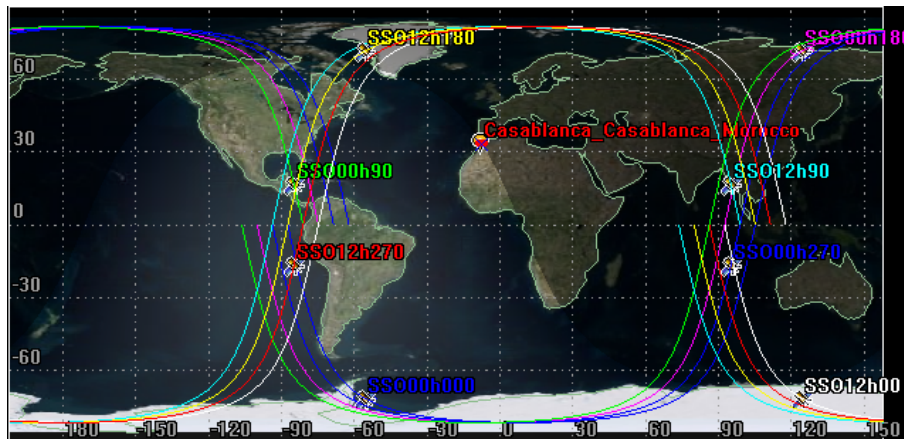


FIGURE 1: *Ground tracks of 800[km] SSO constellation*

The second figure presents a first CAD model of OUFTI-Next with its different subsystems.

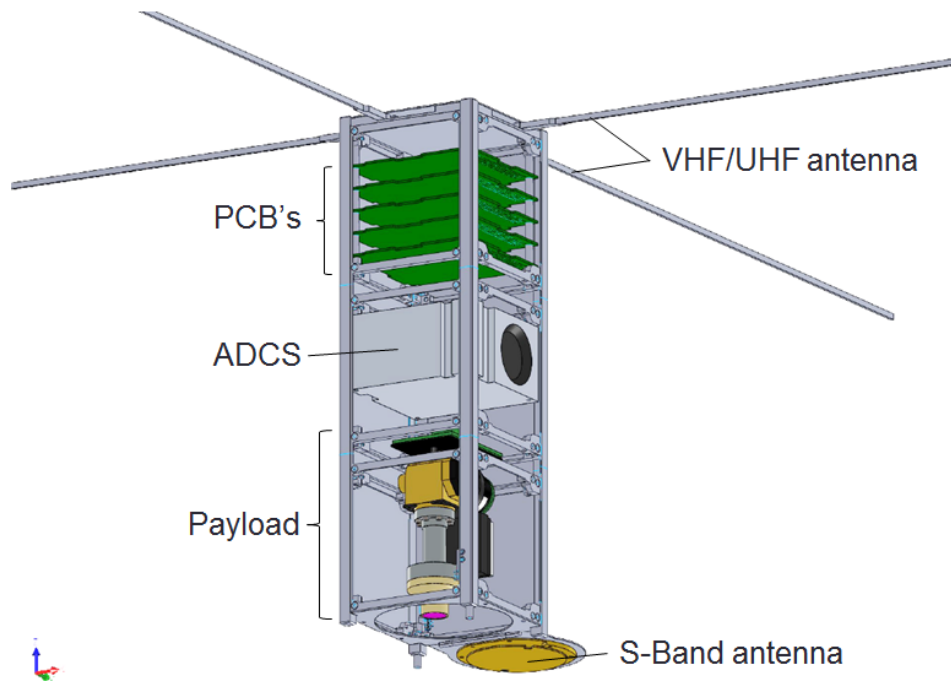


FIGURE 2: *OUFTI-Next CAD model*