The French proposal for a high spatial resolution Hyperspectral mission

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More than 25 years of airborne imaging spectroscopy and spaceborne sensors such as Hyperion or HICO have clearly demonstrated the ability of such a remote sensing technique to produce value added information regarding surface composition and physical properties for a large variety of applications. Scheduled missions such as EnMAP and PRISMA prove the increased interest of the scientific community for such a type of remote sensing data. In France, a group of Science and Defence users of imaging spectrometry data (Groupe de Synthèse Hyperspectral, GSH) established an up-to-date review of possible applications, define instrument specifications required for accurate, quantitative retrieval of diagnostic parameters, and identify fields of application where imaging spectrometry is a major contribution. From these conclusions, CNES (French Space Agency) decided a phase 0 study for an hyperspectral mission concept, named at this time HYPXIM (HYPerspectral-X IMagery), the main fields of applications are vegetation biodiversity, coastal and inland waters, geosciences, urban environment, atmospheric sciences, cryosphere and Defence. Results pointed out applications where high spatial resolution was necessary and would not be covered by the other foreseen hyperspectral missions.

The phase A started at the beginning of 2013 based on the following HYPXIM characteristics: a hyperspectral camera covering the [0.4 – 2.5 μm] spectral range with a 8 m ground sampling distance (GSD) and a PAN camera with a 1.85 m GSD, onboard a mini-satellite platform. This phase A is currently stopped due to budget constraints. Nevertheless, the Science team is currently focusing on the preparation for the next CNES prospective meeting (March, 2014), an important step for the future of the mission. This paper will provide an update of the status of this mission and of new results obtained by the Science team.