

EARTH OBSERVATION SYMPOSIUM (B1)  
Future Earth Observation Systems (2)

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PRISMA: THE ITALIAN PRECURSOR OF AN OPERATIONAL HYPERSPECTRAL IMAGING  
MISSION**Abstract**

In the framework of Earth Observation activities, the Italian Space Agency (ASI) signed a contract in 2007 with an Italian Consortium lead by Carlo Gavazzi Space S.p.A. for the design, development and deployment of PRISMA mission. PRISMA stands for “PRecursore IperSpettrale della Missione Operativa” and is the follow-on of previous programmes, both national (HypSeo, phase A/B) and international (JHM phase A, in cooperation with Canada). The program is funded by ASI up to the completion of system on-orbit commissioning. The industrial consortium includes all key national industries, which have already acquired specific know-how and expertise. PRISMA will provide worldwide imaging access, with a specific area of interest covering the whole European and Mediterranean region. Hyperspectral data will help to efficiently address the selected applications, such as those related to environment quality and protection, sustainable development, climate change, strong economy. According to its “public good” nature, PRISMA will focus on the needs of Italian institutional and research entities. PRISMA system fulfills the mission requirements defined by the Agency for a small satellite mission operating in sun-synchronous LEO for 5 years of operational life and carrying a state-of-the-art hyperspectral and panchromatic payload. The first part of the paper, starting from a short overview of the context, will present PRISMA program and its status. The paper will then address the main user requirements that the system will fulfill. In fact, PRISMA program, being conceived as a precursor of a future operational mission, is mainly driven by the needs of Italian user community that will develop a set of dedicated applications for the exploitation of PRISMA data. The quality of images and products will be superior to previous and competing systems for what concerns geometry (also thanks to fusion of panchromatic and hyperspectral data), spectral and radiometry. Finally, the paper will introduce the system architecture, describing both space (i.e. the satellite) and ground segment. The satellite, weighting about 700kg, will primarily operate in a targeting mode with a <7 days re-look period, with an image acquisition and download to Ground of more than 100,000 km<sup>2</sup> daily. The focus will be on hyperspectral and panchromatic instrument features and performance. The ground stations, both for TT&C and receiving image data, will be located in Italian territory; the ground segment will generate and distribute data products from level 0 to 2. PRISMA system key performance will be eventually presented, focusing on peculiar design aspects.