

Science Missions and Payload Specifications of Philippines' First Earth-Observation Microsatellite

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On average, there are eighteen to nineteen typhoons entering the Philippines' area of responsibility in a year. It is also situated in the pacific ring of fire making it vulnerable to earthquakes and volcanic activities. Driven by these natural hazards, the Philippines, under the Department of Science and Technology (DOST), funded the program, "Development of Philippine Earth Observation Microsatellite (PHL-MICROSAT)", which aims to launch the Philippines' first Earth-observation microsatellite, PHL-MICROSAT-1, by 2016.

The microsatellite will be launched from the International Space Station with an expected altitude of 400 km and a near circular orbit similar to that of the ISS. It aims to provide robust and efficient near real-time status of the country's environment particularly for applications on disaster risk management, land-use and aquatic resource assessment and monitoring. On-board the microsatellite are four science and engineering payloads: (1) High Precision Telescope (HPT) with a 3 m GSD and the capability to capture images in the visible and near infrared region which will be used in determining the extent of damages from natural hazards such as typhoons, earthquakes and volcanic eruptions; (2) Space Borne Multi-Spectral Imager (SMI) with Liquid Tunable Filter (LCTF) which can capture images at 80 m GSD with a spectral range of 420-1050 nm. This payload will be used in determining the health and composition of the Philippine oceans; (3) a panchromatic Wide Field Camera (WFC) with a field of view of 180°x134° which will be used to capture images of cloud patterns and distribution as well as weather disturbances such as tropical cyclones; and (4) a colored Middle Field Camera (MFC) with 185 m GSD which will assist in the microsatellite's attitude determination.

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