

An observation plan of high-energy solar particles by a deep-space university satellite UNITEC-1.

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JAXA's Venus explorer Planet-C "AKATUKI" will be launched in 2010. UNITEC-1 will be installed on a piggy back satellite of the Planet-C. The UNITEC-1 is developed by University Space Engineering Consortium (UNISEC) as a consortium of 22 universities and technical colleges of the whole country, to be launched as the first university-developed satellite into interplanetary orbit.

Scientific instruments on-board the UNITEC-1 are MCAM (Mission Camera) and SPM (Solar Particle Monitor). The SPM, a proto-type compact particle detection sensor for the next JAXA's planet explorer, will monitor activities of high-energy solar particles in a different phase angle with respect to the Earth in the interplanetary orbit, so far as in capable communication from the Earth to the UNITEC-1. More precisely, main target of the SPM is to clarify the indices of high-energy protons over 100 keV up to a few GeV under the active solar events like CME and CIR disturbances. The UNITEC-1 is a kind of ultra-small satellites of about the size of 30 cm cube. A method to compress selected important data by MOBC (Main On-Board Computer) is developed because of the requirement of extremely limited communication capacity of the baud rate of 1 bps. The other mission equipments of the UNITEC-1 are UOBCs (University On-Board Computers) developed by student of universities and technical colleges. From 13 entries, only 6 selected UOBCs are finally installed on the UNITEC-1 through a qualifying tournament test process in August 2009. Along the rule of UOBC competition, each student team developed data handling program on their UOBC with arbitrary way to compress MCAM and SPM data to send within the limited downlink telemetry rate to the Earth.

UOBC team of Kochi University of Technology has been developed their UOBC for the deep space university satellite since April 2009. After winning of installation right to the UNITEC-1, FM-version data handling program has been developed in order to save SPM data on the very limited data space.

In this paper, an overview of the UNITEC-1 and the data handling program for our UOBC-FM will be shown in comparison with MOBC's one.

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