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GNSS REMOTE SENSING MISSIONS IN TAIWAN

Abstract

Triton program is the upcoming global navigation satellite system reflectometry (GNSS-R) mission in Taiwan which carries NSPO in-house built GNSS-R receiver. In a GNSS reflectometry mission, the reflected signals can be processed to form delay Doppler maps (DDMs) so that the various geophysical parameters of Earth's surface, such as roughness, ocean wind speed, and soil moisture can be retrieved. In this paper, the design and development of NSPO in-house built GNSS-R payload for the Triton mission are presented. As well, some airborne flight experiments for the verification of Triton's GNSS-R receiver are described. In addition to the reflectometry, the operational FORMOSAT-7 (FS-7) GNSS-R radio occultation (GNSS-RO) mission is exploited to profile the ionosphere and atmosphere to better understand the space weather and weather prediction. Therefore, the GNSS RO/R mission is the next step of the GNSS remote sensing mission in Taiwan as expected. A mission conceptual design for the GNSS RO/R mission for collecting atmospheric and ocean surface roughness soundings simultaneously for the enhancement of severe weather prediction is introduced at the end of this paper.