

NSPO's Perspectives on Remote Sensing Missions

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ABSTRACT

In this speech, the highlights of Taiwan's space program are briefly introduced along with its visions, program goals, accomplishments, and current status. The National Space Organization's (NSPO's) perspectives on the development of the remote sensing missions, based on the lessons learned from past two decades and visions for next decade, are to be addressed in terms of mission planning, technology development, and user's needs. The strategies and implementation plans constituting the next phase of Taiwan's space program are to be elaborated as well.

Since the Taiwan's space program was initiated in 1991, NSPO has successfully carrying out three satellite programs (FORMOSAT-1, 2, &3). Three remote sensing missions have been conducted by NSPO including ocean color imaging of FORMOSAT-1, earth observations of FORMOSAT-2, and atmospheric soundings of FORMOSAT-3, respectively. Equipped with a 2m ground resolution electro-optical (EO) type remote sensing instrument, FORMOSAT-2 operates in a sun-synchronous orbit with revisit time equal to one day. This unique feature of the daily revisit capability is significantly useful for post disaster assessment and environmental monitoring. FORMOSAT-3 is a constellation of six micro-satellites to collect atmospheric data for weather prediction and conducting climate, ionosphere, and geodesy research. FORMOSAT-3 has been demonstrated the ability to significantly increase the accuracy of weather forecasting by utilizing the GPS Radio Occultation (GPS RO) technique. ECMWF has ranked GPS RO data as the 5th place in all atmospheric observation data collected by space- and air-borne sensors.

With these remarkable achievements on previous programs, NSPO is continuously pursuing the follow-on remote sensing missions focusing on two primary catalogs: EO-type Earth Observation and GPS RO. The FORMOSAT-5 program will serve as a follow-on mission of FORMOSAT-2 to continuously provide remote sensing imagery for users worldwide. FORMOSAT-5 will carry a domestically made electro-optical Remote Sensing Instrument (RSI) to perform earth observation mission. The FORMOSAT-5 program is also considered a big leap in demonstration of the self-reliant space technology in Taiwan. The FORMOSAT-7/COSMIC-2 Mission is intended to provide continuity of GPS-RO data as well as provide the next generation of Global Navigation Satellite Systems-RO (GNSS-RO) data to the global users. The FORMOSAT-7/COSMIC-2 is a joint Taiwan-US cooperative program between NSPO of Taiwan and NOAA of US. The goal of this program is to deploy a 12-satellite constellation operational system to provide the dense and timely GPS-RO data to the global user's communities for real-time weather forecast as well as space science researches. In the mean time, NSPO is also conducting the feasibility study and mission definition for three potentially future remote sensing missions including Hyper-Spectrum Imaging, Microwave Radiometer, and Synthetic Aperture Radio respectively.

Based upon the capability built up in the past two-decades, NSPO is committed to become a center of innovation and excellence for the space technology in Taiwan. Strategically, NSPO will fully utilize and synergize the domestic resources to the ultimate extent via carrying out these programs. Taiwan's space program is also committed to promote innovative space science & technology and make pronounced societal impacts not only to Taiwan but to all over the world.