

Report on the Status of Future Geostationary Meteorological Satellite System

This paper will provide a status and an overview of the future GOES satellite system

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1. Introduction

In the current constellation, GOES-12 (launched July 23, 2001) continues to provide data as GOES-EAST. GOES-10 (launched April 25, 1997) is operational as GOES-WEST. It was activated in mid 1998 to replace GOES-9 (launched May 23, 1998) when GOES-9's momentum wheels showed signs consistent with lubrication starvation seen on other vehicles, which failed shortly thereafter. GOES-9 was transitioned to a location over the Western Pacific Ocean to provide operational data until Japan can launch the next MTSAT. GOES-11 (launched May 3, 2000) completed its checkout on August 14, 2000, and is the primary operational on-orbit spare.

GOES-12 was successfully launched on July 23, 2001 and completed its checkout on December 21, 2001. It carries the first Solar X-Ray Imager (SXI) instrument. The SXI can stare at the Sun continuously and provide images in up to eight X-ray energy bands. Other instrumentation is similar to that on GOES-10. One important change is in the Imager channels. One channel at 12.0 micrometers will be replaced with one at 13.3 micrometers in order to better establish the height of winds for tropical storm predictions and for more accurate cloud optical properties. In addition, the horizontal resolution of the 6.7 micrometer water vapor channel will be improved from 8 km to 4 km.

2. GOES-N Series

The first two spacecraft, GOES-N and O, are in preparation for thermal-vacuum testing. The completed GOES-N spacecraft is scheduled to be available for launch by December 2004 and GOES-O by December 2005. The new GOES-N series ground system was delivered to the Satellite Operations Control Center in June 2001. Contractual options for GOES-P were exercised in the spring of 2003.

Instrumentation will continue with the present five channel Imagers and filter wheel Sounders. At least two SXI instruments will fly on the GOES-N series. Horizontal resolution of these Imagers will be improved to 4 km in all IR channels, including the 13.3 micrometer channel.

3. GOES-R Series

The GOES-R series satellites will each carry a new Advanced Baseline Imager (ABI). The ABI will have approximately 16 channels. Channels selection will be based, in part, on EUMETSAT's SEVERI instrument. The GOES-R series will also fly a Hyperspectral Environmental Suite (HES), which is being planned to serve five purposes:

full disk soundings, soundings for severe weather and mesoscale systems, open ocean soundings,

coastal zone imaging, and land imaging. HES will be a hyperspectral instrument leveraging technology from NASA's Geosynchronous Imaging Fourier Transform Interferometer (GIFTS).

Procurement activities are underway. Three contractors were awarded ABI Formulation Phase (formerly known as Phase B) contracts for system trades and preliminary designs. A single contractor will be the implementation contract by early 2005. Procurement activities for the HES are now being initiated with the formulation phase award scheduled for mid-CY 2004. For the spacecraft, three contractors were awarded accommodation study contract to provide an understanding of weight and power issues. Spacecraft formulation phase will be initiated in 2004.

GOES-R is planned to be ready for launch in 2012.