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## 1. INTRODUCTION

The National Oceanic and Atmospheric Administration/National Environmental Satellite Data and Information Service (NESDIS) and the National Weather Service (NWS, <http://weather.gov>) have been collaborating on the requirements for the Geostationary Operational Environmental Satellites (GOES) for many years. As new science and technology evolves, the demands by the GOES User Community continue to increase. In recent years, NESDIS has hosted open GOES User's Conferences at least once a year. Such conferences were held to brief the user community on progress toward the next generation of GOES satellites while also seeking to understand and document new requirements.

GOES satellite imagery is a fixture of modern broadcast meteorologists' presentation. While the use and distribution of GOES imagery is quite widespread across the meteorological community, there are capabilities of the current GOES series which are just now becoming utilized by broadcasters through special partnerships. The time to learn and plan for utilization of GOES-R+ data is now. This presentation will include an updated set of capabilities and show new and exciting applications of GOES imagery .

## 2. GOES R+ REQUIREMENTS

The current series of GOES satellites has captured historic weather events of all kinds. From widespread outbreaks of tornadoes, to crippling blizzards and ice storms, and devastating floods and hurricanes. GOES provides operational weather forecasters the unique ability to image the earth's weather systems using Rapid Scan Operations (RSO). One of the limitations of the current GOES imagers is the ability to scan even more rapidly over a large area. Today's imaging frequency is a tradeoff with the domain being covered. Simply put, the larger the area covered, the longer the image scans take. Because of conflicts in being able to cover the full disk and other large sectors during Rapid Scan Operations, a new design and requirements have been set for the GOES R+ series of satellites.

A series of GOES User Conferences began in preparation for the GOES-R requirements gathering and acquisition process. The first four were held in or near Boulder, CO in 2001, 2002, 2004, and 2006. The fifth GOES Users' Conference was held in conjunction with the AMS Annual Meeting in New Orleans in 2008. The Sixth GOES Users' Conference is scheduled for Fall 2009 (November 3-5) in Madison, WI . See <http://www.goes-r.gov/> for more information. Many of the presentations from the previous users' conferences are available online.

The first launch of the GOES-R series of satellites is scheduled for FY2015. Prior to that, a number of studies are being undertaken to develop algorithms and visualizations using the new suite of instruments and data at improved spatial and temporal resolutions. NOAA has a number of testbed activities which investigate meteorological and hydrological observation and forecast problems with the purpose of transferring research to operations and technology transfer.

In order to prepare users for optimal use of the GOES-R series, a number of activities have begun to maximize the use and benefit of the improved capabilities. Experimental imagery and products from non-NOAA satellites are now being ingested and used by a number of operational forecast offices in the NWS. Such use will be organized around "proving ground" activities which will demonstrate the use and benefits of such data operationally for forecast and warning operations. Experimental imagery to be used prior to the GOES-R launch include the National Aeronautical and Space Administrations' (NASA) AQUA and TERRA satellites. Onboard these satellites are instruments called MODIS (MODerate resolution Imaging Spectroradiometer) which provide operationally-available data at increased spatial resolution over a large portion of the electromagnetic spectrum. Early products include enhanced resolution products currently available from GOES as well as new products like true color imagery of the earth and cloud systems.

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### 3. GOES-R+ TRAINING

Training for GOES-R will include new remote sensing capabilities and science applications to forecasting. Building upon the NESDIS and NWS partnerships with NOAA's Cooperative Institutes, NOAA's Testbeds, and the newly-formed NOAA Satellite Proving Ground, operational transition of proven remote sensing techniques. As new training is developed for GOES-R, it will become available via the VISIT (<http://rammb.cira.colostate.edu/visit>), COMET/MetEd (<http://www.meted.ucar.edu/>), SPORT (<http://www.ghcc.msfc.nasa.gov/sport/>), NASA (<http://goes.gsfc.nasa.gov/goesproject.html>), and NESDIS (<http://www.osdpd.noaa.gov>). These sites have real-time products and imagery from GOES and other related satellite training applicable to operational forecasters. Among the new capabilities with GOES-R will be 5-minute full disk imaging, the Geostationary Lightning Mapper, and the Advanced Baseline Imager. Each of these capabilities will present a leap forward in GOES capabilities and provide new information to combine with high-resolution dual-polarized Doppler radar data for short-term forecasts and warnings. Numerous examples and further information will be available in the presentation file available at the AMS website or from the corresponding author.

# 6<sup>th</sup> GOES Users' Conference

Bringing Environmental Benefits to a Society  
of Users

**November 3–5, 2009**  
**Madison, WI**

**<http://www.goes-r.gov>**

