Usage of McIDAS-V with GOES-R AWG products

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With help from Tom Rink (CIMSS/SSEC), Tom Achtor (CIMSS/SSEC), and Tim Schmit (NOAA/NESDIS)
We would like to acknowledge the efforts of several people in providing the data from the GOES-R AIT framework for testing

Walter Wolf¹, Shanna Sampson², Qingzhao Guo², Gang Fu², Aiwu Li², Meizhu Fan², Shuang Qiu², Zhaohui Cheng²

¹ NOAA/NESDIS/STAR
² IMSG/Dell

In addition, we would like to acknowledge the GOES-R AWG teams who created these algorithms, EUMETSAT for the SEVIRI data and NASA EOS for the MODIS data.

Further thanks goes to the GOES-R Imagery AWG for providing the simulated AWG data and to Tom Rink for implementing the GOES-R Fixed Grid Format in to McIDAS-V
• Currently all of the 80% code delivery ABI Baseline Products are able to be visualized in McIDAS-V

• As files from the 100% code delivery become available for the Baseline products, the output is being tested and visualized in McIDAS-V. The Option 2 products, which are at their 80% code delivery are also being tested as they become available. Comments on any issues are then sent back to the GOES-R AIT

• McIDAS-V can visualize simulated ABI data in the GOES-R Fixed Grid Format
• A request was sent in December 2010 to the GOES-R AWG teams to gather enhancements for the various products.

• As they become available, the enhancements are tested and passed along to the McIDAS-V team for integration into McIDAS-V.

• The status of what enhancements have been integrated in available online to both the AIT as well as McIDAS-V teams.
AB/GLM GOES-R product List

**BASELINE Products**
- Clouds and Moisture Imagery (KPP)
- Clear Sky Mask
- Cloud Top Pressure and Height
- Cloud Top Phase
- Cloud Top Temperature
- Cloud Particle Size Distribution
- Cloud Optical Path
- Temperature and Moisture Profiles
- Total Precipitable Water
- Stability Parameters ( Lifted Index)
- Aerosol Detection
- Aerosols Optical Depth
- Derived Motion Winds
- Hurricane Intensity
- Fire/Hot Spot Characterization
- Land and Sea Surface Temperature
- Volcanic Ash
- Rainfall Rate
- Snow Cover
- Downward Solar Insolation: Surface
- Reflected Solar Insolation: TOA
- Lightning Detection

**OPTION 2 Products**
- Cloud Layer/Heights
- Cloud Ice Water Path
- Cloud Liquid Water
- Cloud Type
- Convective Initiation
- Turbulence
- Low Cloud and Fog
- Enhanced “V”/Overshooting Top
- Aircraft Icing Threat
- SO2 Detections (Volcanoes)
- Visibility
- Upward Longwave Radiation (TOA)
- Downward Longwave Radiation (SFC)
- Upward Longwave Radiation (SFC)
- Total Ozone
- Aerosol Particle Size
- Surface Emissivity
- Surface Albedo
- Vegetation Index
- Vegetation Fraction
- Flood Standing Water
- Rainfall probability and potential
- Snow Depth
- Ice Cover
- Sea & Lake Ice Concentration, Age, Extent, Motion
- Ocean Currents, Currents: Offshore
GOES-R East (Simulated), FGF w/ lats included
75 W

WRF Simulation - 7.4 um Radiance - GOES-R EAST (75W)
Simulated GOES-R
Displayed in Google Earth

Image courtesy of NOAA/NESDIS STAR and GOES-R Imagery Team, Kaba Bah (CIMSS/SSEC)
Most of the GOES-R products have been using SEVIRI as a proxy dataset. Others have used MODIS or simulated data as a proxy data.

The following images show products either from the Framework runs of from PG efforts in order to demonstrate the enhancements and abilities of McIDAS-V.

Unless otherwise noted, all images use data from the 80% code delivery.
GOES-R LST
GOES-R SST using regression technique
Clouds masked using ACM
6/5/2008, 1200Z

SST using regression technique with Clouds masked out
GOES-R Rain Rate Algorithm
GOES-R Ozone
Clouds masked using ACM

Ozone with Clouds masked out using ACM - 2006236 1600Z
GOES-R
Upward Longwave Flux
GOES-R AMV
Overlaid on 0.64 μm animation

MET-8 SEVIRI - 0.64 micron - 2006-08-25 11:45:00Z
AWG AMV (80%) 2006-08-25 12:00:00Z
GOES-R Overshooting Tops
Enhanced-V
4/7/2006, 1845Z

Blue – Overshooting Top
Red – Thermal Couplet
GOES-R Overshooting Tops
Enhanced-V
Proving Ground efforts

Blue – Overshooting Top
Red – Thermal Couplet
GOES-R 100% ACM

MET-8, 0.64 Ref w/ 100% ACM, 2006-08-01 12:30:00Z
GOES-R Volcanic Ash Product
5/5/10 Eyjafjallajökull, Iceland

Vol Ash Data provided by Michael Pavolonis (NOAA/NESDIS/STAR)
EUMETSAT Ash Enhancement provided by Hans Peter, EUMETSAT
McIDAS-V has not only been used to visualize the GOES-R AWG product, but has also been used to demonstrate the improved resolution capability of GOES-R.

The usages of side-by-side panels is useful in demonstrating the resolution differences in the ABI resolution as compared to current GOES.
Side by side analysis animation
4km vs 2km HRIT for MTSAT-1R
Thanks to JMA for providing the 2km HRIT data
Side by side analysis
4km vs 2km HRIT for MTSAT-1R
Thanks to JMA for providing the 2km HRIT data
• All of the ABI Baseline Products are able to be visualized in McIDAS-V
  – We are currently working towards visualizing the GLM products as well.
• As they become available, Option 2 products are being tested in McIDAS-V

• We are making a concerted effort to gather the enhancements that are used by the various AWG teams.
Questions?