



# ASSISTT: Near Real-Time Processing

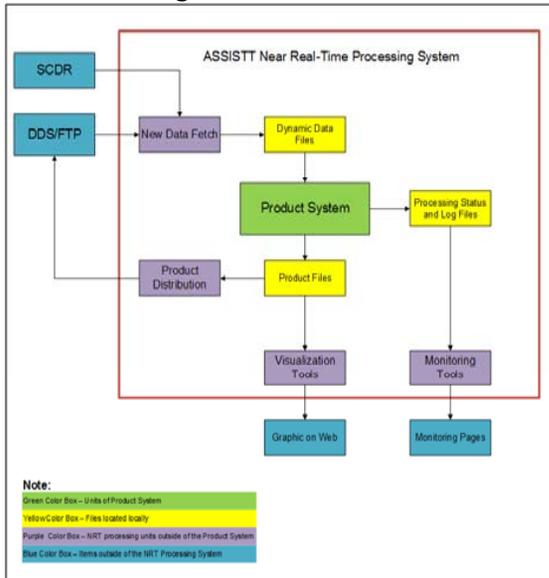
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## Overview

- The Algorithm Scientific Software Integration and System Transition Team (ASSISTT) has designed, developed and implemented the Near Real-Time (NRT) processing system.
- The ASSISTT NRT processing system includes sets of **product systems**, a suite of **monitoring tools**, **product visualization tools**, and **data fetch/distribution**.
- The ASSISTT product systems generate the products by using the STAR Algorithm Processing Framework (SAFF). The SAFF was originally developed by ASSISTT as a testbed for GOES-R project products and have expanded to the other projects such as JPSS Risk Reduction products, VIIRS Polar Winds (VPW), GOES Winds, and AHI Winds.
- The ASSISTT product system plays an important role in the R2O (Research to Operational) algorithm transition: the support of algorithm verification and validation over extended seasonal datasets.
- The ASSISTT product system plays pre-operational role in the system transition: the product system will be fully tested before it is officially delivered to operations. We've delivered: VIIRS Polar Winds, GOES Winds, and JPSS Risk Reduction product systems to OSPO and NDE.
- The ASSISTT product system plays quasi-operational/pseudo-operational role in some special cases: system processes the AHI SST and Winds products and distributes to DDS and FTP server respectively for the outside users such as NWS.
- The recently implemented product systems (AHI data related) are processing on HTCondor/Cluster platform. ASSISTT has plans to transition all the Implemented Product Systems to the cluster.
- The monitoring tools are used to monitor product processing and system performance for the NRT product systems processing.
- The product visualization tools are used to visualize the products created by the product system.

## NRT Processing Data Flow Chart



Data Flow Chart of NRT Processing by ASSISTT

## Future Plans

- Transition the Implemented Product Systems to HTCondor/Cluster.
- Design, develop, and implement the GOES Low Cloud/Fog Product System. Deliver the product system DAP (Delivery Algorithm Package) to OSPO (Office of Satellite and Product Operations)
- Design, develop, implement and deliver the MODIS/AVHRR Polar Winds Product System. Deliver the product system DAP to OSPO.

## Product Systems – Quasi/Pseudo Operational

### Reasons

- The PDA (Product Distribution and Access) is not scheduled to distribute Himawari-8 (H8) AHI data to the users until late 2016
- To ensure that the users receive the H8 data before PDA is ready, STAR is currently running the AHI data related processing systems in quasi/pseudo operational mode
- Best effort support

### AHI Winds product system

- Products: AHI Radiance in BUFR and NetCDF4 formats; Cloud Mask, Cloud Phase, Cloud Height in NetCDF4 format; and 7 types of Winds products in BUFR and NetCDF4 formats
- Refresh rate: 10 minutes. Coverage: Full Disk
- Distribution: The products have been distributing to STAR THREDDS FTP site. NOAA users have been given access to the ftp server where they can retrieve the data

### AHI SST product system

- Products: AHI SST products
- Refresh rate: 10 minutes, but only distribute hourly products. Coverage: Full Disk
- Distribution: AHI products have been distributing to DDS (OSPO Data Distribution Services). NOAA users should follow the DDS data access rules to access the data

## Product Systems – Implemented

### NPP VIIRS Polar Winds

- Input data: The Suomi NPP VIIRS Scientific Data Records (SDR) data from the SCDR (STAR Central Data Repository)
- Products: VIIRS Polar Winds and the precedence products: Cloud Mask, Cloud Phase, Cloud Height
- Refresh rate: ~101minutes, Coverage: North Polar and South Polar regions
- Status: The VPW product system has been delivered to NDE (NOAA's NPOESS Data Exploitation) on March 28, 2014. It has been transitioned to operations at OSPO on May 8, 2014

### GOES Winds

- Input data: The GOES-East and GOES-West GVAR data from DDS
- Products: GOES Winds and the precedence products: Cloud Mask, Cloud Phase, Cloud Height. There are five types of Winds for each different GOES sector
- Refresh Rate: 30 minutes Coverage: 6 GOES sectors
- Status: The GOES Winds product system has been delivered to OSPO on April 9, 2015 and is currently being transition to operations. The official operational products will be available in the near future.

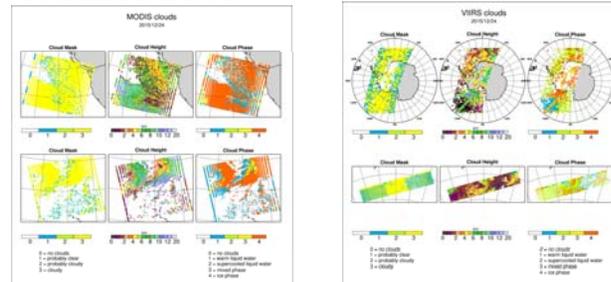
### JPSS Risk Reduction Products

- Input data: The Suomi NPP VIIRS Scientific Data Records (SDR) data from the SCDR
- Products: The JPSS RR project includes eleven selected algorithms which produce total of twenty VIIRS products in three different product areas: Clouds, Aerosol, and Cryosphere.
- Refresh rate/Coverage: ASSISTT processes the granules over CONUS and Polar regions
- Status: Have made the official product system DAP (Delivery Algorithm Package) delivery to NDE (NOAA's NPOESS Data Exploitation) on December 18, 2015

### GOES-R Winds

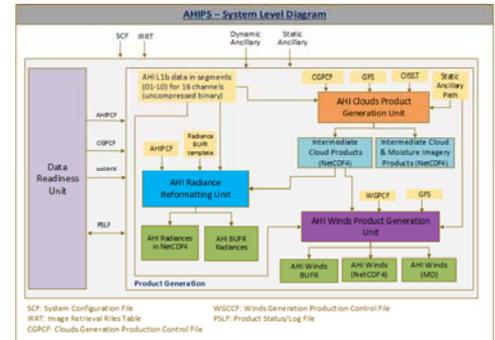
- Input data: The realtime-simulated ABI data from CIMSS (Cooperative Institute for Meteorological Satellite Studies) ftp
- Products: Imagery, Clouds (Mask, Phase, Height, DCOMP, NCOMP), Aerosols (AOD, ADP, Volcanic Ash), LST, SST, Soundings, and Rain Rate.
- Refresh rate: 1 hour, Coverage: CONUS

## Visualization Tools

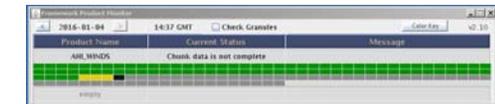


Plots on the ASSISTT intranet webpage for Cloud Mask, Cloud Phase and Cloud Height from the ASSISTT NRT processing for Dec. 24 2015. The plots are posted on the AIT webpage and updated once per day (left: MODIS, right: VIIRS)

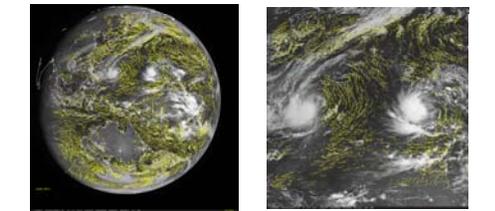
## Example – AHI Winds



AHI Winds Product System Diagram



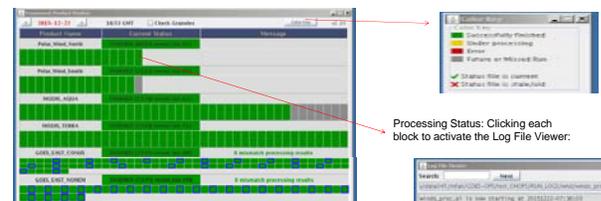
AHI Winds Processing Status – at 14:37 UTC January 04, 2016



AHI Visible Winds produced by ASSISTT AHI Winds product system – Figure provided by Winds algorithm science team member Wayne Bresky (IMSG)

## Monitoring Capabilities

- Process Monitor** tracks the status of the processing chain from data gathering to algorithm processing
- Performance Monitor** compares timing of runs to the average. If the timing is significantly greater than normal, the tool will flag the granule



Interface of Process Monitor tool.

