# Online Visualization and Analysis of Merged Global Geostationary Satellite Infrared Dataset

Zhong Liu[1,4], D. Ostrenga[2,4], G. Leptoukh[4], and A. Mehta[3,4]   Email: Zhong.Liu@nasa.gov

[1]George Mason University,  [2] ADNET Systems, Inc.,  [3]JCET/UMBC, [4] NASA/GSFC, NASA Goddard Earth Sciences (GES) Data & Information Services Center (DISC) , Code 610.2, NASA/GSFC , Maryland 20771, USA

## INTRODUCTION

The NASA Goddard Earth Sciences Data Information Services Center (GES DISC) is home of Tropical Rainfall Measuring Mission (TRMM) data archive. The global merged IR product, also known as, the NCEP/CPC 4-km Global (60°N - 60°S) IR Dataset, is one of TRMM ancillary datasets. They are globally-merged (60°N-60°S) pixel-resolution (4 km) IR brightness temperature data (equivalent blackbody temperatures), merged from all available geostationary satellites (GOES-8/10, METEOSAT-7/5 & GMS). The availability of data from METEOSAT-5, which is located at 63E at the present time, yields a unique opportunity for total global (60°N-60°S) coverage. The GES DISC has collected over 8 years of the data beginning from February of 2000.

This high temporal resolution dataset can not only provide additional background information to TRMM and other satellite missions, but also allow observing a wide range of meteorological phenomena from space, such as, mesoscale convection systems, tropical cyclones, hurricanes, etc. The dataset can also be used to verify model simulations. Despite that the data can be downloaded via ftp, however, its large volume poses a challenge for many users. A single file occupies about 70 MB disk space and there is a total of ~73,000 files (~4.5 TB) for the past 8 years.

In order to facilitate data access, we have developed a web prototype to allow users to conduct online visualization and analysis of this dataset. With a web browser and few mouse clicks, users can have a full access to over 8 year and over 4.5 TB data and generate black and white IR imagery and animation without downloading any software and data. In short, you can make your own images!

Basic functions include selection of area of interest, single imagery or animation, a time skip capability for different temporal resolution and image size. Users can save an animation as a file (animated gif) and import it in other presentation software, such as, Microsoft PowerPoint.

The prototype will be integrated into GIOVANNI and existing GIOVANNI capabilities, such as, data download, Google Earth KMZ, etc. will be available. Users will also be able to access other data products in the GIOVANNI family.

Other Resources and Additional Online Analysis and Visualization Tools:

GES DISC: http://disc.gsfc.nasa.gov
GES DISC Hurricane Portal: http://disc.gsfc.nasa.gov/hurricane/
Hurricane Analysis Tool: http://disc.gsfc.nasa.gov/trmm_quikscat_analysis.shtml
TOVAS: http://disc2.nascom.nasa.gov/Giovanni/tovas/
Giovanni: http://giovanni.gsfc.nasa.gov

Questions and comments: help-disc@listserv.gsfc.nasa.gov

## To Access:

http://disc.gsfc.nasa.gov/hurricane/trmm_quikscat_analysis.shtml
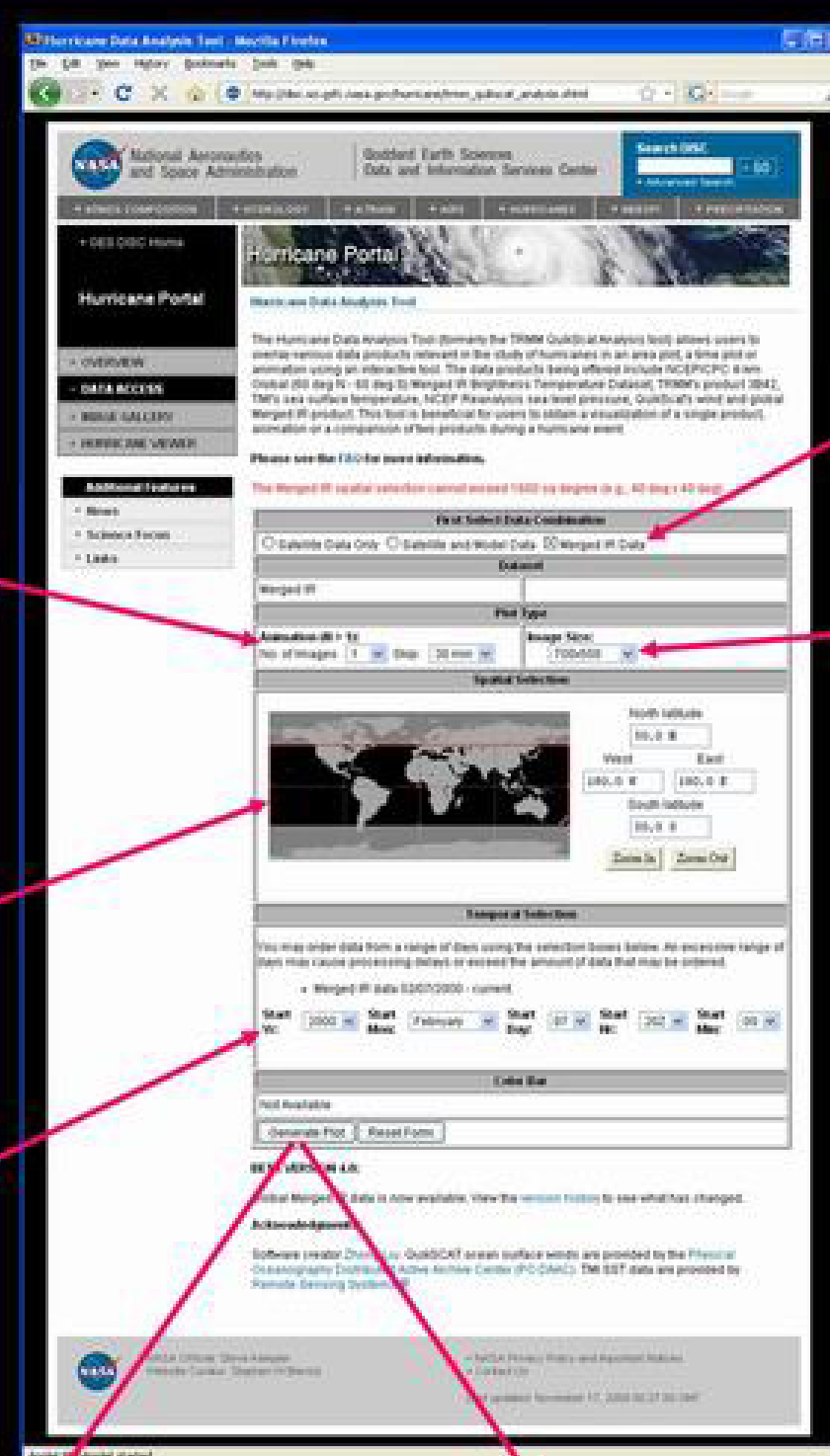
Select the product

Select No. of images and time step

Select image size

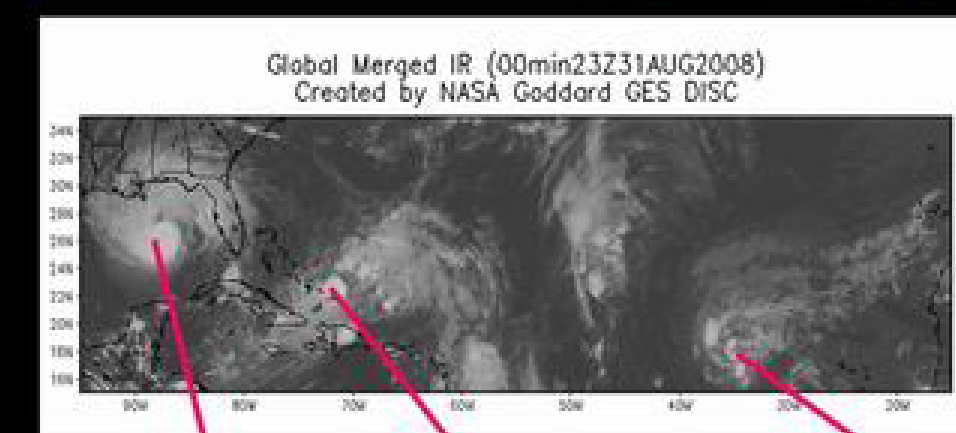Select an area of interest

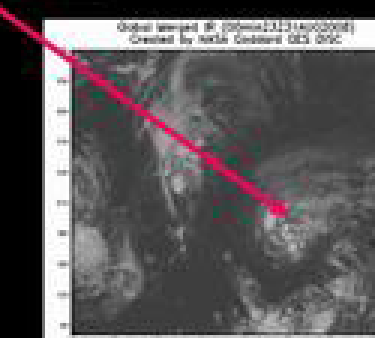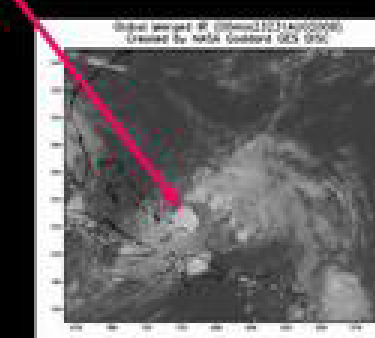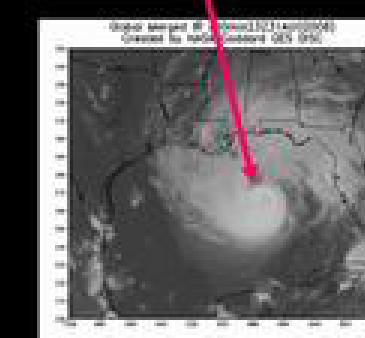Select beginning time
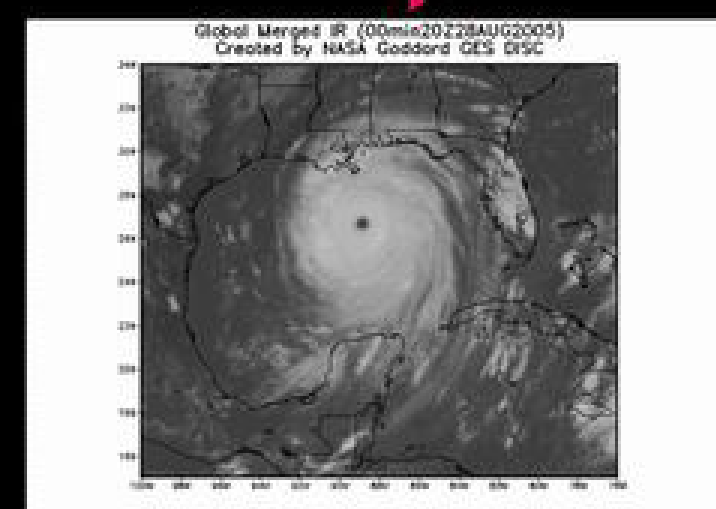
Single image
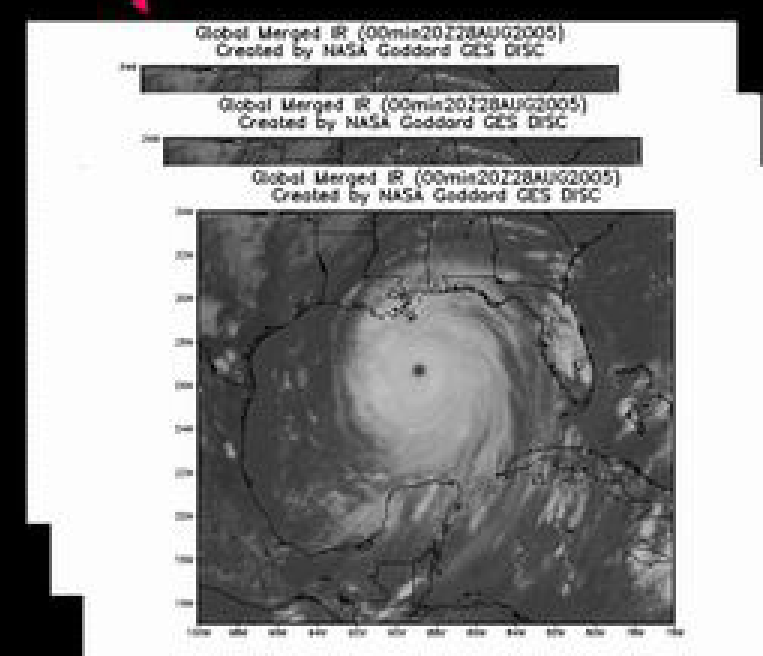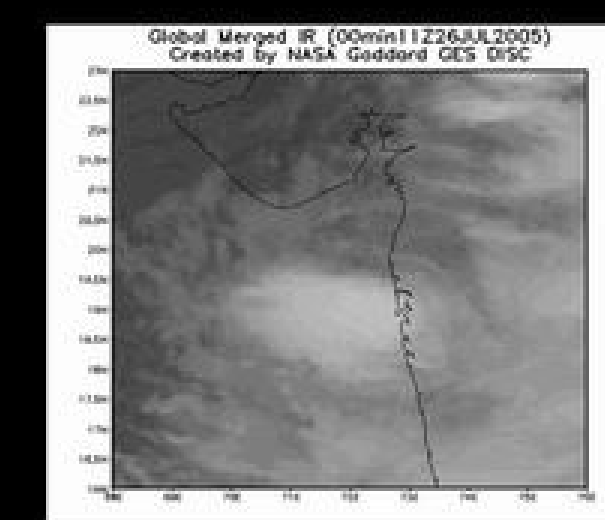
Animation

Import to Microsoft PowerPoint
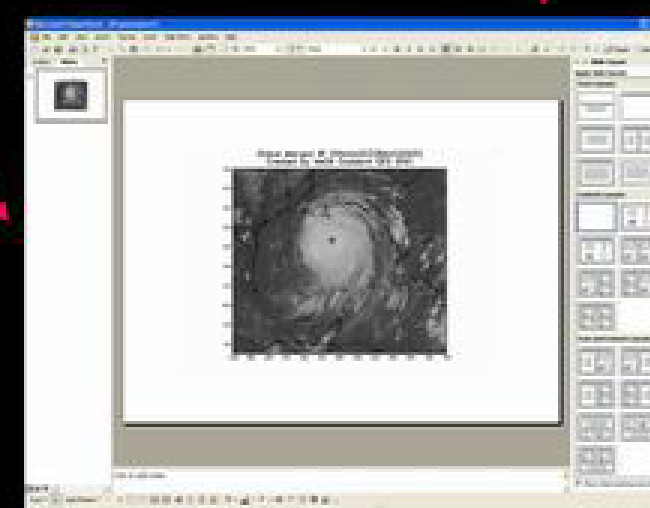
## Sample Images

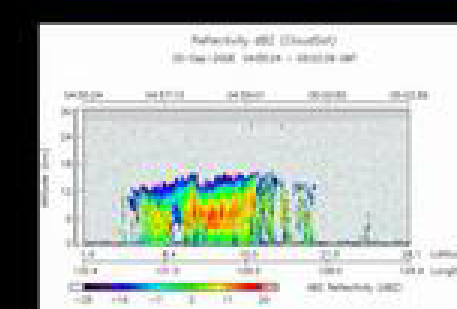A large scale image on August 31, 2008 at 23Z showing Hurricane Gustav, Tropical Storm Hanna and Tropical Storm Ike.
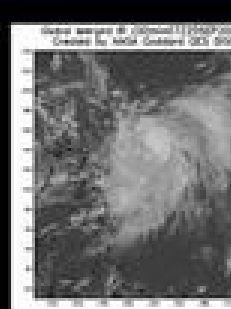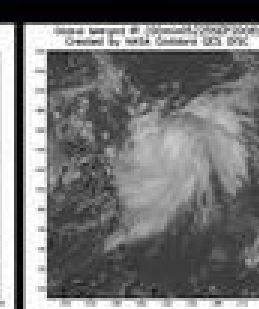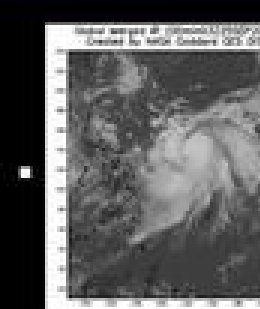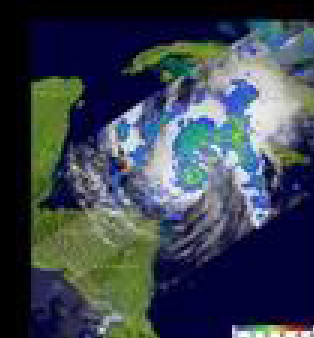
A front passage

A record breaking rainfall event in Mumbai, India
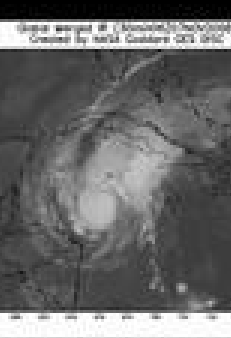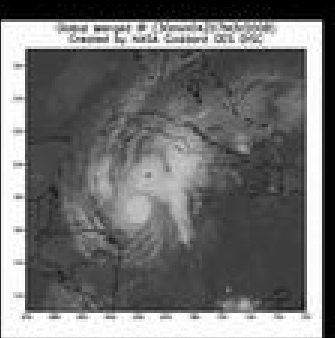
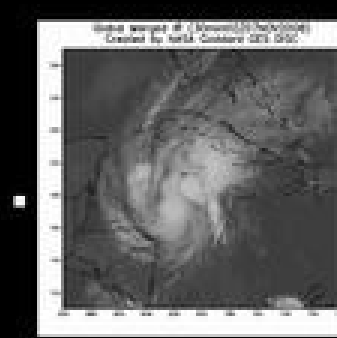## Providing Background Info for Other Satellite Missions

http://giovanni.gsfc.nasa.gov

Sample images of Typhoon Jangmi evolution for CloudSat.

http://trmm.gsfc.nasa.gov

Sample images of Paloma evolution for TRMM.

## Future Plans

- ❏ Improving performance for making animation
- ❏ Eliminate area selection size limit
- ❏ Add false colors (see left)
- ❏ More functions (e.g., Hovmoller)
- ❏ Integrate other satellite observations and model data
- ❏ Your inputs