The JPL Tropical Cyclone Information System (TCIS) a tool for hurricane research and model evaluation

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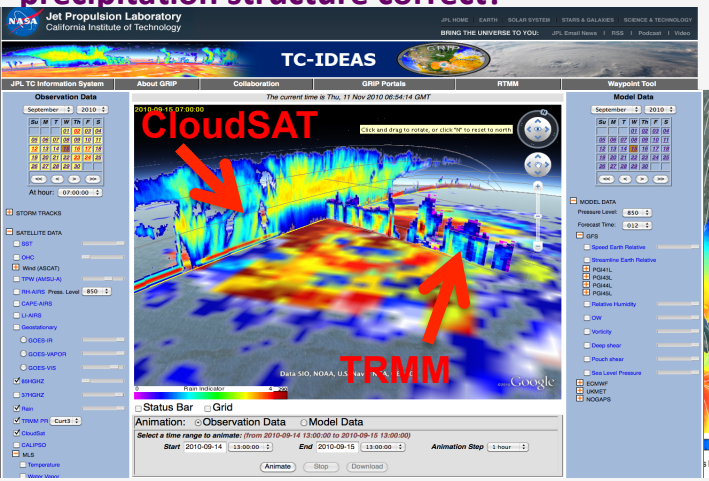
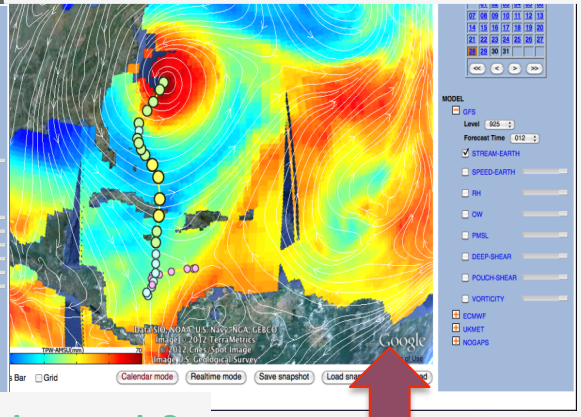
- Is the representation of the precipitation structure correct?
- Is the environment captured well?
- Is the interaction between the storm and its environment realistic?

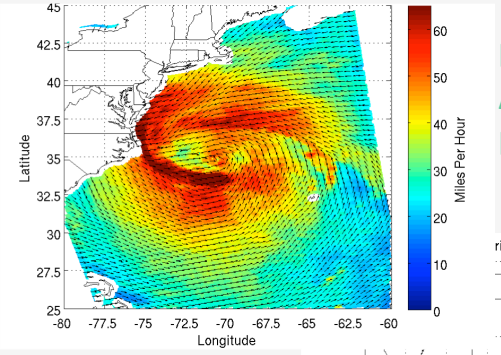




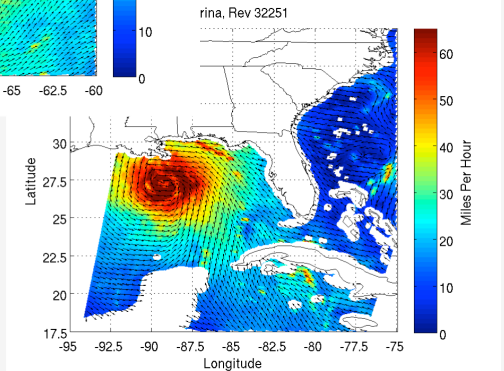
Why is the accuracy of hurricane intensity forecasts still lacking?

Do the models properly reflect the physical processes and their interactions?

- Is the storm scale and asymmetry reflected properly?



Hurricane Sandy
As seen by the
ISRO's OSCAT



Hurricane Katrina
As seen by the
NASA's QuikSCAT

Satellite observations (TCIS) can help through:

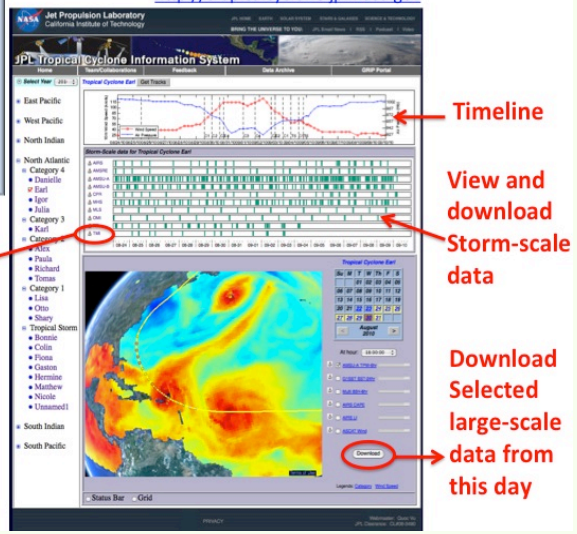
1. **Validation/improvement of hurricane models**
2. **Advanced data assimilation of satellite observations inside the hurricane core.**

Despite the significant amount of satellite observations today, they are still underutilized in hurricane research and operations, *due to complexity and volume.*

The JPL Tropical Cyclone Information System (TCIS)

http://tropicalcyclone.jpl.nasa.gov - S. Hristova-Veleva et al.

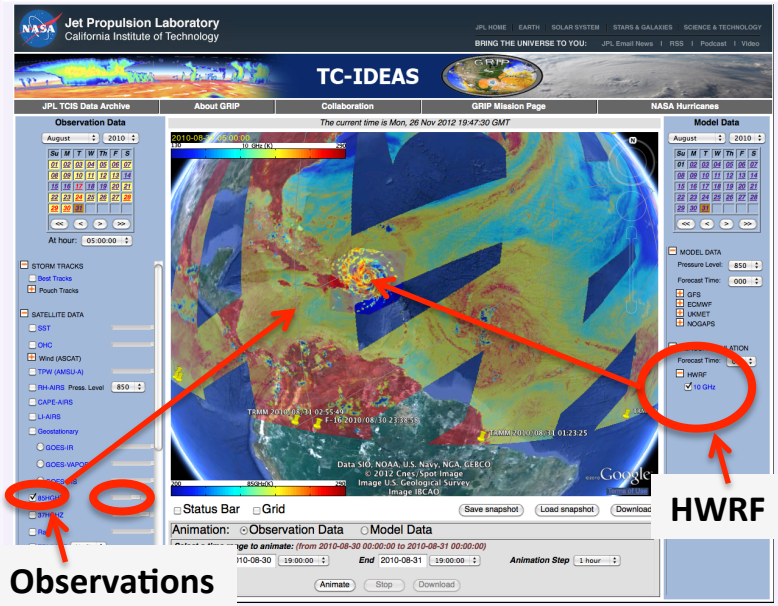
- Satellite depictions of hurricanes over the globe
- 12-year record (1999-2010)
- Offers both data and imagery, making it a unique source to support hurricane research.



Tropical Cyclone Data Archive

supported by NASA/HSRP-2008

- Satellite depictions of hurricanes over the globe
- Multi-instrument observations pertaining to:
  i) the storm structure; ii) the air-sea interactions; iii) the larger-scale environment
- 11-year record (2000-2010) First phase released 05/2012
- Offers both digital data and imagery
- A unique source to develop robust statistics for:
  - hurricane research
  - algorithm development



Fusion of Models and Observations

supported by NASA/ESTO/AIST-2011

- **Now:** Integrating hurricane model forecasts with satellite and airborne observations from a variety of instruments and platforms
- **Next:** Analysis tools to allow interrogation of a large number of atmospheric and ocean variables
  - To evaluate and improve models
  - To better understand the large-scale and storm-scale processes and their interaction