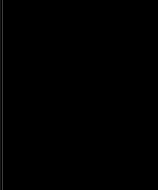
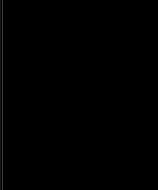




NE



S



Suomi-NPP/JPS





STAR Mission



- Develop and maintain the science to convert raw satellite observations into products for NOAA's mission and to maintain quality and consistency through the satellite life cycle
- Support research and conduct development to improve: satellite data assimilation, products, services; development timelines and cost; to enable NOAA mission skill improvement objectives
- Define and support international partnerships and standards for instruments, products, services, and calibration / validation to improve NOAA access to use ready observations

The raw data collected from NOAA Satellites is not usable without the functions STAR performs



STAR Work across Products and Services Life Cycle



- **STAR work is critical / integral to NOAA satellite missions**

- Develop data products, support instrument development
- Sensor calibration / data product validation, both pre-launch and post-launch (intensive)
- Product maintenance and sustainment, anomalies, improvements

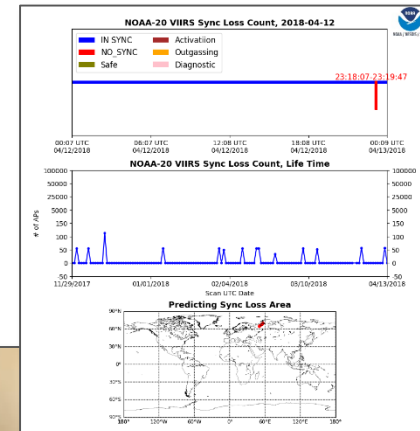
- **STAR supports users**

- Experimental products and services
- Test beds and risk reduction
- Training
- Data assimilation including Joint Center for Satellite Data Assimilation



- **STAR prepares for the future**

- Science requirements for future satellite architecture, formulates Data Product developments
- Research and technology development for improved cal / val, algorithms, applications
- Advanced tools and computational infrastructure

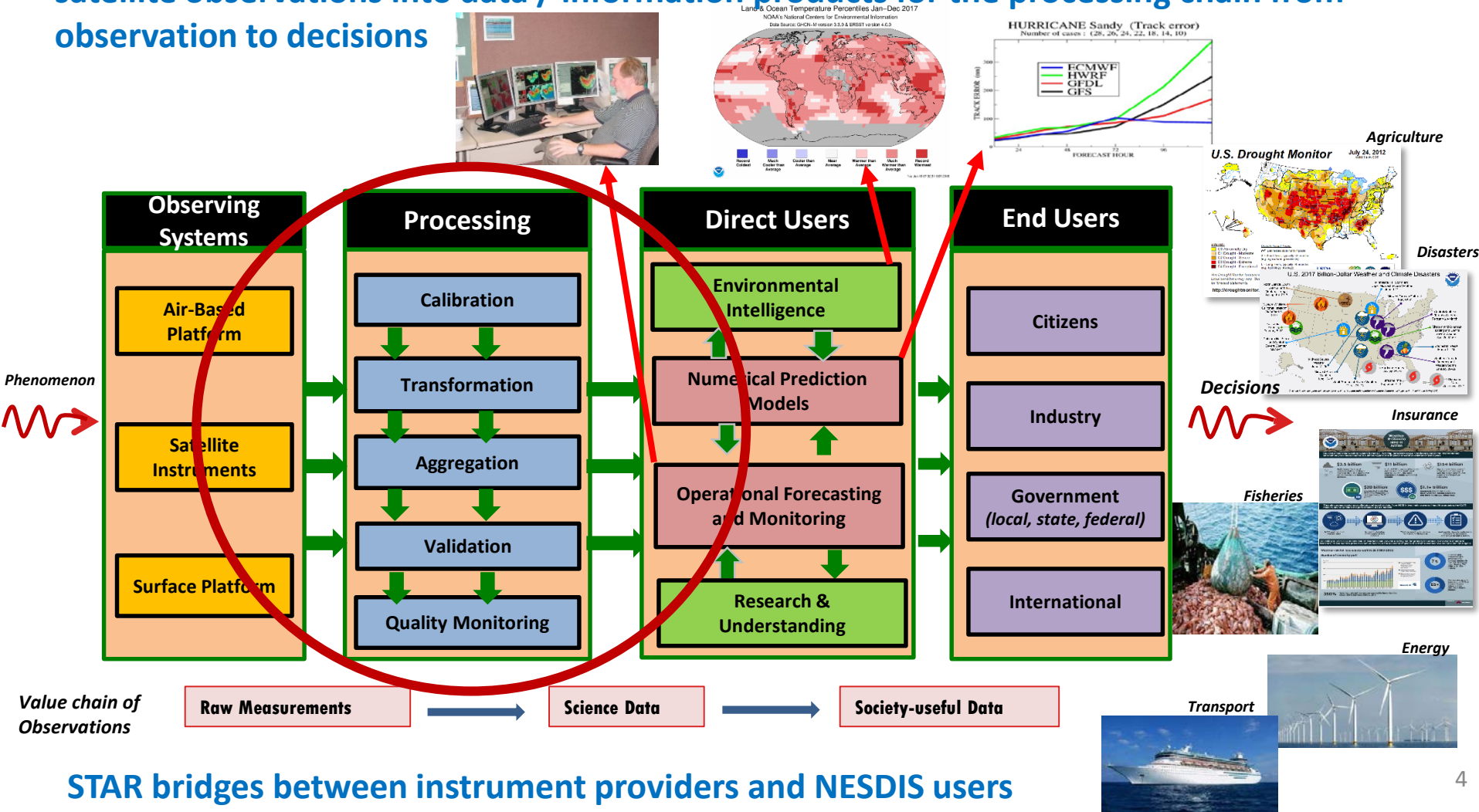


Increase agility, increase value, expand performance



STAR in the Value Chain

STAR provides the satellite remote sensing science and software basis for transforming satellite observations into data / information products for the processing chain from observation to decisions

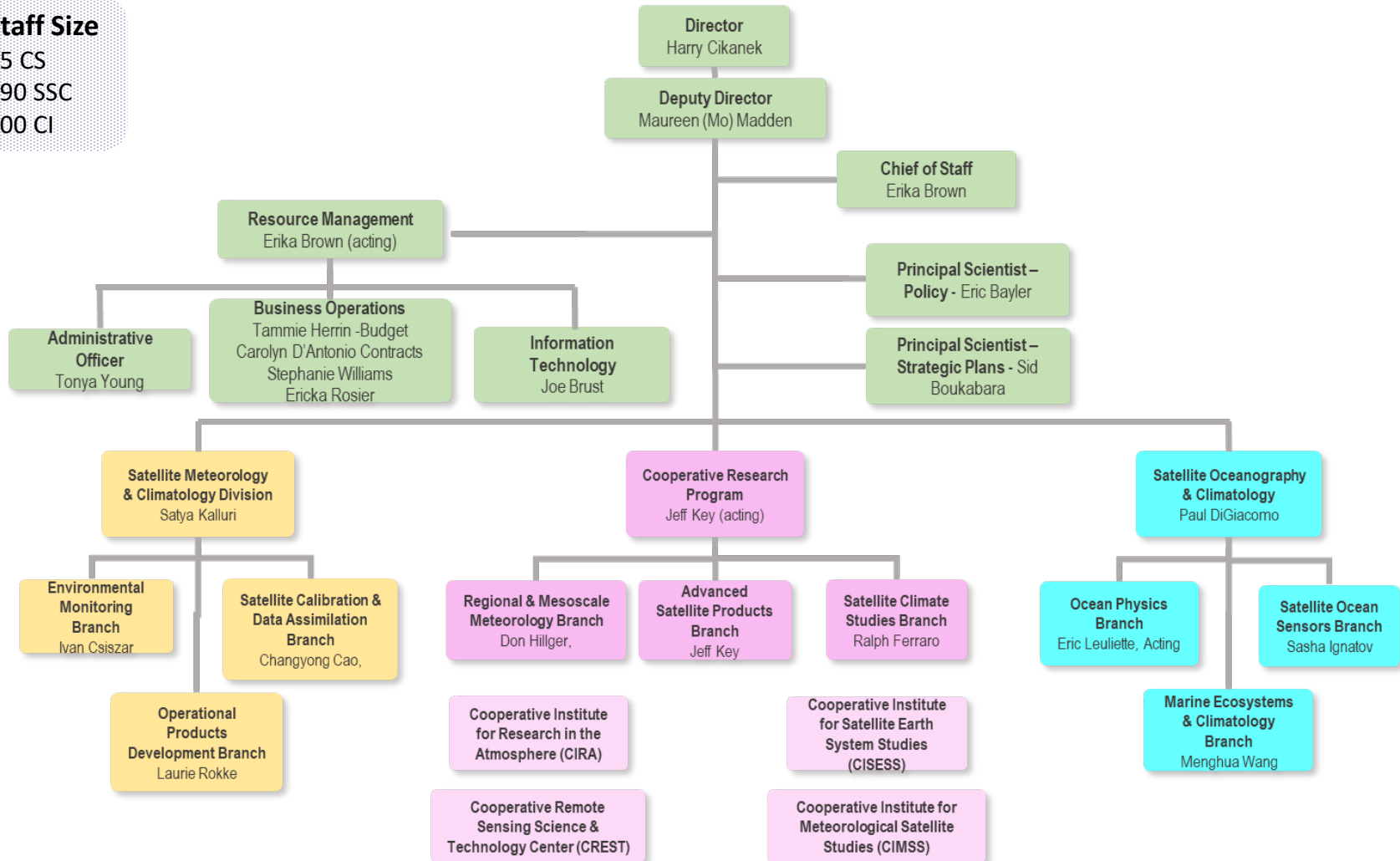




STAR Organization

Staff Size

75 CS
190 SSC
200 CI





NOAA's Mission: Science, Service and Stewardship

1. To understand and predict changes in climate, weather, oceans and coasts;
2. To share that knowledge and information with others; and
3. To conserve and manage coastal and marine ecosystems and resources.



Understand & Predict



Share & Inform



Conserve & Manage

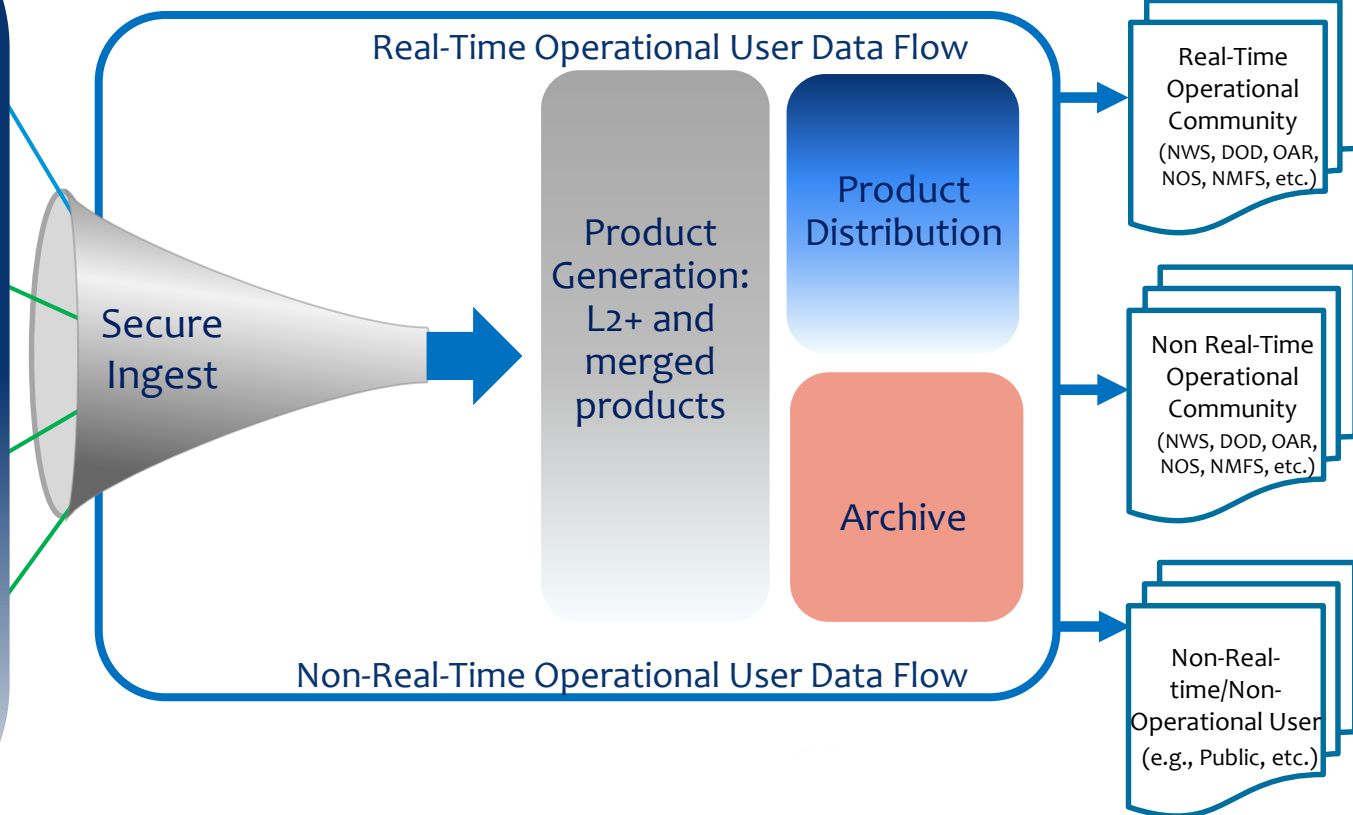
End-to-end System Evolution to Support the integrated observing system



DATA SOURCES



NESDIS Cloud Framework





Trends - A Pivotal Time for Earth Observations



- Science and models – Moving to increased earth system understanding, coupling, higher resolution
- Operational forecasters – Need integrated information products tied to mission needs
- Big Earth Data – processing, distribution, archive, easy access, security – all challenges
- Technologies – AI, deep learning, IOT, cloud, High Perf. Computing advances
- Business models – commercial data, Citizen Science – old is new
- New technologies in satellites and launch



Meeting the Challenges:

Partnerships and Transformation



- **Partnerships - STAR is in the front line of partnership and coordination – essential to make effective use of the global satellite observing system**
 - Operational and spaceflight agencies around the world
 - CGMS, CEOS, GEO, WMO committees
 - US Agencies including NASA, NAVY, USAF, USGS
 - NOAA Line Offices
- **Transformation - for how we do algorithms, data & information products**
 - Business model move from mission focus only to enterprise (Level 2 and above)
 - Source-agnostic fit for purpose, application targeted
 - Enterprise algorithm and product portfolio
 - Technology move to higher information content
 - Integrated, blended, fused data products
 - Advanced assimilation, calibration / validation
 - Expand and couple
 - Advance satellite oceanography and hydrology
 - Enable coupling of oceans, atmosphere, land, space to meet NOAA Skill Improvement

Increase agility, expand performance, increase value

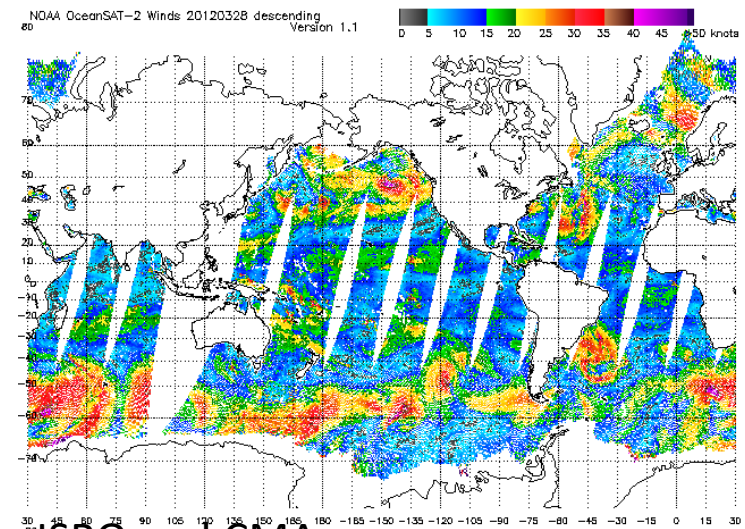
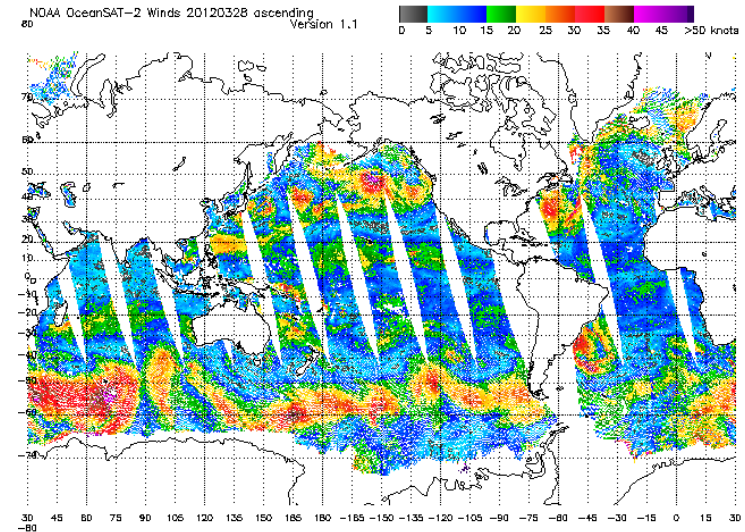
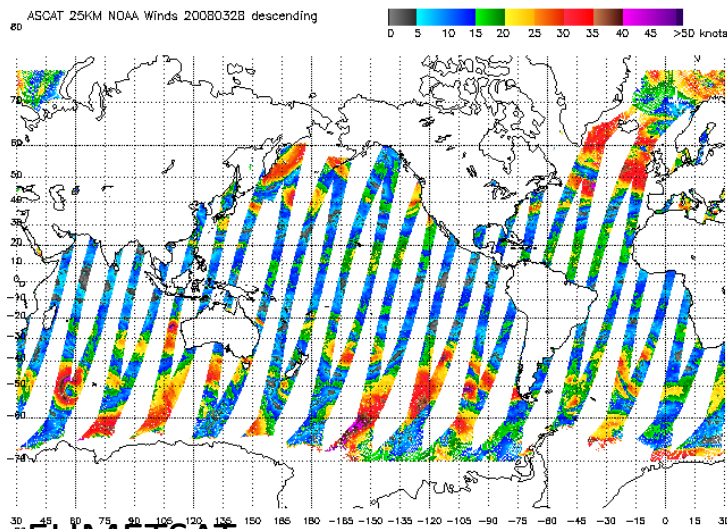
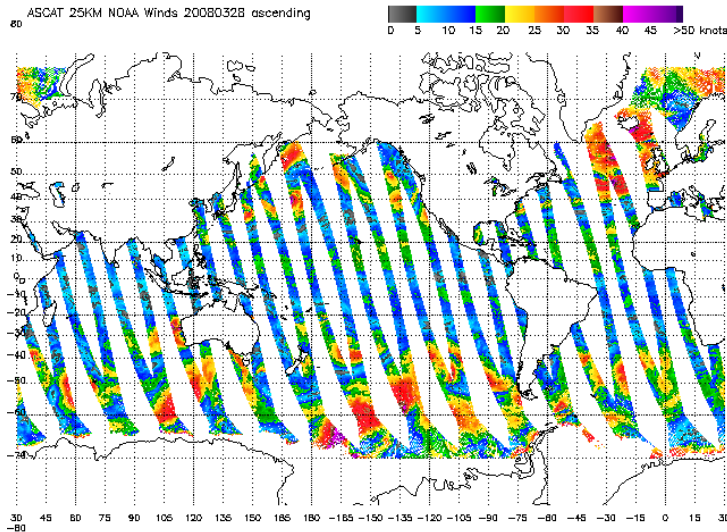


Partnership Example – International cooperation Serves Critical Needs

Satellite Ocean Wind Example

Improve:

- Marine weather forecast, warnings and analyses (hurricanes, winter storms and everyday weather)
- Ship safety and efficiency
- Contribution to Safety of Life at Sea (SOLAS)
- Numerical weather model forecast guidance and validation
- Understanding of ocean atmosphere coupling

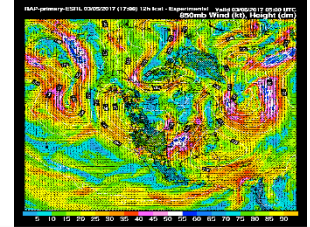
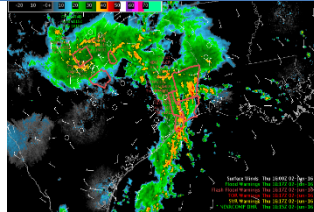


EUMETSAT

ISRO and CMA



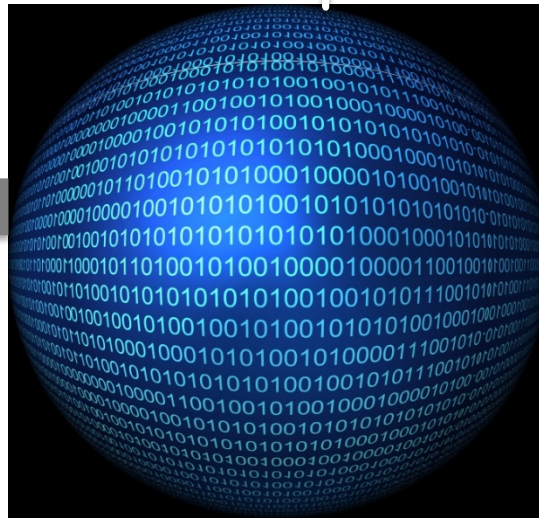
Transformation Example: Higher Information Content



Operational applications
require “Big Data” to be
automatically
transformed into
information and insight
for decision making

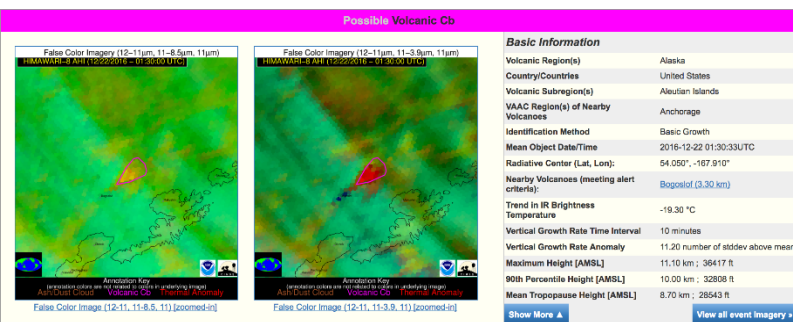
VOLCAT

Volcanic Eruption Detected!



ProbSevere

Severe Weather Likely





Global Constellation of Earth Observing Environmental Satellites



- **NESDIS reorganizing** from mission centric to user focused / enterprise optimized approach to products and services
- **NESDIS Evaluating** future satellite observing system architecture for NOAA to define what follows JPSS and GOES R



