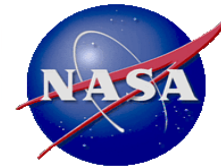


# Workflows for Satellite Image Acquisition and Automatic Processing

Presented at the Namibia Hydrology Division Meeting

by Stu Frye

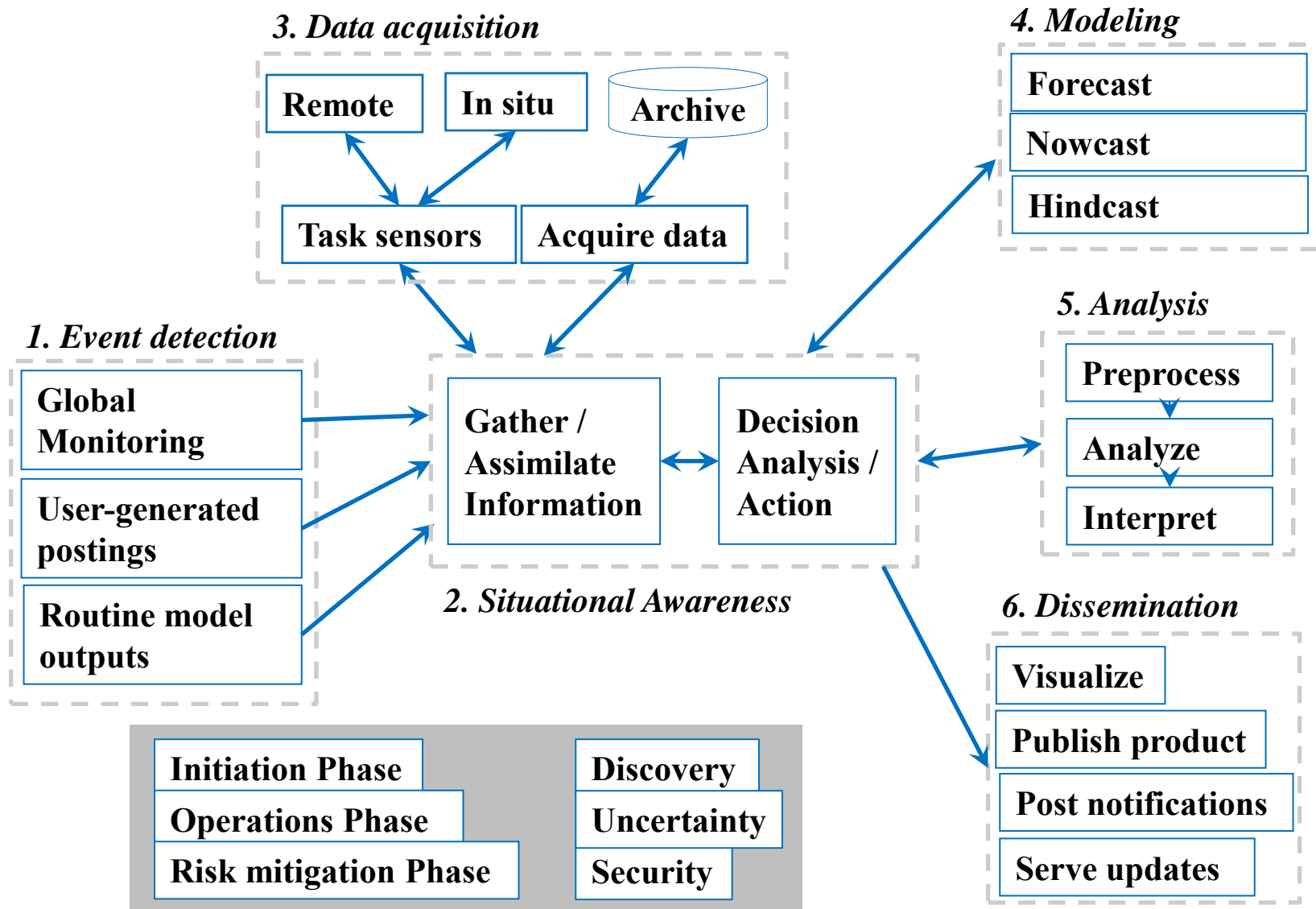
1 February 2013



# Satellite Contributions to Disaster Management

- Targeted satellite images of disasters
- Customized autonomous processing of disaster maps
- Development of tiled KML overlays of disaster maps
- Demonstration of OpenID/OAuth web service security API
- Introduction of Open Street Map (OSM) field validation approach for correcting data product mis-classifications
- Improvements to product publication, subscription, and notification functionality
- Development of satellite disaster architecture
- Training/support for uptake of satellite data within capacity building framework
- Free and open sharing of satellite data and web service access

# Overview of Satellite Disaster Management Workflows



# Results/Accomplishments for Southern Africa

- MODIS, EO-1, and Radarsat-2 coverage for numerous disasters both pre-event and post event imagery
- Coverage for flooding, earthquakes, algal blooms, wildfires, landslides, volcanoes, tornadoes, and other natural and man-made events
- Development of REST-ful web service interfaces via browser GUI and Application Programmer Interface for machine-to-machine automation for
  - Satellite acquisition planning
  - Tasking execution
  - Data delivery
  - Autonomous on-demand processing
  - Data product publication
  - User subscription and notification

# Web Service URLs

- OpenID Provider-Server = <https://op.geoblivi.com/> controls the security (this is where you setup your account)
- Campaign Manager = <http://geobpms.geoblivi.com/home> allows tasking requests to be submitted (i.e., targets)
- EO-1 Server = <http://eo1.geoblivi.com/> this is where EO-1 data can be found along with the status of future and past taskings
- Radarsat Server = <http://radarsat.geoblivi.com/radarsat> where we provide access to Radar raw data, browse images, metadata, and processed flood products
- MODIS Flood Server (API) = <http://modis.geoblivi.com/modis> is where you can point your browser to manually check on daily MODIS flood maps
- MODIS Flood Server (GUI) = <http://oas.gsfc.nasa.gov/floodmap/> is the server that provides and API for accessing the daily MODIS maps

# Web Service URLs Page 2

- Flood Dashboard Client = <http://matsu.opencloudconsortium.org/namibiaflood> this is an example of a client implementation that runs on a cloud computing platform provided through a collaboration with the University of Illinois/Chicago
- WCPS Server = <http://matsu.opencloudconsortium.org/wcps/session/login> is where you go to generate and run algorithms against satellite data
- Pub/Sub Server = <http://opsb.geobliti.com/session/new> is where you setup a subscription for requesting notifications about new data in your area or from a particular instrument or with a particular feature or....The notifications come via Email, SMS, or twitter and contain RSS or Atom feeds for you to follow to find the processed or raw data. Clients can be automated to monitor the feeds and pull the data they are programmed to look for

**For more information contact [stuart.frye@nasa.gov](mailto:stuart.frye@nasa.gov)**

**Detect Floods**

**Task Sensor**

**Acquire Data (Image)**

**Initiate Request**

**NASA Disaster Sensor Web Concept**

**Analyze Risks**

**Analyze Image**

**Acquire Data (River Gauge)**

**Validate Model**

# Future Work Concepts

- **Focus on the user more (and less on engineering viewpoints) in Architecture and Standards areas**
- **Develop a user activity view of the architecture (user stories, goals, behaviors, and activities)... some light semantic work for Geo Activities**
- **Develop an Open Geo-Social API for disaster end users on top of SOAP and REST (for data providers)**
- **Demonstrate interoperability and usability with disaster pilot users on the ground**