

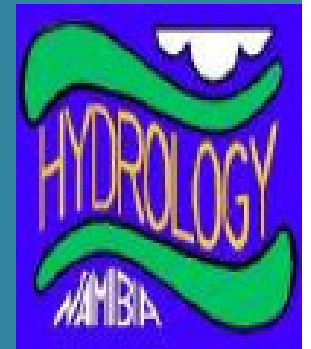


Namibia Flood Pilot Project

Ottilie Angula

Hydrological Services Namibia

Addis Ababa, July 2010



FLOODS IN NAMIBIA

- Flooding has become a common phenomenon in Namibia
- With 2008, 2009 and 2010 flood events being the most exceptionally on records and in memory.
- EARLY WARNING FOR FLOODING
 - No specified responsibilities or mandates
 - Assumedly between:
 - National Meteorological Services (Ministry of Works and Transport) – warning (conditions)
 - National Hydrological Services (Ministry of Agriculture, Water and Forestry) – early warning and monitoring (events)

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Statistic information for 2009 Flood

- 6 out the 13 regions, northern parts
- 105 lives lost
- 56,945 people displaced – 28,932 in camps
- 93,770 school children affected
- 150 000 hectares of crop fields submerged
- 10,000 livestock lost
- Direct damage: US\$ 136.4 million
- Indirect losses: US\$ 78.2 million
- Recovery for future mitigation: US \$460 m

Flood-risk Areas in Namibia

Areas
affected
by floods
in 2009

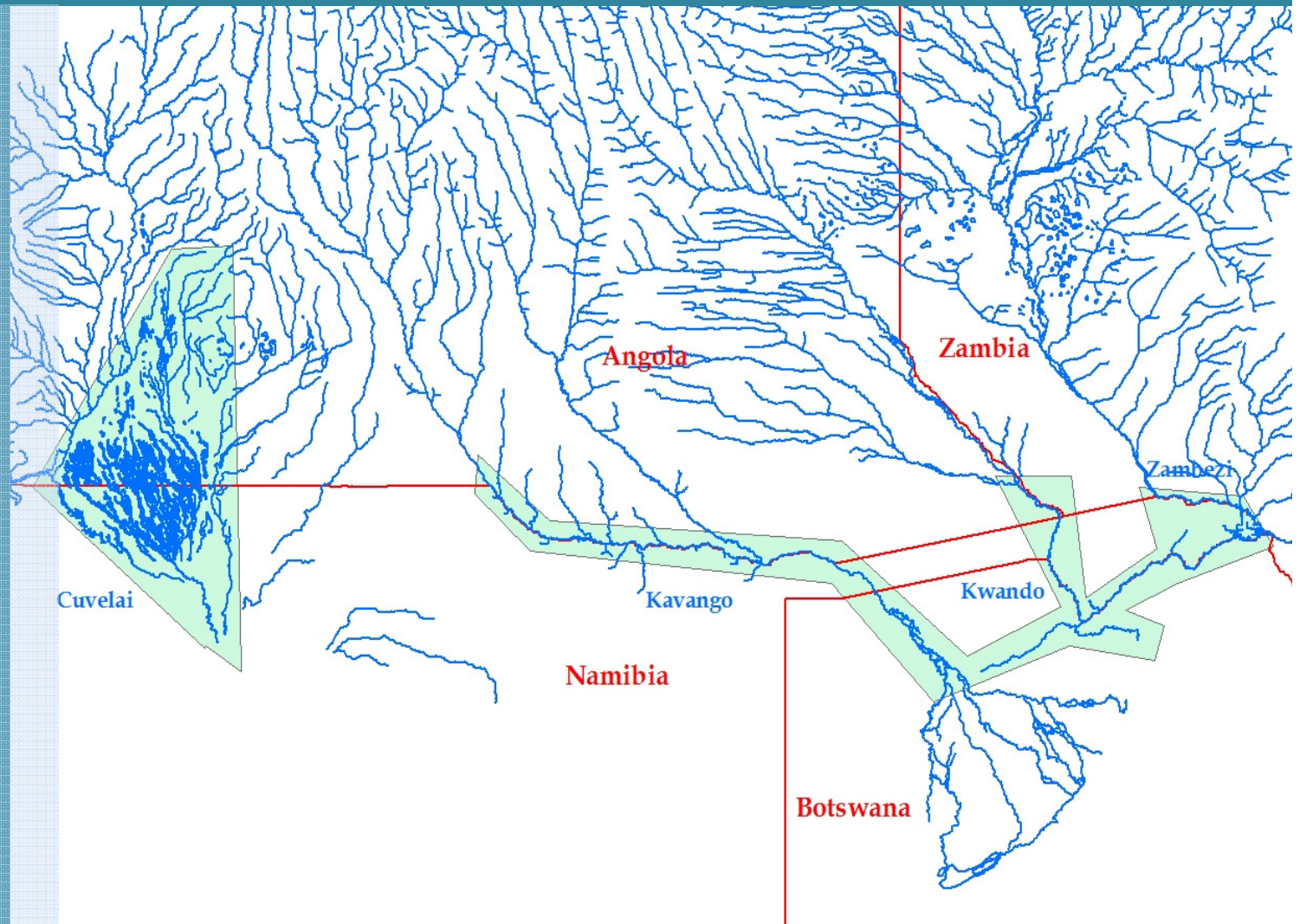
Cuvelai

- Feb-Mar:
Kavango

- Mar:
Zambezi

- Apr-May:
Kwando

- Jun-Aug:



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- Due to the extensive nature and potential long-term impact of flood, the Government declared a national emergency and appealing for external assistance
- As a follow-up to the assistance provided by UN-SPIDER, NASA, DLR, USRI, and other space agencies, which started during the 2008 and 2009 the “Namibia SensorWeb” project has been set up
- The first component of the project is to develop and test operational approaches during the 2010 flood season

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Aim of the project

- To integrate remote sensing into a **flood and water-related disease modeling**, monitoring, and early warning and decision support system.
- It is of major importance that the system will be **oriented to focus on local user needs** and based on a **regional, trans-boundary approach**, and **with capacity development and institutional strengthening** in Namibia to ensure the sustainable use of such a system

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Participants partners

- Namibia Hydrology for implementation
- UNOOSA/UNSPIDER
- DLR (Germany)
- NASA (USA)
- NOAA (USA)
- SRI (Ukraine)
- JRC (EU)
- ITC (Netherlands)
- Cooperation from Directorate of Disaster Risk Management and the Ministry of Health and Social Services in Namibia
- Support from RCMRD and Space agencies (CSA, NSPO....) through CEOS/WGISS

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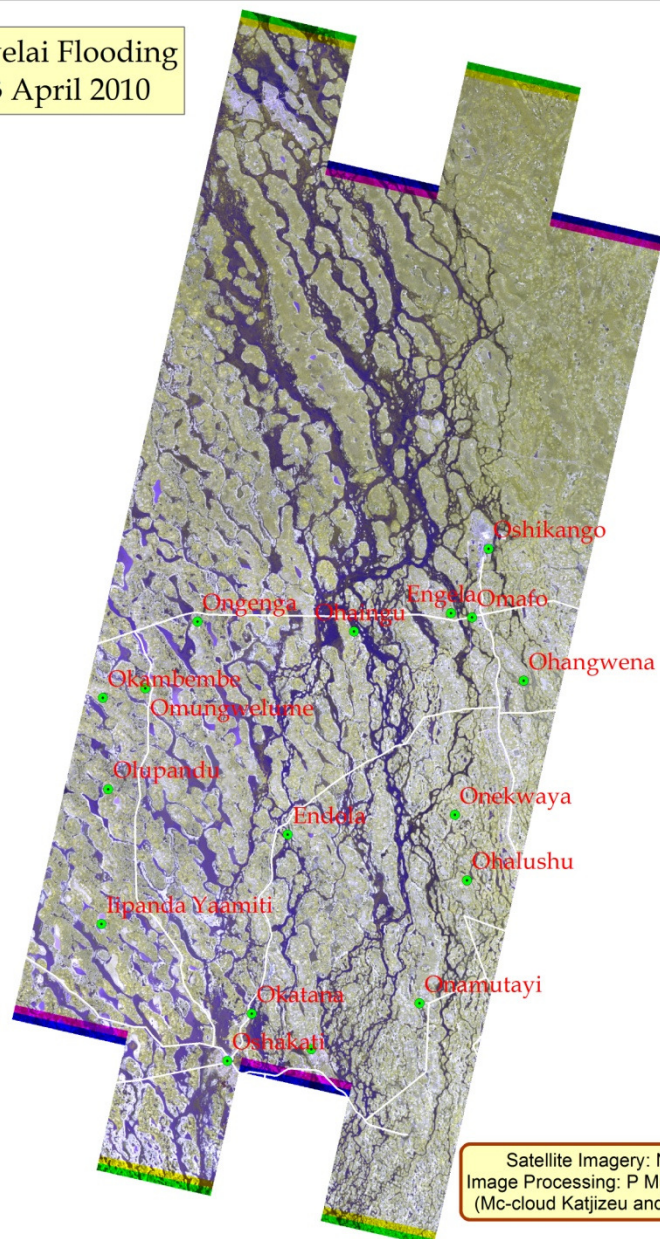
- Operational system for near-real time flood mapping
 - activation mechanism
- Areal rainfall:
 - short-term predictions
 - near-real time short-duration estimates
- Flood forecasting models (Zambezi)
- Remote sensing monitoring of flows
- Capacity building and technology transfer

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Sensorweb project – comprehensive decision support component → long-term

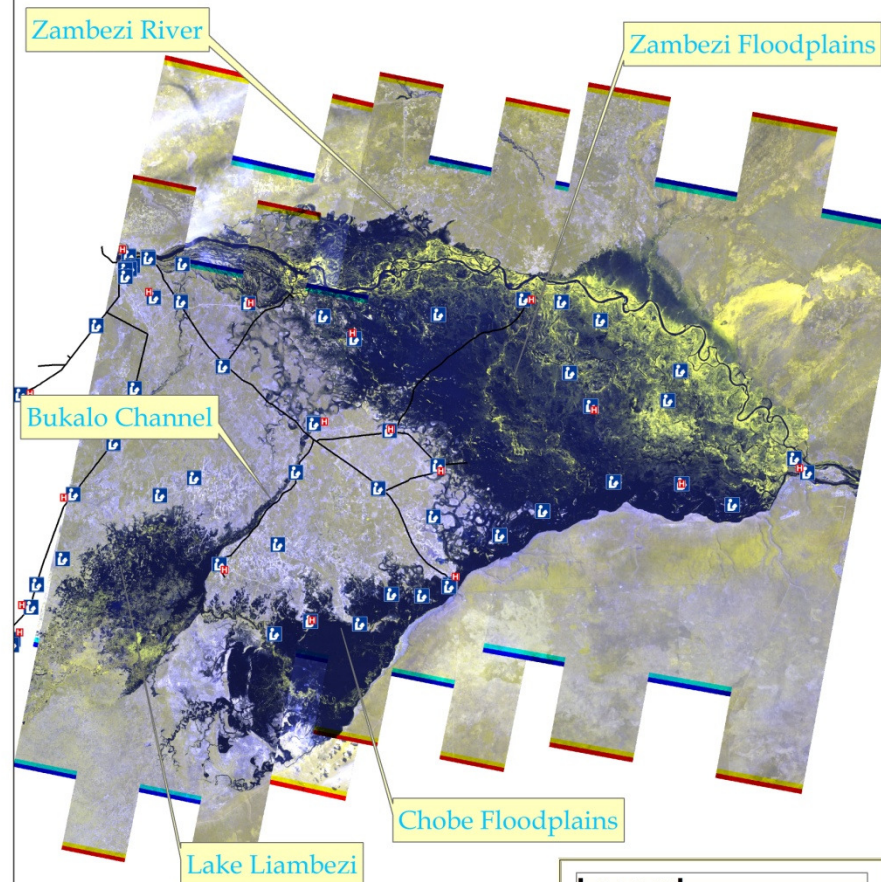
- Expansion in scope:
 - Full cycle: preparedness, early warning, management, recovery, planning
 - From hazard to risk by including exposure
 - Water-borne diseases
- Expansion in geographical area
 - Regional cooperation
- Present status – project proposal for funding through Namibian Planning Commission

Cuvelai Flooding 23 April 2010



Satellite Imagery: NASA EO1
Image Processing: P Mufeti GIS Center
(Mc-cloud Katjizeu and Otilie Angula)

Flooding in Caprivi 2010



Satellite Imagery: NASA EO1
Image Processing: P Mufeti GIS Center
(Mc-cloud Katjizeu and Kaangu Nguasanangombe)

Legend

- Health Centers
- Schools
- Roads

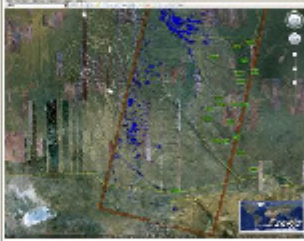
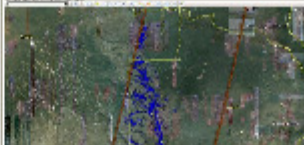
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Namibian Project

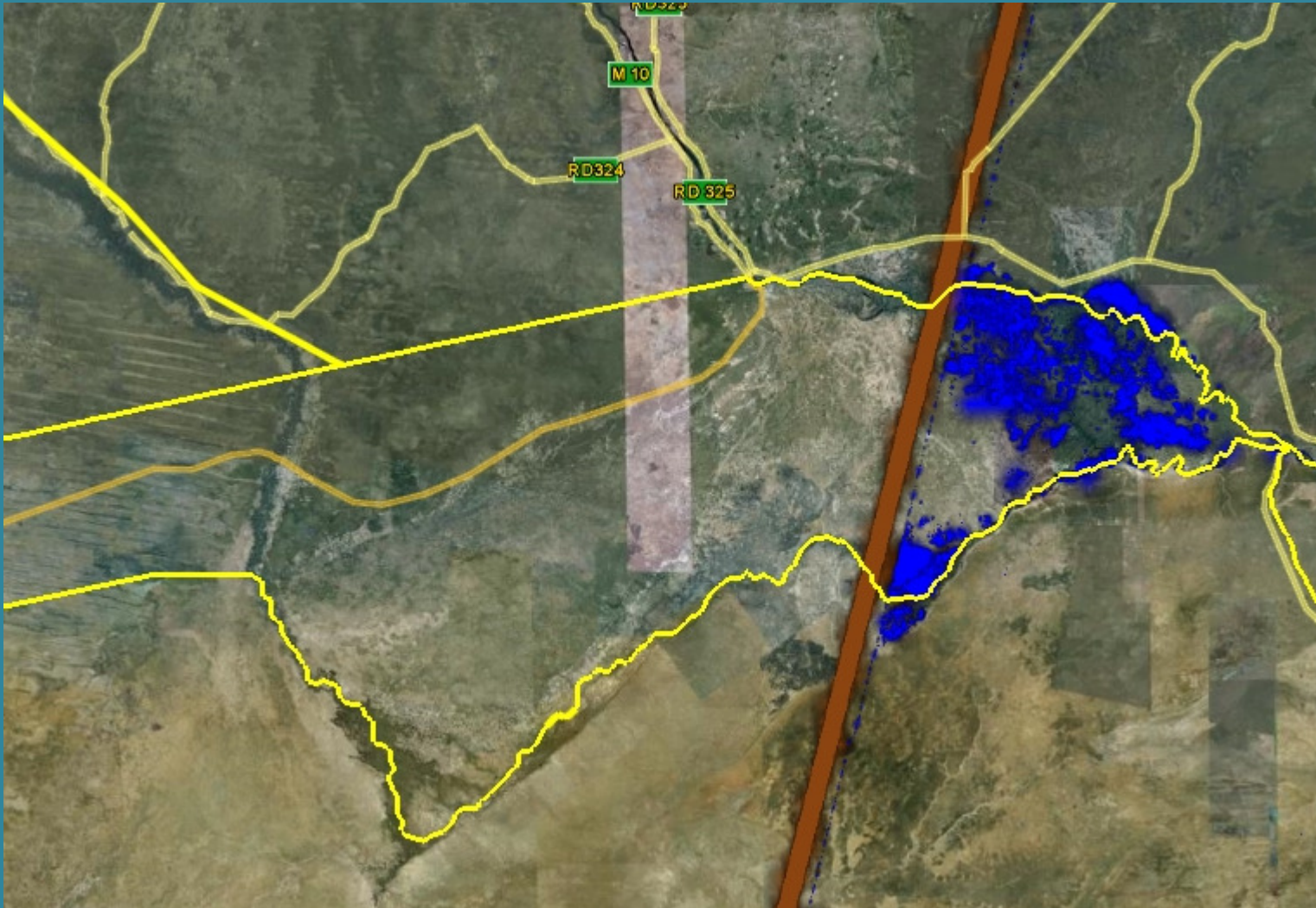
Flood/water mask derived from SAR imagery

Image credit: Copyright ESA 2009, 2010

Image processing, map created by: Space Research Institute, National Academy of Sciences of Ukraine, National Space Agency of Ukraine.

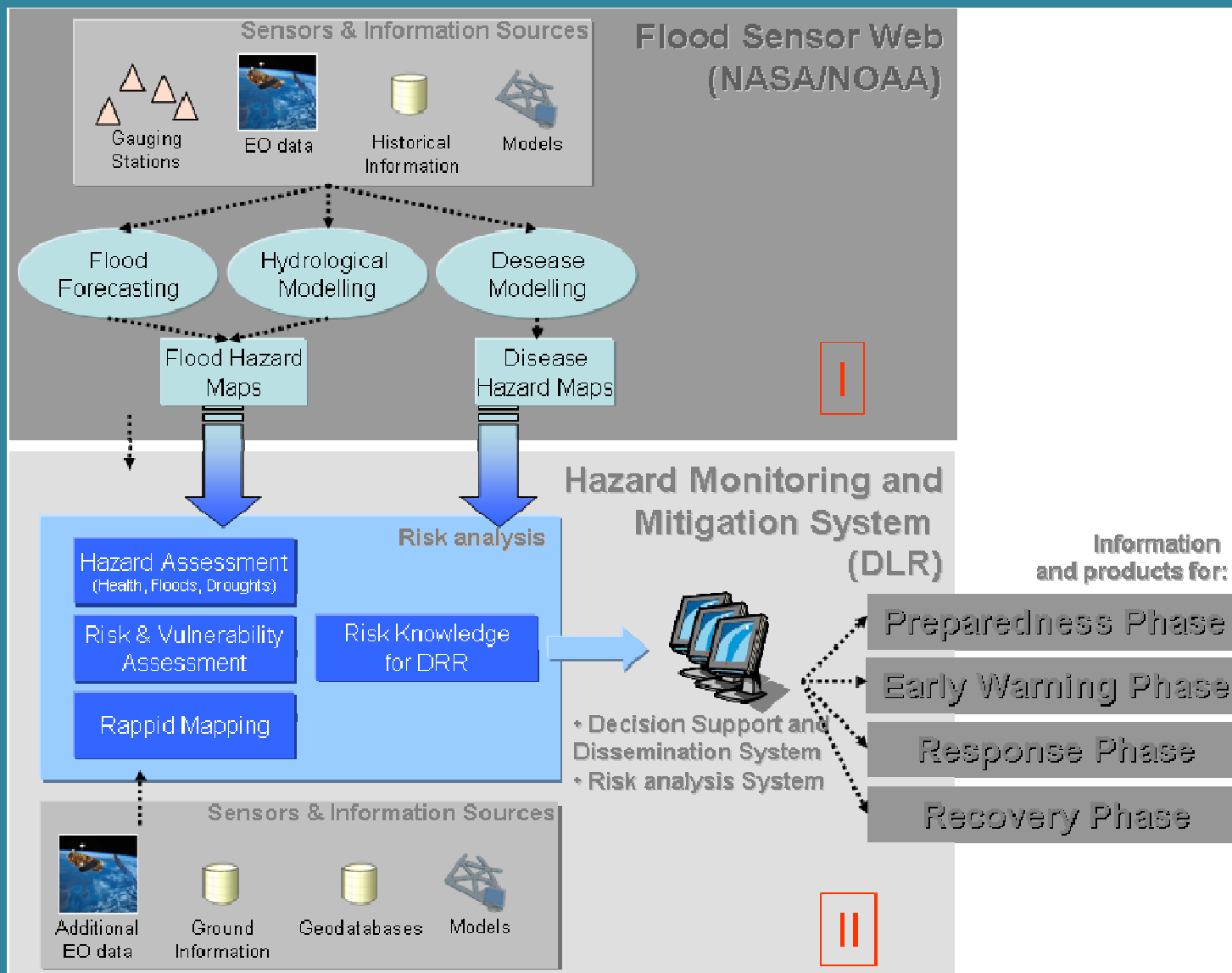
Date	Flood/water Product	Product Quicklook
New! 2010-05-24 (08:55 UTC)	KML: link KML (archive): link GeoTiff: link	 High-res Low-res
2010-04-25 (20:39 UTC)	KML: link KML (archive): link GeoTiff: link	 High-res Low-res
2010-03-28 (07:58 UTC)	KML: link KML (archive): link	

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Proposed framework



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CHALLENGES FOR FLOOD COMMUNICATION

- Institutions/people on ground?
- Information/advice/instructions?
- Is information reaching?
- Is information understood?
- Is appropriate reaction planned?
- Is appropriate reaction executed?
- Availability of flood mapping?