

3rd African Water Cycle Coordination Initiative - NOAA and CEOS Initiatives in Africa

Jacob Sutherlun
National Oceanic & Atmospheric Administration |
NOAA

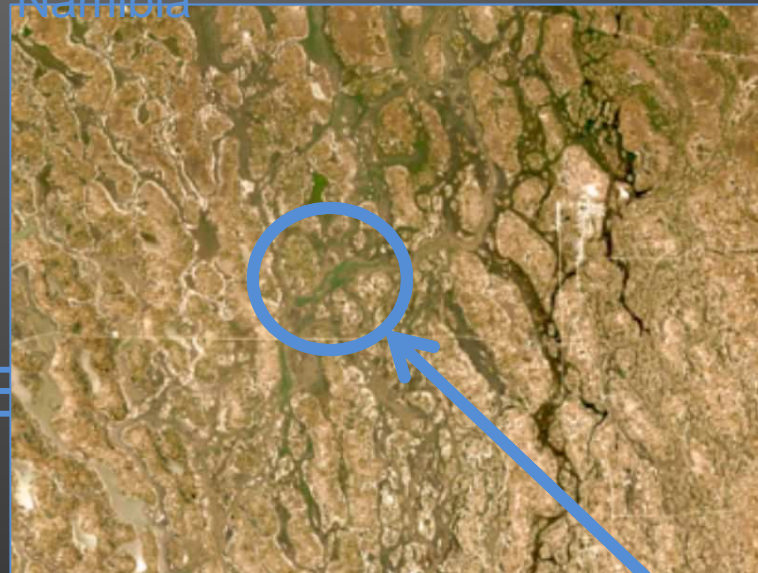
El Jadida, Morocco
4 February 2013



Outline

- NOAA
 - NCEP
 - GDIS
 - GFFG
 - COMET and METE
- CEOS
 - DEM Workshop
 - E-Learning Course
 - CEOS WGCapD Inventory
 - Disaster Pilot Project

High Risk Flood Area in Northern Namibia



Earth Observing 1 (EO-1) Advanced Land Image (ALI)
Pan sharpened to 10 meter resolution,
Oshakati area



NOAA Overview

NOAA'S MISSION: Science, Service, and Stewardship

*To understand and predict
changes in climate,
weather, oceans, and
coasts,*

*To share that knowledge
and information with
others, and*

*To conserve and manage
coastal and marine
ecosystems and
resources*

SCIENCE

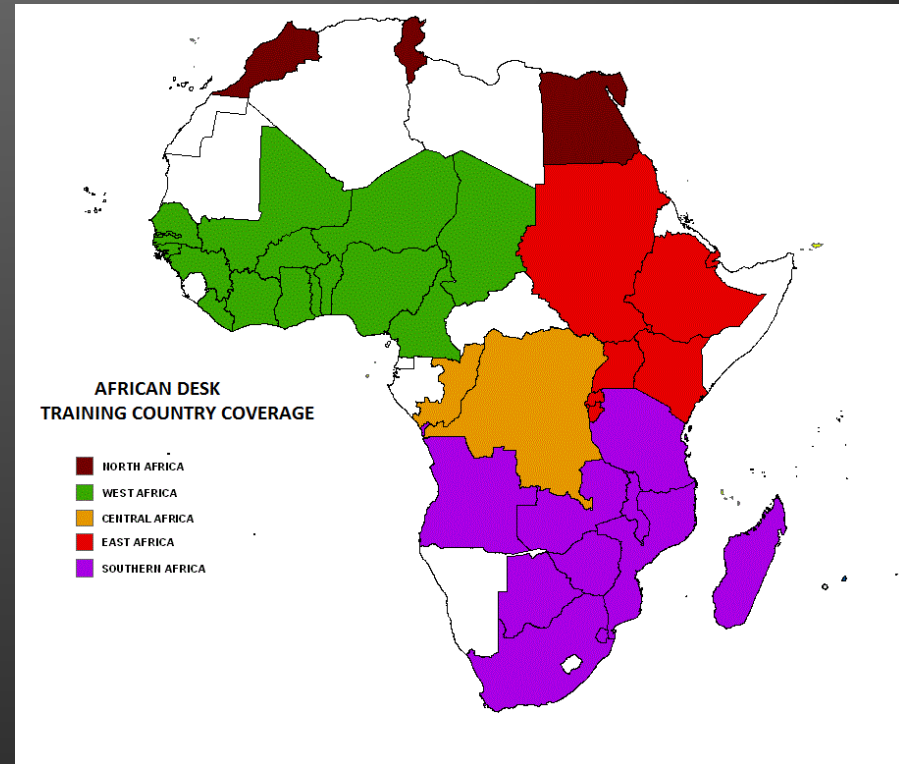


SERVICE STEWARDSHIP



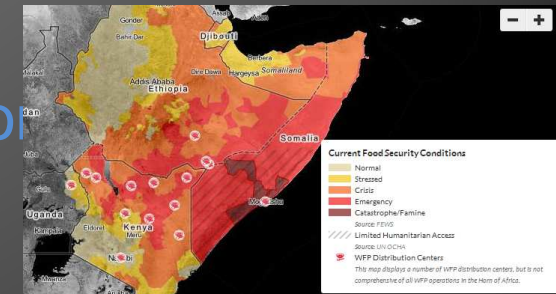
National Centers for Environmental Prediction Africa Desk

- Established at the Climate Prediction Center in 1994 as part of the US contributions to the WMO Voluntary Cooperation Program (VCP).
- Objective is to help build capacity in climate predictions, monitoring, weather, and assessments at African meteorological institutions.
- Provides access to NCEP weather and climate data and products, and conducts in-house professional development training for African NMHSs.
 - Consists of Climate Training Desk and a Weather Training Desk, and has the capacity to

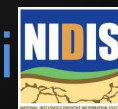


Global Drought Monitoring Web Portal

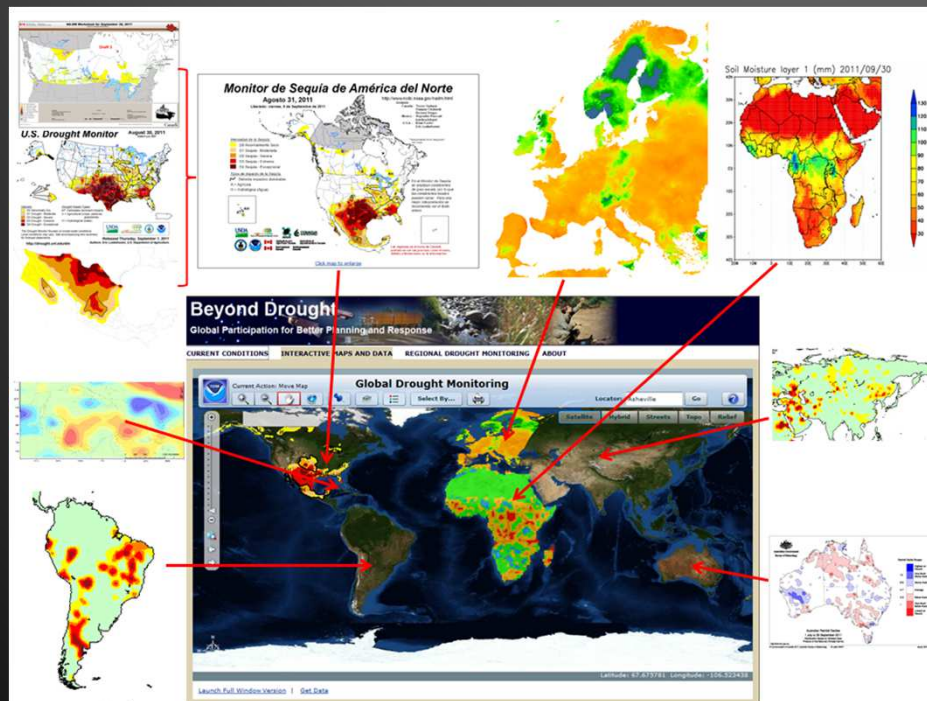
- What it is not
 - Mandated depiction of drought for a country
 - Declaration of drought
 - A drought early warning system
- What it is
 - Collaborative mechanism for comparing drought across the globe based upon the best available science
 - Delivery capability for standards-based drought products for assisting nations and regions in determining their drought status
 - Point of access to drill down to regional and national depictions of drought
 - The foundation for the Global Drought Information System (WMO, GEO, WCRP)
 - The first step or foundation of a drought early warning system



2011 Horn of Africa



Global Drought Monitoring Conceptual Framework

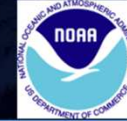


- Future Direction
 - Incorporate existing information from new regions (Asia, South America)
 - Encourage development of regional tools/products
 - Encourage regional participation
 - Examine mechanisms for incorporating drought forecasting information

Global Flash Flood Guidance Program



HYDROLOGIC RESEARCH CENTER



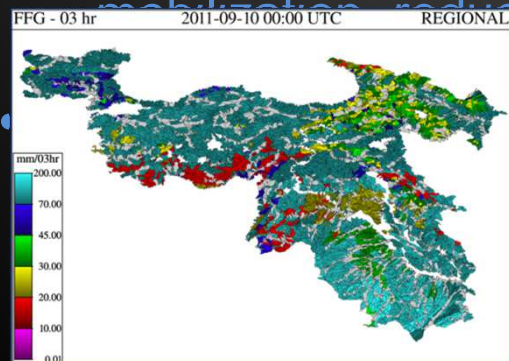
- Description:
 - Program to provide a tool for National Meteorological and Hydrologic Services to develop flash flood warnings.
 - Addresses the need to provide early warnings for flash floods in the development of *regional approaches* to flash flood issues.
 - Partnership between the Agency for International Development/Office of Foreign Disaster Assistance, the World Meteorological Organization, the Hydrologic Research Center, and the National Oceanic and Atmospheric Administration
- Goal:
 - Implement an end-to-end flash flood early warning system to improve response by federal, state, and local governments, international organizations, NGOs, the private sector, and the public to occurrences of flash floods



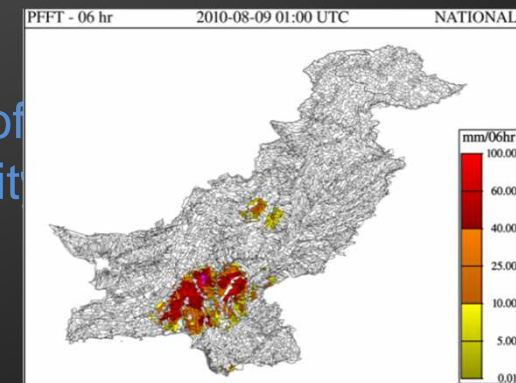
Global Flash Flood Guidance Program

- Evaluations of threat of flash flooding on 1 and 6 hr time scales on basin sizes of 100-300 square kilometers
- Satellite precipitation estimates are used together with available regional in-situ precipitation gauge data to obtain bias-corrected estimates of current rainfall volume over the region
- System is designed to allow local forecasters to add their experience with local conditions and other sources of data to assess the threat of a local flash flood

- Provide rapid assessments of the occurrence of flash flooding and the quality and value of a given duration (1-6 hours) over a given small catchment that is just enough to cause bank full flow at the outlet



Flash Flood Guidance –
quality and value of a
given duration (1-6 hours)
over a given small
catchment that is just
enough to cause bank full
flow at the outlet



Flash Flood Threat – rainfall of a
given duration in excess of the
corresponding Flash Flood
Guidance

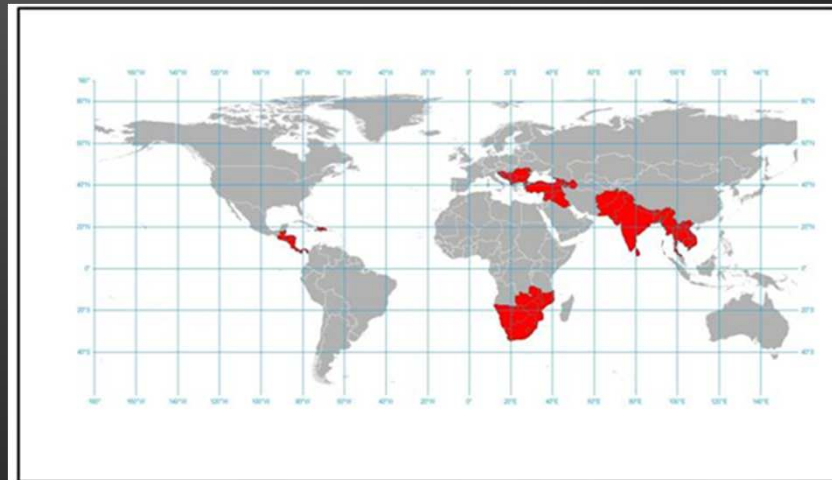
Global Flash Flood Guidance Program

FFG Program Implementations*

- Central America – 7 countries
• 522,000 km²
- Southeast Asia – 4 countries
• 1,260,000 km²
- Southern Africa – 7 countries
• 4,720,000 km²
- Black Sea-Middle East – 8 countries
• 3,250,000 km²
- Haiti/Dominican Republic
- Pakistan

Upcoming Implementations*

- Southeast Europe – 9 countries
• 545,000 km²
- South Asia – 7 countries



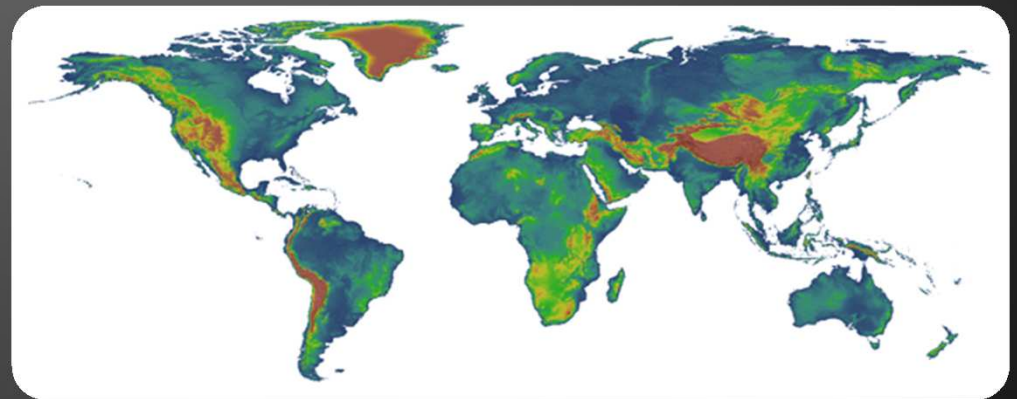
* Funding by
USAID/OFDA

CEOS Working Group on Capacity Building and Data Democracy (WGCapD)

- E-Learning
- DEM Workshop
- Inventory
- Disaster Pilot Project – Namibia

DEM workshops

- Regional workshops across the world utilizing the advanced DEM data:
 - Train participants on how to utilize the data in capacity building workshops
 - Focus of workshops will be on flash flood forecasting and settlement planning
 - First workshop planned in Nairobi, Kenya, May 2013
 - Maximize the skillsets and contributions of a range of partners: RCMRD, INPE, SANSA, NOAA.



E-Learning Course

- 180 hour courses that target university professors in the sciences to teach them the benefits of incorporating EO into their classes
- Use of data sets that are normally restricted
- Taught by consortium of CEOS agencies and partners
- Coordinated by INPE
- First Pilot course: 15 Feb - 15 June, 2013
- 4 modules:
 - Introduction, History and International Support
 - Principles of Remote Sensing, Sensors and Platforms
 - Data and Tools
 - Remote Sensing Applications
 - + Project development
- Target Region: Africa – Nigeria, Kenya and South Africa

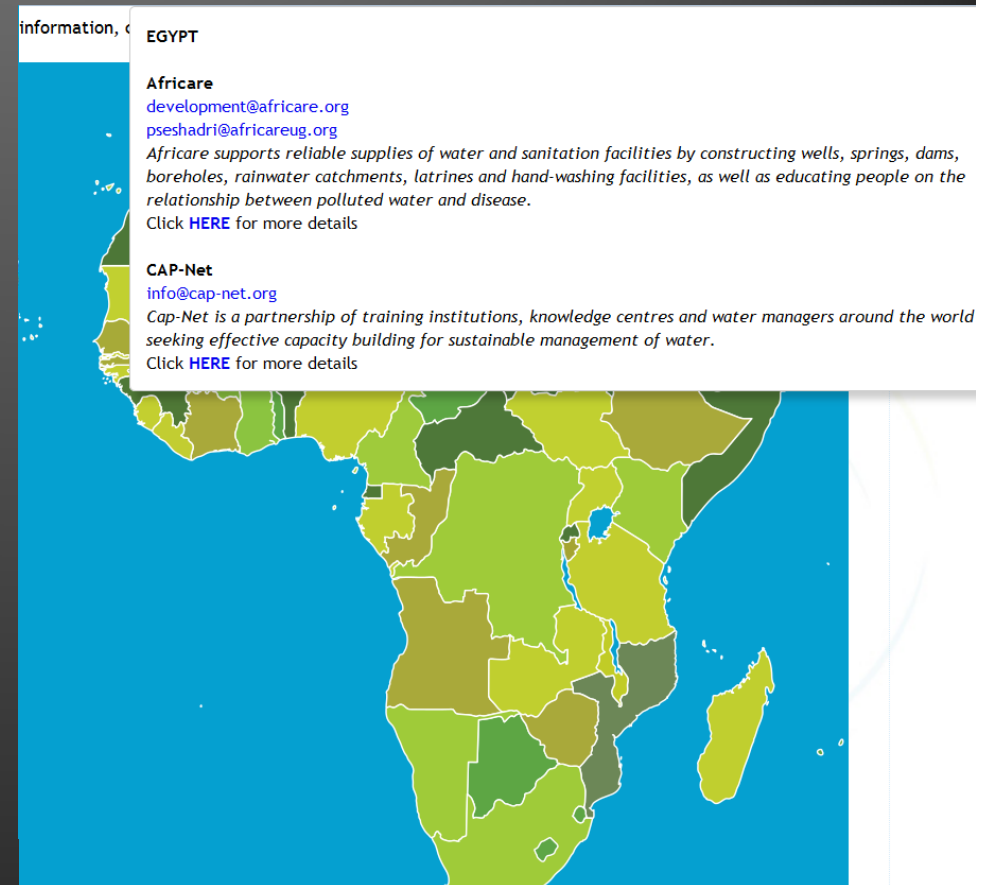


Capacity Building Inventory

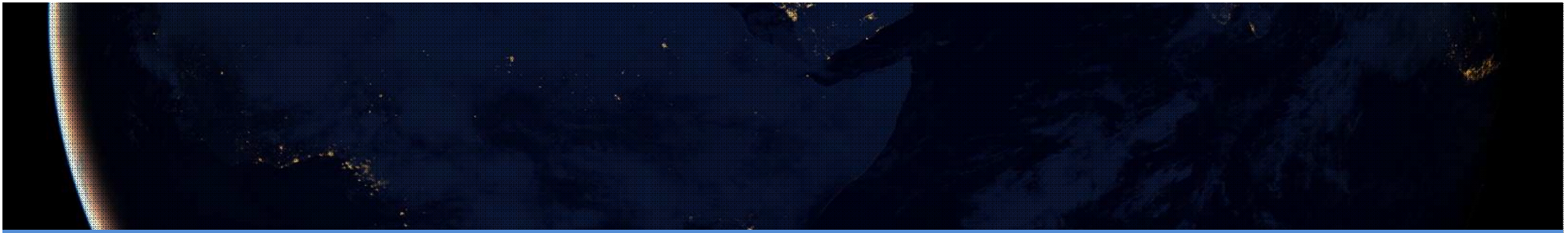
- Background
 - Capacity building activities are being carried out across the globe by various organizations.
 - These organizations do not always coordinate with each other in their capacity building programs. This leads to less than efficient use of resources that are quickly dwindling due to budget pressures.
 - One easily identifiable reason for a lack of coordination is that many organizations are simply not aware of everything that other organizations are doing in this field.
- Objective
 - The primary objective of this project is to compile all current capacity-building efforts on the use of space-derived Earth observation (EO) data for societal benefits into an easily updateable format. Once completed, the project will serve as a comprehensive resource of ongoing capacity-building efforts, helping those actors involved better coordinate their existing activities and possibly inform future planning.

Final Product

- Clickable, but not only clickable by country, but sortable by layers
- Layers would be associated with the SBA's of GEO
- Still finalizing what would be the most useful outputs
- Resources to produce this type of output would be necessary (hosting, maintenance, updating)
- The CEOS WGCapD would have a team that would be dedicated to updating the map
- Depending on funding,



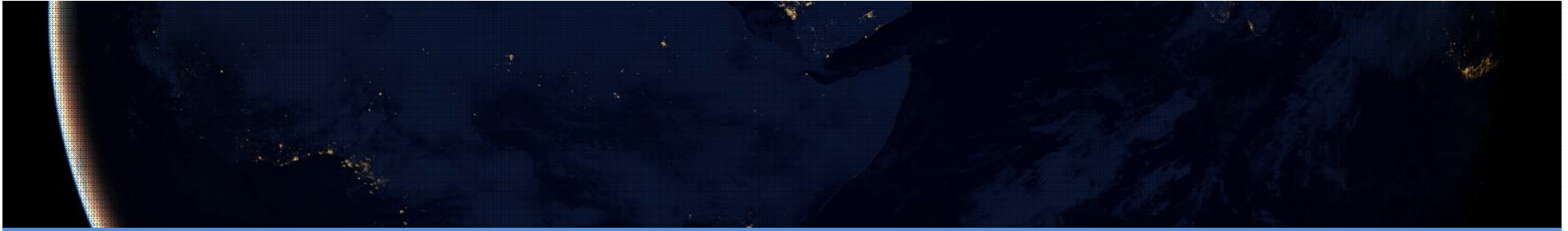
<http://www.globalwaters.net/uncategorized/ngo-and-cbo-map/>



Thank You!

Contact or see me for more information

Jacob.sutherlun@noaa.gov



Backup Slides

NCEP Requirements for Participation

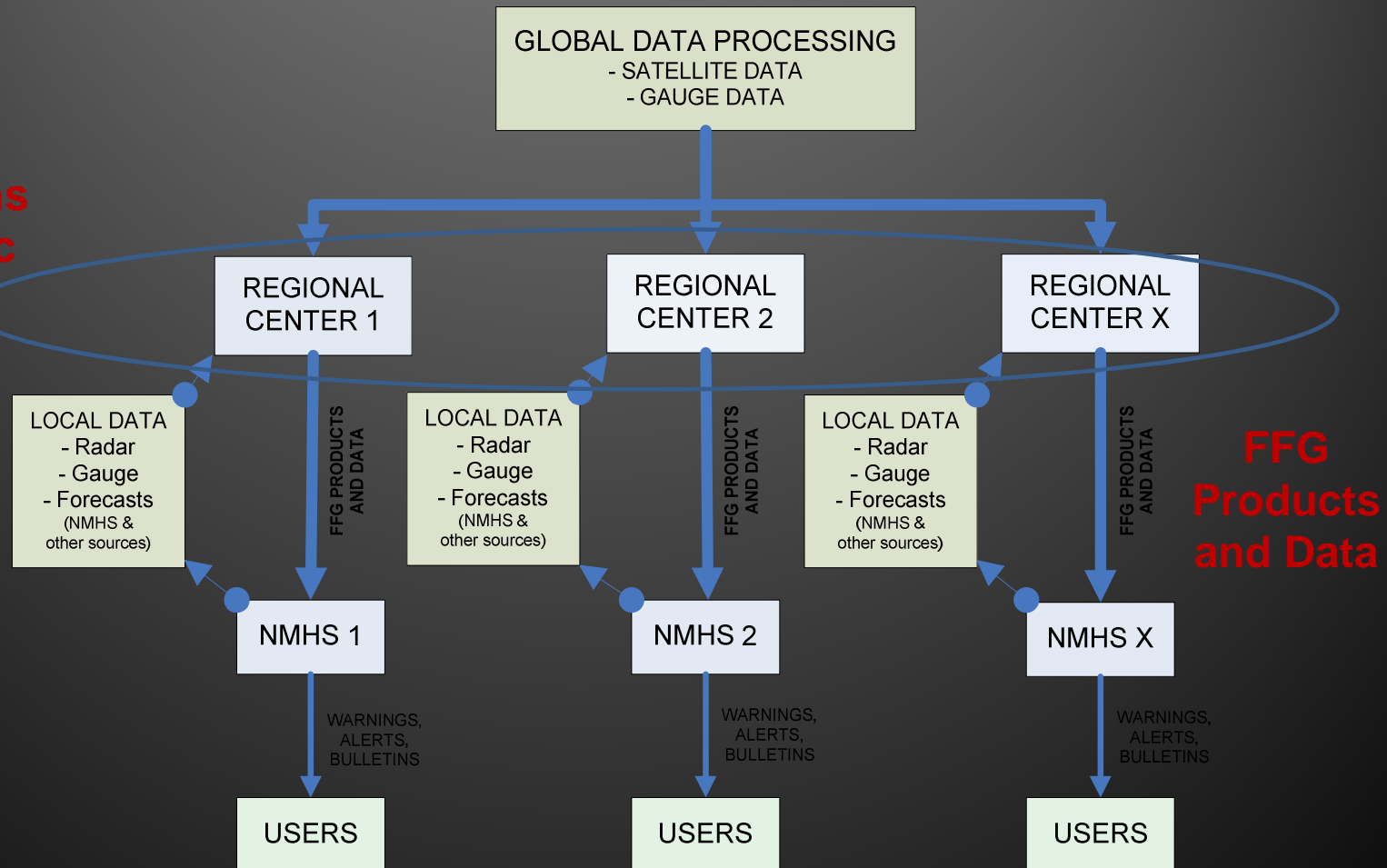
- At least a 4 –year university degree in Meteorology or a 4-year university degree in any of the science fields plus at least one year of graduate studies in meteorology
- For the Weather Forecasting Training Desk, at least 3 years of professional experience in operational weather forecasting.
- For the Climate Prediction Training Desk, at least 3 years professional experience in climate monitoring and or predictions.
- Knowledge of basic UNIX commands not required but desired for both the weather and climate sections of the African
- Training on satellite rainfall estimation available to candidates working on climate monitoring, data analysis, and who are proficient in the use of UNIX commands and GrADS.
- Candidates must commit to return to their duties for at least one year immediately upon completing the African Desk training.
- Candidates must fill out a WMO VCP Fellowship Application Form and mail it to the Education Department of the WMO in Geneva. A copy of the application form may be sent by fax to the African Desk at 301-763-8125 or by email to:

Wesley.Thieu@noaa.gov

Global Flash Flood Guidance Program

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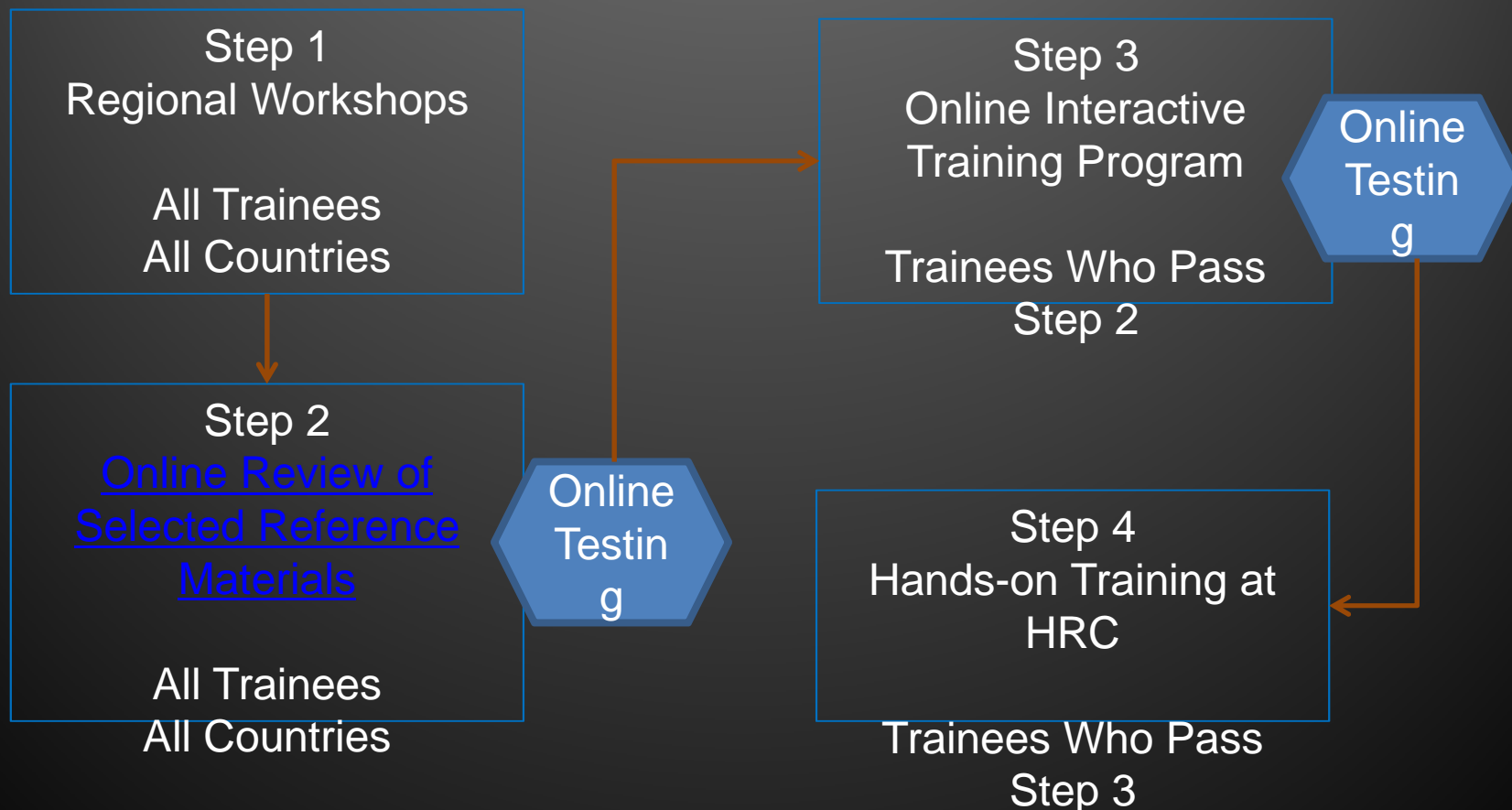
**FFG
Operations
Schematic**



Global Flash Flood Guidance Program

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Training Programs Model



Southeast Europe FFG Planning Meeting

22-24 January 2013

Global Flash Flood Guidance Program

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Challenges, Lessons Learned

- Regional Cooperative Effort – all countries in the region working together during implementation phases
- Involved and active Regional Center
- Availability of high quality historical data for system development and real-time data for ingest during operations
- Assistance with system validation – feedback on system performance
- Adapting to making evaluations/decision in real-time

Southeast Europe FFG Planning

22-24 January 2013

Meeting

Global Flash Flood Guidance Program

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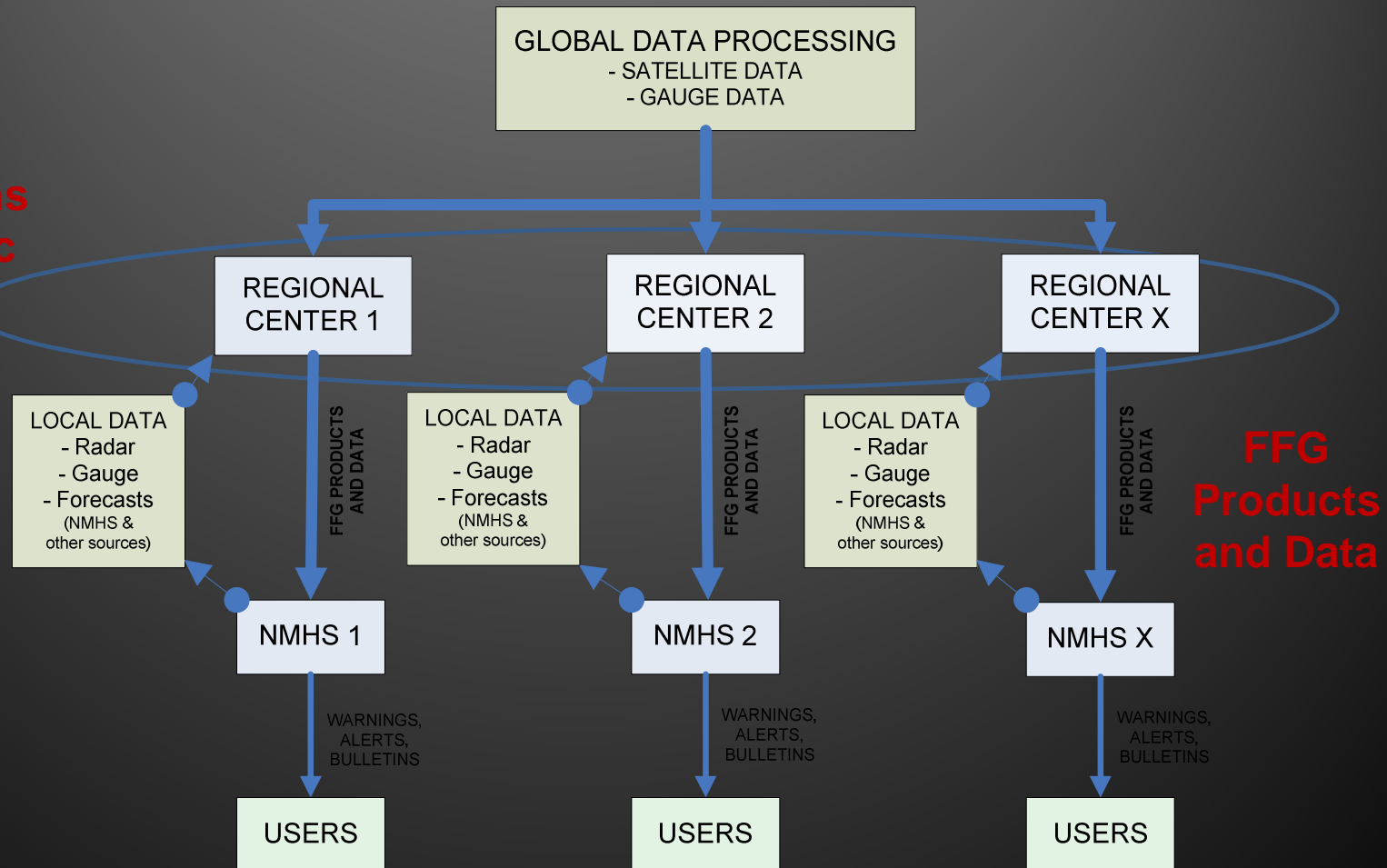
FFG System Benefits

- Addresses all flash flood prone basins over the area of interest
- Early awareness of impending local flash flood threats for all potentially vulnerable areas
 - Provide rapid assessments of the **occurrence** of a flash flood, rapid mobilization, reduces uncertainty and complexity
- **System balancing quality and value**

Global Flash Flood Guidance Program

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**FFG
Operations
Schematic**



Global Flash Flood Guidance Program

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- Real-time Precipitation Inputs
 - Global HydroEstimator (NOAA/NESDIS) – short latency (<30 minutes), IR-based
 - CMORPH (NOAA/CPC) Adjustments to GHE, microwave-based
- Snow Model
 - SNOW-17 (NOAA/NWS)
- Soil Moisture Model
 - Sacramento Soil Moisture Accounting Model
- Rainfall Forecast Model
 - Mesoscale Models – WRF, ALADIN, UNIFIED,

Methodology

- Collecting the information is the crucial step in this process
- Reviewing previous studies paired with their desired outcomes, it appears that a questionnaire would likely be the best medium to gather the required information.
- Personal contacts and follow-up would be key in securing the participation of many organizations
- Questionnaire is under development to ensure

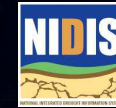
Process/Timeline

- Research and Design – Due March 12, 2013 for SIT Approval
 - Consultations with previous study leads
 - Clearly define purpose
 - Development of final product idea
 - Develop questionnaire
 - 2 questionnaires being developed and will be beta tested on the WG. They will bring their experiences to the WG meeting to initiate discussion
 - Fill in data for example organizations (NOAA, NASA, UNSPIDER) to show what types of information for which we are looking
 - Determine time commitment to fill out questionnaire
 - Identify Points of Contact for all institutions from which we would like information

Process/Timeline (continued)

- Outreach Phase – Due July 31, 2013
 - Official outreach to CEOs Members
 - Outreach to CEOs Associates, Partner Organizations, Others
 - Could use April EO Handbook announcement to send out this data call
 - Personal contact follow-ups
- Consolidation Phase – Due November 4, 2013
 - Consolidate information received
 - Build global map with clickable links to POC's and brief project descriptions
 - Build layers on map for different SBA's
 - Announce Beta product and get feedback
- Announcement Phase – Due SIT 2014
 - Final product announced and unveiled
 - Final report released

Global Drought Monitoring Web Portal



Who Is Interested

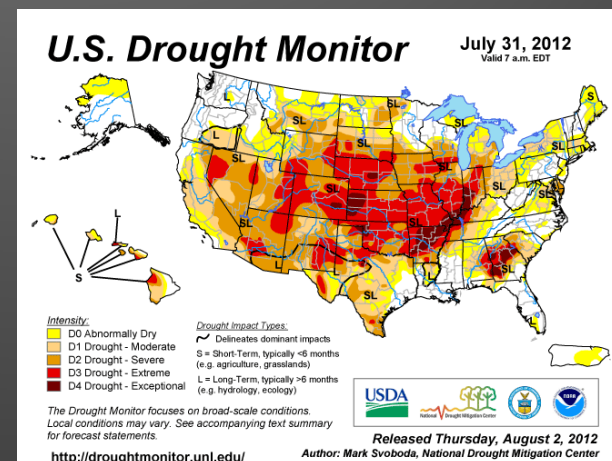
- WMO Agriculture & Climate
- GEO
- WCRP
- Famine Early Warning
- Commodities
- Water Security
- National Security

Participants

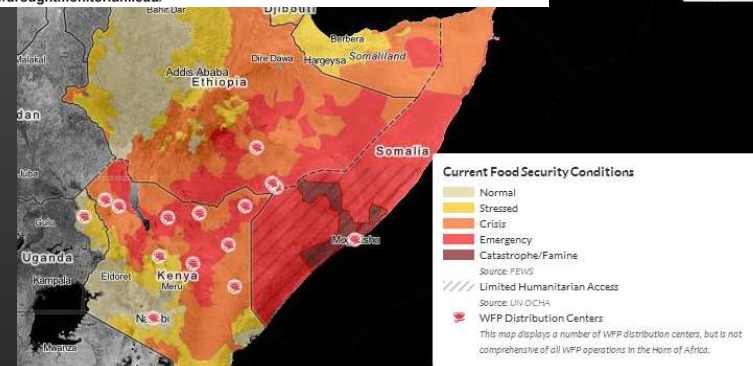
- US NIDIS – NCDC
- Europe – European Drought Observatory
- Africa – ICPAC & Princeton University
- Australia – BoM & ABARES
- WCRP (coming soon)
- South America (coming soon)
- Middle East – Jordan (exploring)

Coordination

- GEO
- WMO

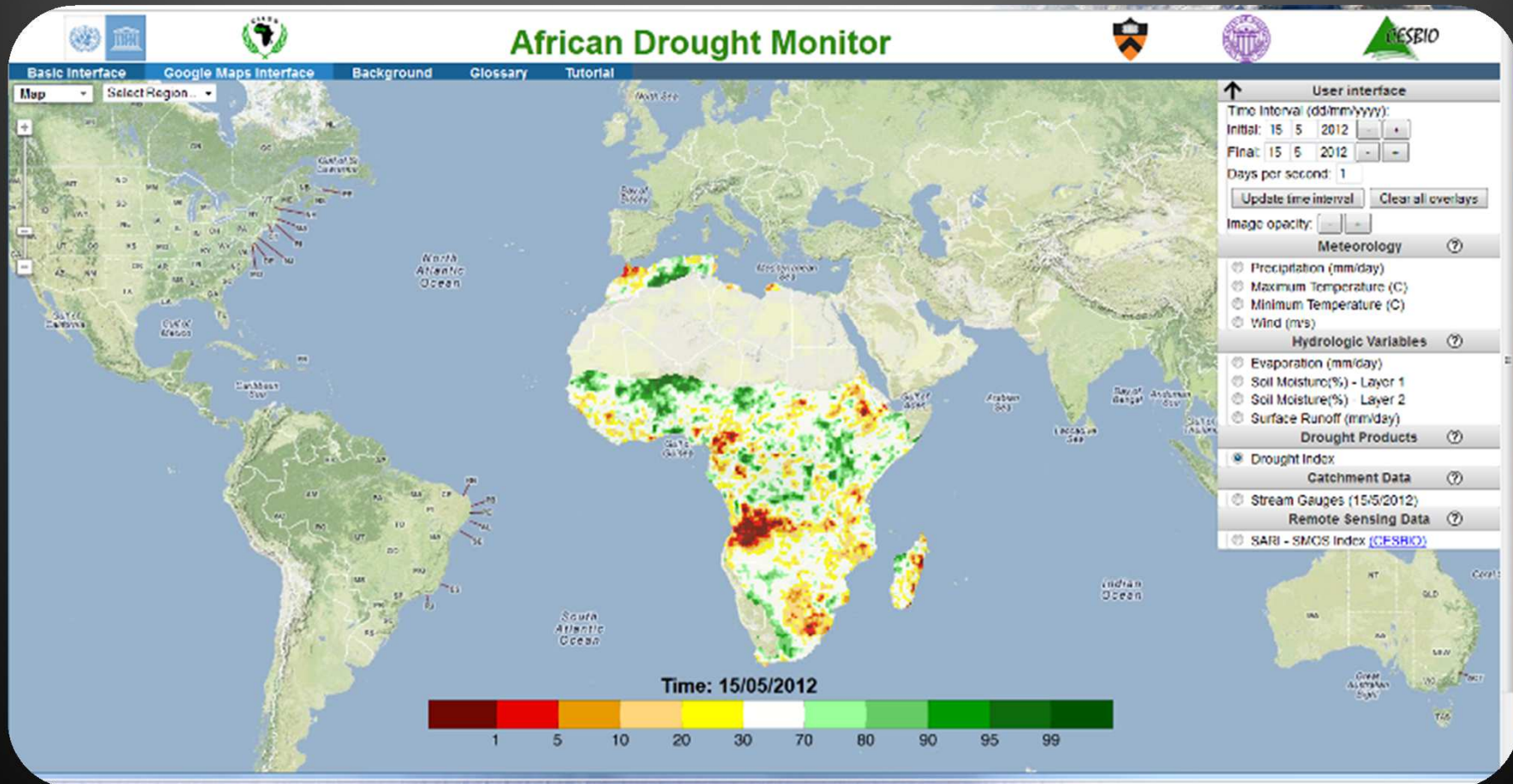


2011 Worst one-year drought in Texas history followed by 2012 worst drought in U.S. since the 1950s.



2011 Horn of Africa

Global Drought Monitoring Web Portal



Global Drought Monitoring Web Portal

- The GDIS is only as good as the information that is available to incorporate into the models
- For the NIDIS, we have many *in-situ* measurements along with the satellite information. This leads to a more accurate picture
- In order to make a more accurate drought model, we need access to more *in-situ* measurements
- **NIDIS.Questions@NOAA.GOV**
- <http://www.drought.gov/portal/server.pt/commu>

