

Background

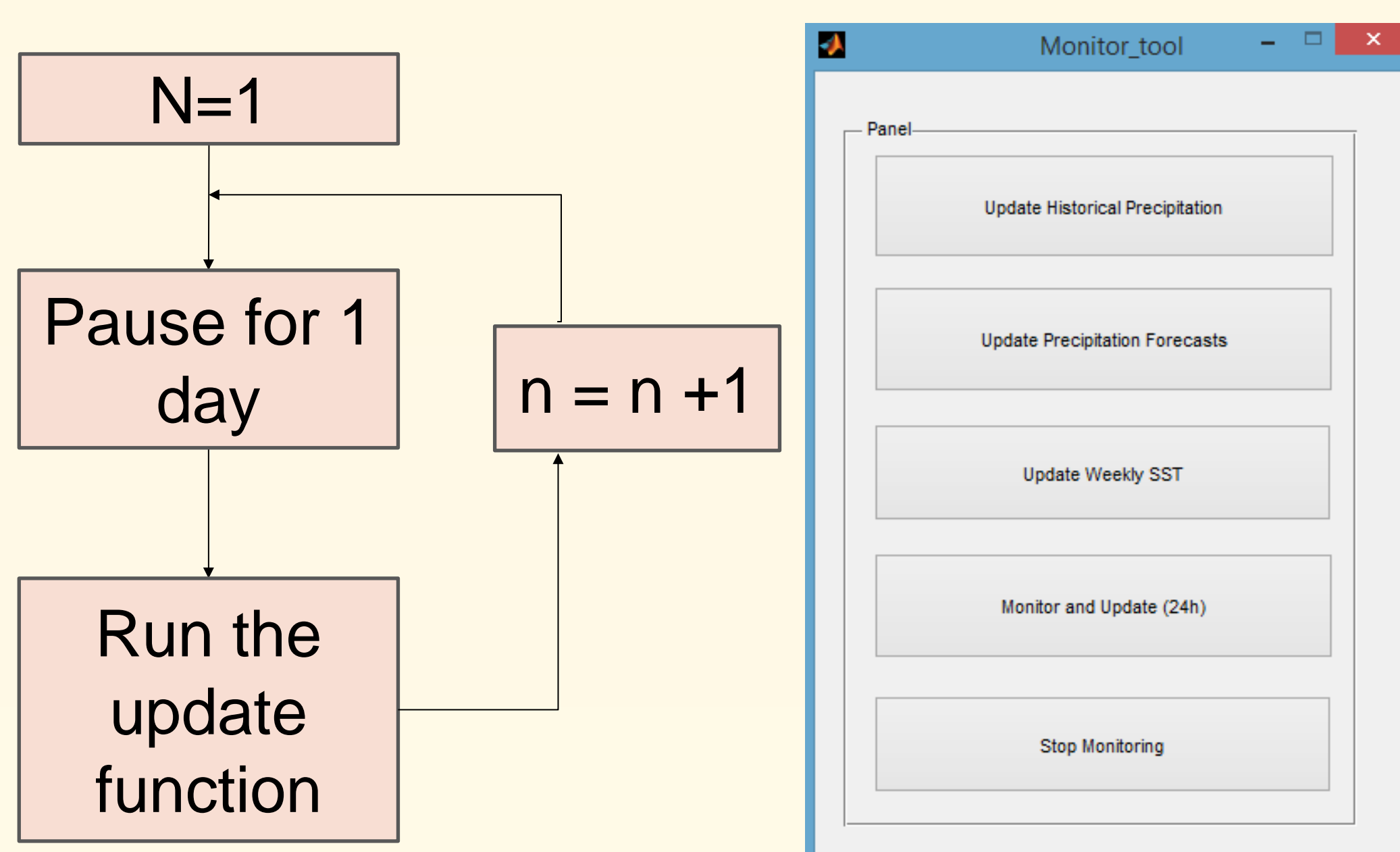
- Each year, flooding not only leads to loss of lives but also involves socio-economic damage and community devastation. In 2005, flooding caused \$6 billion worth of damage globally. By 2050, the cost will be 10 times higher. Developing countries with high concentration of urban population always suffer the most.
- Heavy precipitations in the Sahel received international media attention in 2007, 2008, 2009, 2010, 2012, and 2013 because it resulted in hundreds of casualties and hundreds of thousands of homeless people.
- A low-cost flood forecasting system adapted to the region is being developed within the Water Resources group, department of civil engineering, University of Ottawa.



Philippines Aug. 20 2013
Source: Aaron Favila

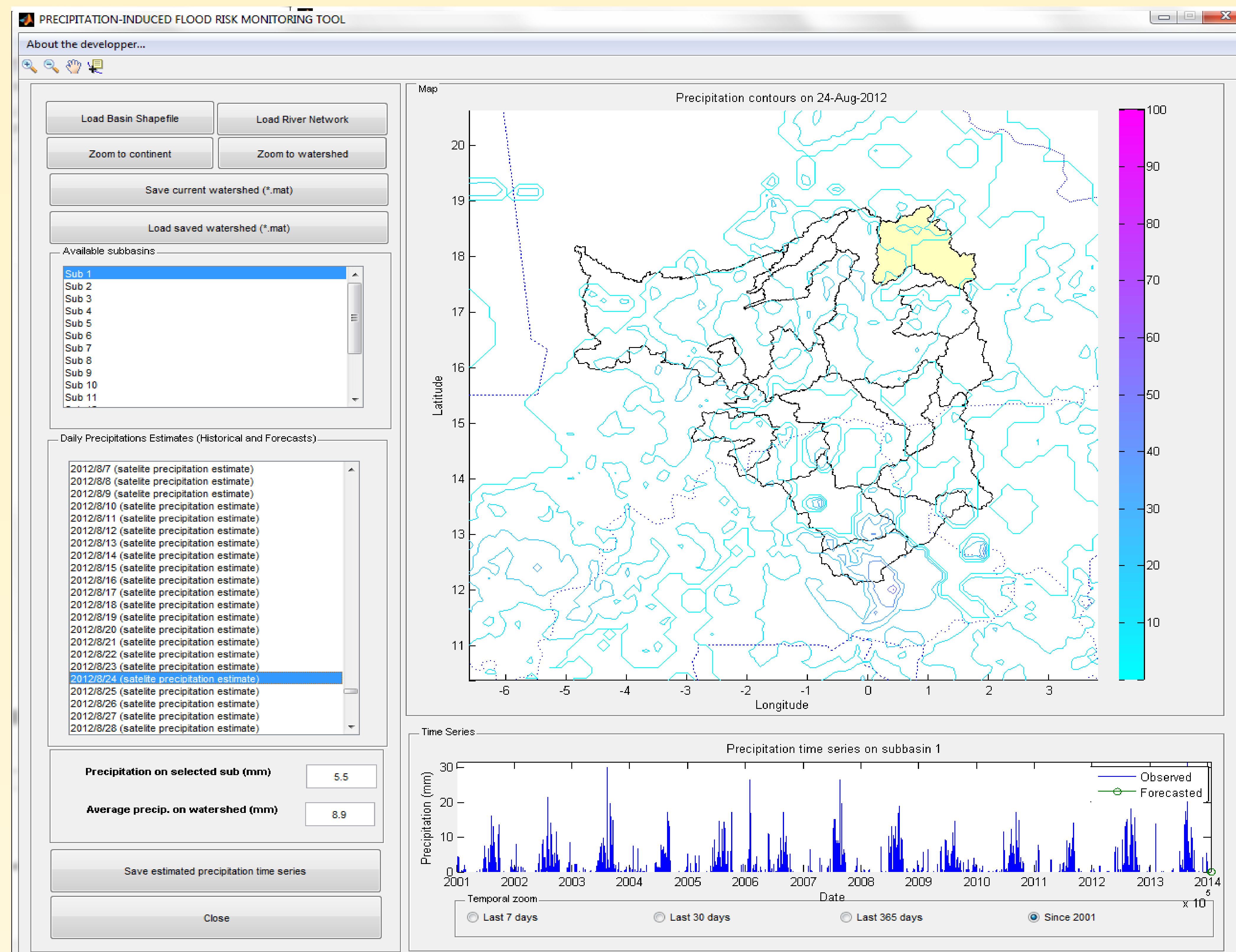
Objectives

- My task in the larger project is to write a program that would make the retrieval of global satellite observation data and forecasts automatic



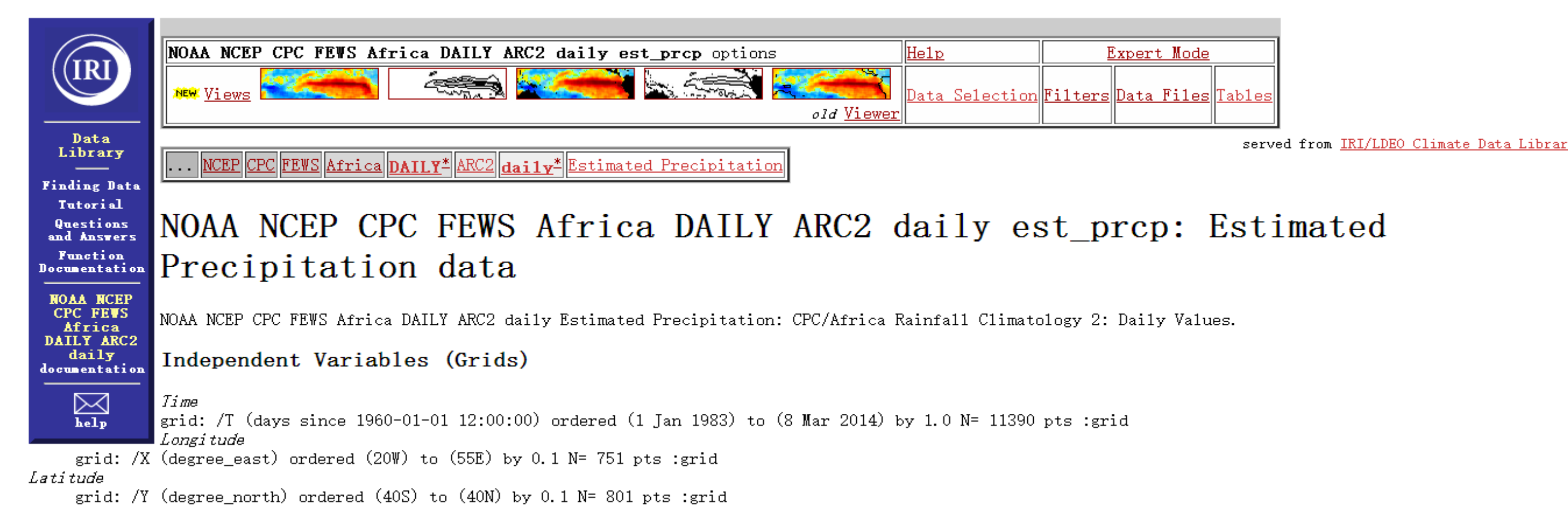
Real-time Flood Monitoring Tool

Allows engineers in 17 African countries to monitor heavy precipitations on any watershed of their choice

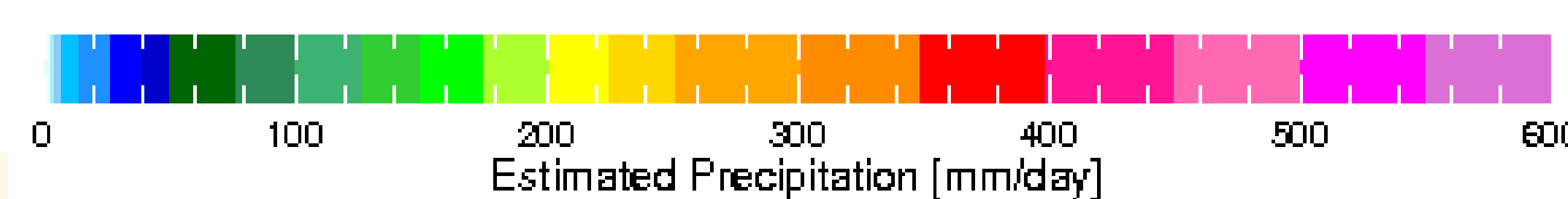


Retrieved Data Sets

- Precipitation data is disseminated from the National Oceanic and Atmospheric Administration (NOAA) and Global Forecast System (GFS) websites. The data are given in the matrix form corresponding to the longitude and latitude geographic gridlines.



- These data are automatically updated into the Matlab application by another dissemination tool.
- The Matlab application transfers the data matrix into the precipitation map, the end user can draw logical predictions on flooding event.
- The precipitation color scale:



Preliminary Results

- The developed program is working and users in 17 countries have access to the satellite precipitation data and forecasts
- Free Dropbox accounts are used to transfer data from a computer at the University of Ottawa to end users in Africa
- Several users are facing technical problems due to computer configuration and limited space in their Dropbox accounts

Future Directions

- Develop a personal cloud solution that will provide more space and cost less than a professional Dropbox account
- Develop rainfall-runoff transformation models so that the forecasts can be converted into streamflow and water levels
- Develop a site-specific precipitation threshold to issue flood warnings based on forecasted precipitation.
- Develop tools to estimate the extent of the upcoming flood and issue warnings.



Source: Radio Netherlands Worldwide, 2012



Taken August 29, 2012 (Source: Sertit, 2012)