Process-based multiple spatial-temporal scale hydrologic/hydraulic modelling (for flood and drought prediction) and its uncertainty analysis Huan Wu and Robert F. Adler

Dominant river tracing-Routing Integrated with VIC Environment (DRIVE) model (Wu et al., 2011, 2012, 2014 Water Resources Research)



Goal: Develop, test and operate a system to provide national and international organizations (gov't and NGO) useful analysis and forecast information about ongoing and potential floods.

Global Flood Monitoring System (GFMS) http://flood.umd.edu

Global Real-time Flood Calculations Using Satellite Rainfall and Hydrological Models



Wu et al., 2011, 2012, 2014 WRR; Wu et al., 2012 JHM;

Potential uses at NCEP:

- 1. The physically based **DRTR** routing model can be used at NCEP/EMC by integrating or coupling with the Noah model to provide improved streamflow simulations across scales and resolutions for NLDAS to support flood/drought applications and improved land surface condition for weather modelling systems at NCEP/EMC. This will help further improve parameterization of land surface models of EMC.
- The GFMS or the DRIVE (coupled VIC and DRTR routing) can be adapted to be useful for NCEP/WPC's weather forecast/flash flood guide and Hydrometeorology Testbed activities.
- 3. The **DRIVE** model can be used for hydrological testing and evaluating NCEP/CPC's various precipitation products (such as CPC-unified gridded gauge data, CMOPRPH products) and potentially be useful for CPC's Climate Testbed activities in sub-seasonal applications.