

2012 Special Program in Applied Mathematics and Applied Mechanics

*Flood forecasting from outback to the coast of Australia using
observations from ground and space*

2012 - 11 - 14 (Wed.)

15:00 - 17:00

308, Mathematics Research Center Building (ori. New Math. Bldg.)

Flood is the most costly natural disaster in Australia. Flood forecasting is critical for both emergency management in flood prone areas and, in some places, operation of flood mitigation infrastructure. In order to provide more accurate and timely flood warning, the Australian Bureau of Meteorology has recently introduced a new flood forecasting system; a suite of continuous streamflow models operating with the forecast precipitation from a numerical weather prediction model. In the seminar, I present recent works to improve the operational flood forecasting accuracy by integrating ground-based and remotely sensed observations into the modeling system. For small catchments with relatively dense ground monitoring stations, real-time stream discharge observations are assimilated into the streamflow models to correct errors in model state variables. For inner catchments with sparse or no gauge networks, satellite observations of rainfall and surface soil moisture are used synergistically to improve input forcing and model state variables. Discussions on upcoming opportunities of the presented approaches for global water resources assessment and prediction are suggested.

