Research at the Surface Dynamics Modeling Lab: from global-scale and long-term riverine modeling to local-scale remote sensing and simulations of flood events

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The Surface Dynamics Modeling Lab (SDML; http://sdml.ua.edu) is a research unit with in the Department of Geography at the University of Alabama. SDML conduct innovative research on earth and planetary surface processes and dynamics by developing and utilizing a suite of numerical models and remote sensing techniques. A review of selected SDML research projects will be provided focusing on:

1. Global-scale modeling of river loads – water, sediment and nutrient fluxes in large global rivers is analyzed using the *WBMsed* model (Cohen et al., 2013, 2014). Recent studies and ongoing developments will be presented focusing on geomorphic and anthropogenic influences on global rivers.
2. Satellite Remote Sensing (SRS) analysis of riverine flooding – flood inundation mapping using satellite remote sensing analysis is used to compile the U.S. Flood Inundation Map Repository (USFIMR; http://sdml.ua.edu/usfimr) in support of the National Water Center new national flood prediction system.
3. SRS-based river gauging – an operational system hosted at the Dartmouth Flood Observatory (DFO; http://floodobservatory.colorado.edu) use passive-microwave SRS sensors to observe neat-real-time changes in streamflow anywhere in the world.