Exploring feasibility and accuracy of SWOT discharge algorithms

• Using a slope-area method, discharge can be estimated from SWOT measurements plus estimates of river bathymetry and roughness/drag

• Three approaches to estimating the unknowns
  – *a priori* information [Le Favour & Alsdorf, 2005]
  – From SWOT measurements [Durand et al., 2010]
  – Using both *a priori* info & SWOT measurements [Durand et al., 2012 – in review]
Exploring feasibility and accuracy of SWOT discharge algorithms

• Test feasibility of three approaches / algorithms by deploying over a large river basin, including all tributaries
  – Questions are run-time, stability, universality and accuracy
  – Number of river reaches to estimate globally is ~20,000

• Test accuracy of algorithms using AirSWOT data
  – Will use data from Sacramento, Garronne, Alaska
  – Control on true bathymetry, width, etc. will allow construction of a SWOT discharge error budget
Exploring feasibility and accuracy of SWOT discharge algorithms

• Sensitivity tests can show response of algorithm performance to
  – SWOT orbit & measurement pattern
  – SWOT measurement accuracy (height, width, slope)
  – SWOT measurement resolution

• Output from the large-scale tests should provide useful data for the community to experiment with, helping nail down what data products are needed