



Strategic Implementation Plan (SIP) for a Community-based Unified Modeling System



Land Surface Models + Hydrology WG

Presented by

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Land WG *Membership*

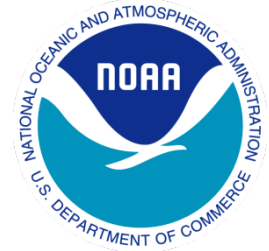


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- Brent Lofgren (NOAA/GLERL)
- *Co-Chair ***



Land WG

Initial Findings



Consensus points among the Land WG members. Important to represent:

- Seasonal interactions among dynamic vegetation, hydrology, and weather.
- Human influences on surface energy and water budgets, i.e. urban regions, crops, irrigation, water reservoirs/diversions/extraction, fire.
- Energy and water partition across various time and space scales.
- Surface heterogeneity (vegetation, soils, etc) and scale-dependencies.
- Lateral movement of water, hydrology (groundwater/streamflow), estuary modeling, freshwater inflow to oceans.
- BGCs, water quality, and interaction with atmosphere (PBL, chemistry) and other earth system components.
- Lakes (explicit as well as sub-grid and not represented).
- Assimilation of land surface states (soil moisture, snow, vegetation, streamflow).



Land WG

Key issues to resolve



- Challenging development and R2O environment:
 - Need land-sensitive integrated metrics (2m T,q; 10m u,v; QPF).
 - Biases in upstream physics (radiation, precipitation).
 - Coupling strategies (numerical efficiencies, consistency, data input).
 - Disjointed land approach across systems (CFS, GFS, NAM, HRRR, NWM).
- Communication across NOAA offices and partners.
- Computational resources (access, sufficient, coordinated).
- Coupled model testing requirements as part of a model hierarchy with an “individual component to fully-coupled model” testing paradigm with appropriate benchmark tests at each step.
- Necessary data sets to test/validate each process/component/sub-component in our land model, and other components in a earth-system model more generally.
- System design ensuring support of widely varying end user needs.