Andrew S. Jones

Using Remote Sensing for WCF Objectives
– New Opportunities
- Thoughts regarding very useful linkages

Andrew.S.Jones@ColoState.edu
Senior Research Scientist
Cooperative Institute for Research in the Atmosphere (CIRA)
Colorado State University (CSU)

September 6, 2017, Fort Collins, CO
Integrated Data and Tools for Watershed Condition Assessments
NASA Research Satellites of Interest to WCF

- Many possibilities
- Most interesting incl:
  - SMAP (now)
  - SWOT (2020)
  - GeoCarb (2021)
  - HyspIRI
  - Precipitation (various)

From Margaret Srinivasan (NASA/JPL)
Major CSU Initiatives

• **Digital “Terraforma”** – A Controlled Ecosystem in a box – BioEngineering Diagnostics, CSU Vet School, Infectious Disease Research Center (IDRC), International Phytobiome Initiative, CSU One Health Institute (linked to remote sensing/environ. data)

• **Rural Wealth Creation** – CSU 17 Faculty Member Team, Links to Colorado Dept. of Ag., CO Governor’s Office, City of Denver – Ag/Economics meets the environment and public health/nutrition, emphasis on society/food production/consumptive linkages – *the complete end-to-end system*. Complex systems-of-systems modeling/observations.

• **Innovation Center for Sustainable Agriculture (ICSA)** – Ag./Sustainability – Soil Health / Carbon Cycling Ecological systems modeling. Links back to “Future Earth” and weather/climate change impacts.

• **Ogallala Water Aquifer Project (USDA/NIFA) at CSU (and 5 other land grant universities)** – This project studies the water “draw-down” in its’ agricultural context, including operations, crop rotations, agro-economic impacts, policy choices... Highly relevant to USFS operations. Has Great Plains governors’ visibility. **The aquifer covers 30% of all US irrigated cropland, including USFS grasslands equivalent to the entire state of Rhode Island.**

Without elevation dependence, downscaling model overestimates role of vegetation and misses saturation at rivers.

With precipitation or Potential Evapotranspiration (PET) included, vegetation dependence is reduced and model captures saturation at rivers.