

**How to collaborate with the crowd:
a method for “publishing” ongoing work**

Jeff Dozier

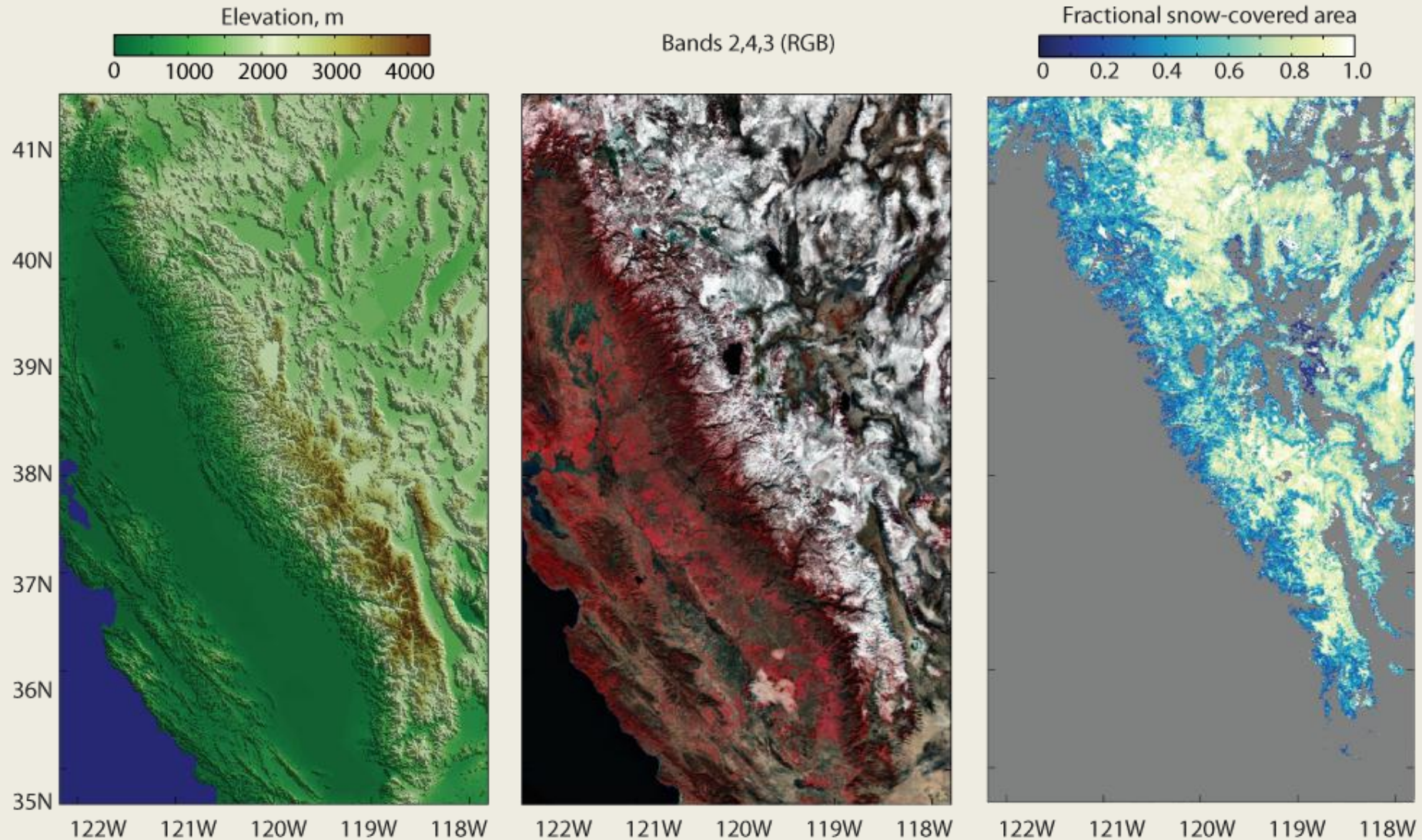
University of California, Santa Barbara

&

Visiting Researcher, Microsoft Research

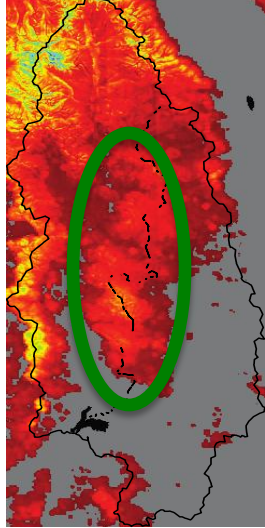
Fractional snow-covered area, Sierra Nevada (MODIS images available daily)

MODIS, 19 Jan 2008

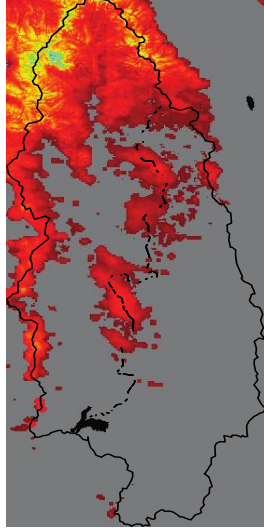


Reconstructed SWE, dry and wet years

March 01, 2007



April 01, 2007



May 01, 2007



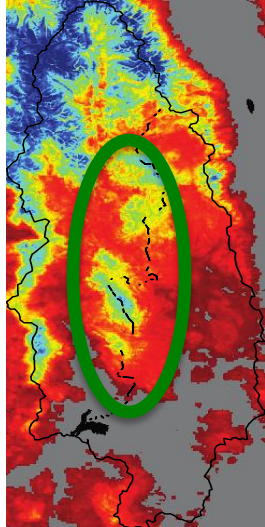
June 01, 2007



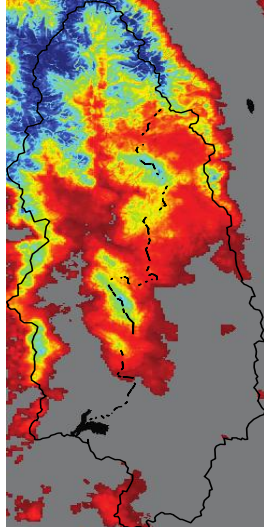
July 01, 2007



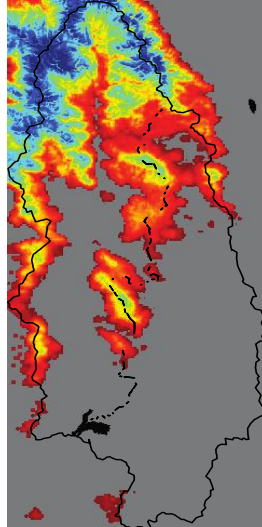
March 01, 2011



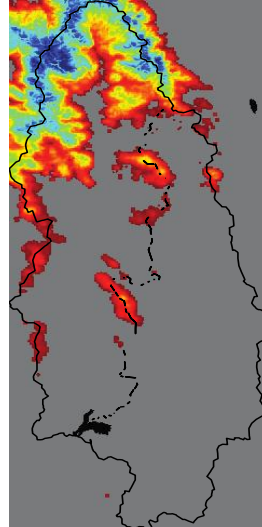
April 01, 2011



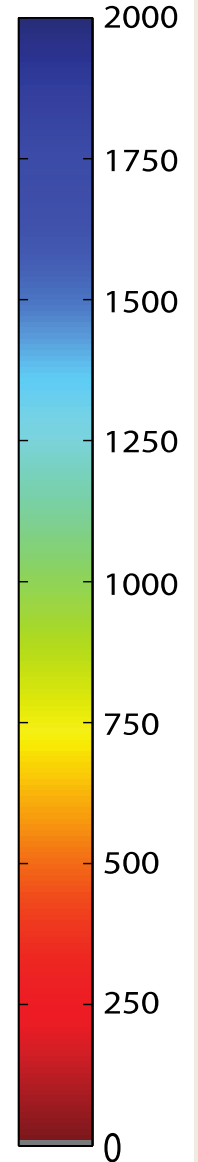
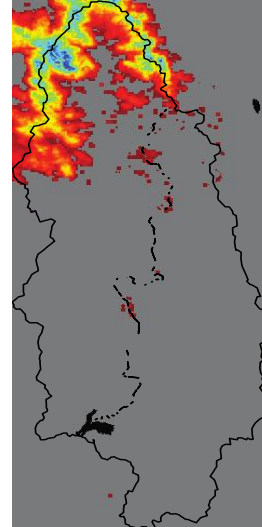
May 01, 2011

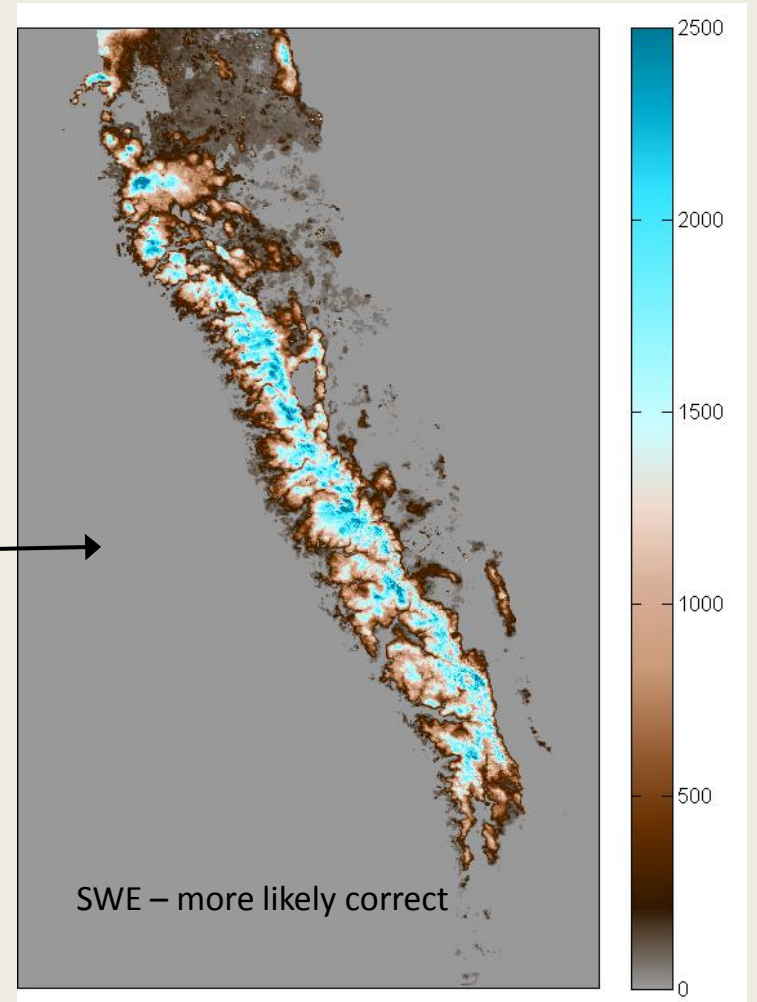
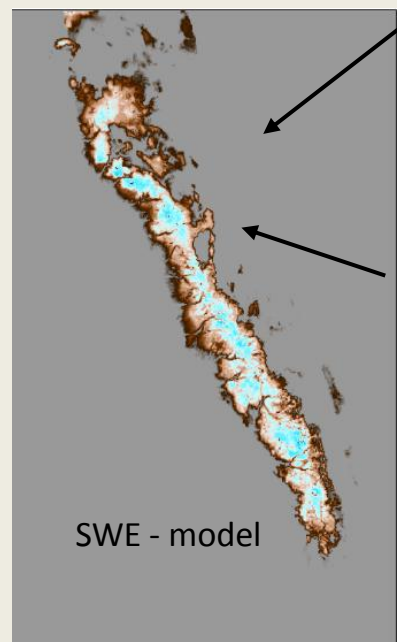
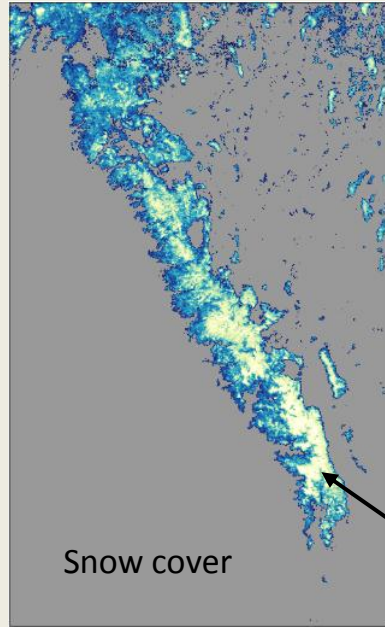
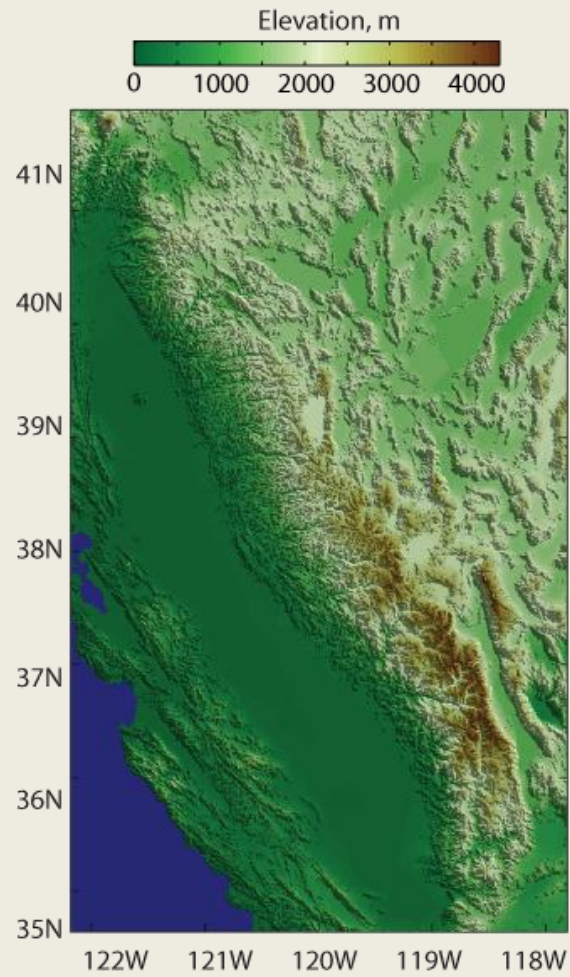


June 01, 2011



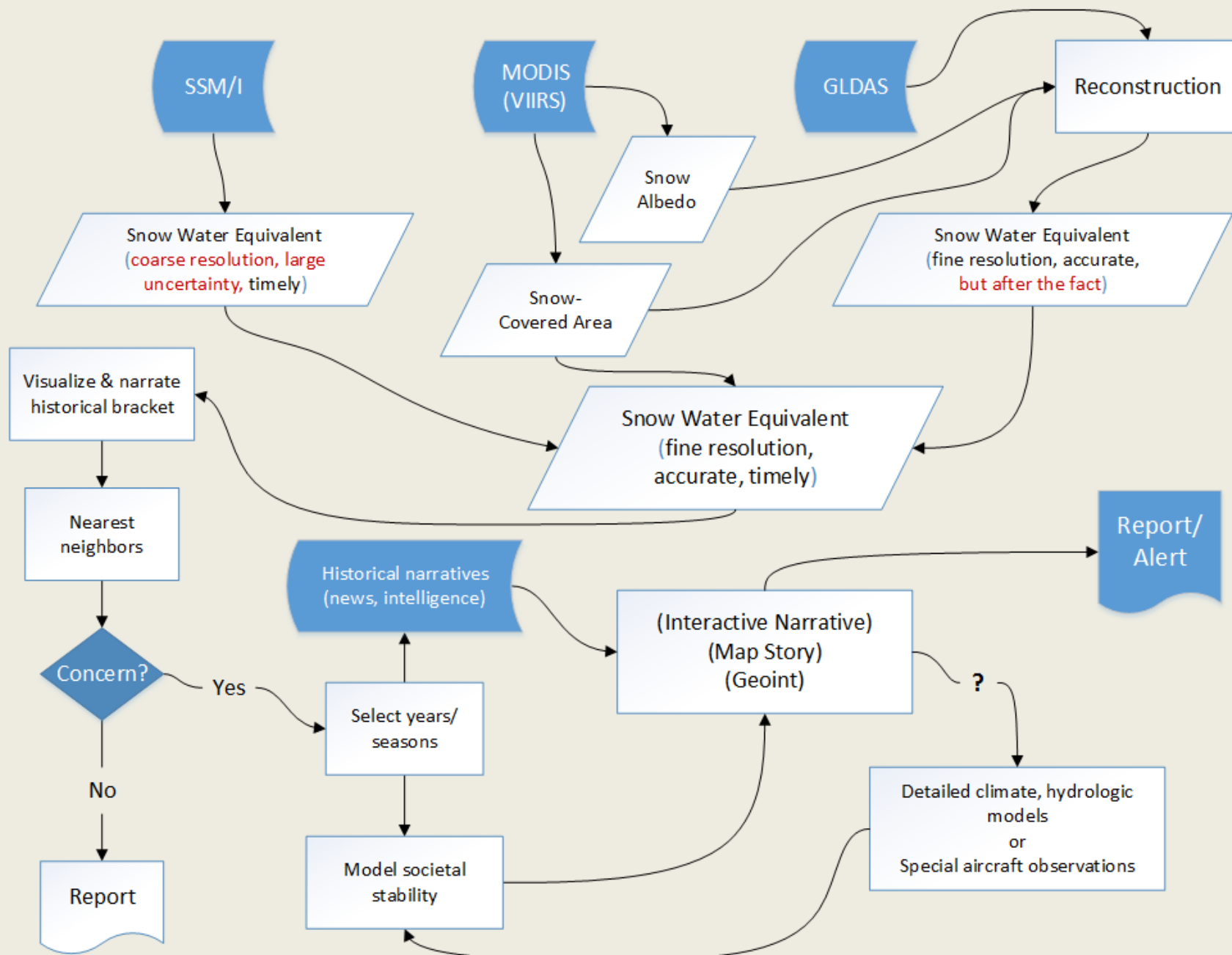
July 01, 2011



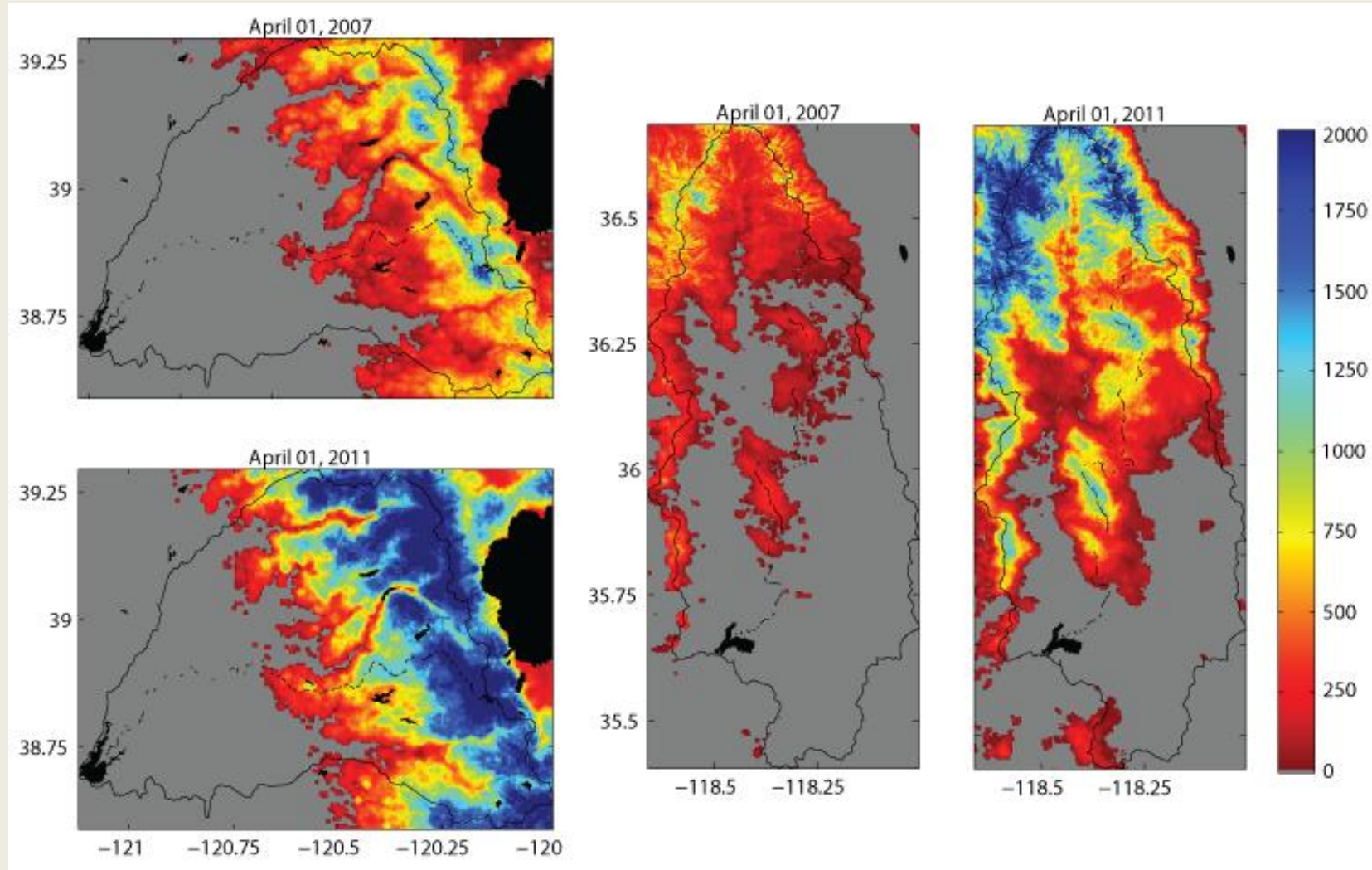


What patterns
can we discover
in these 3 images
to give us
this image?

And then
how do we
fix this model?



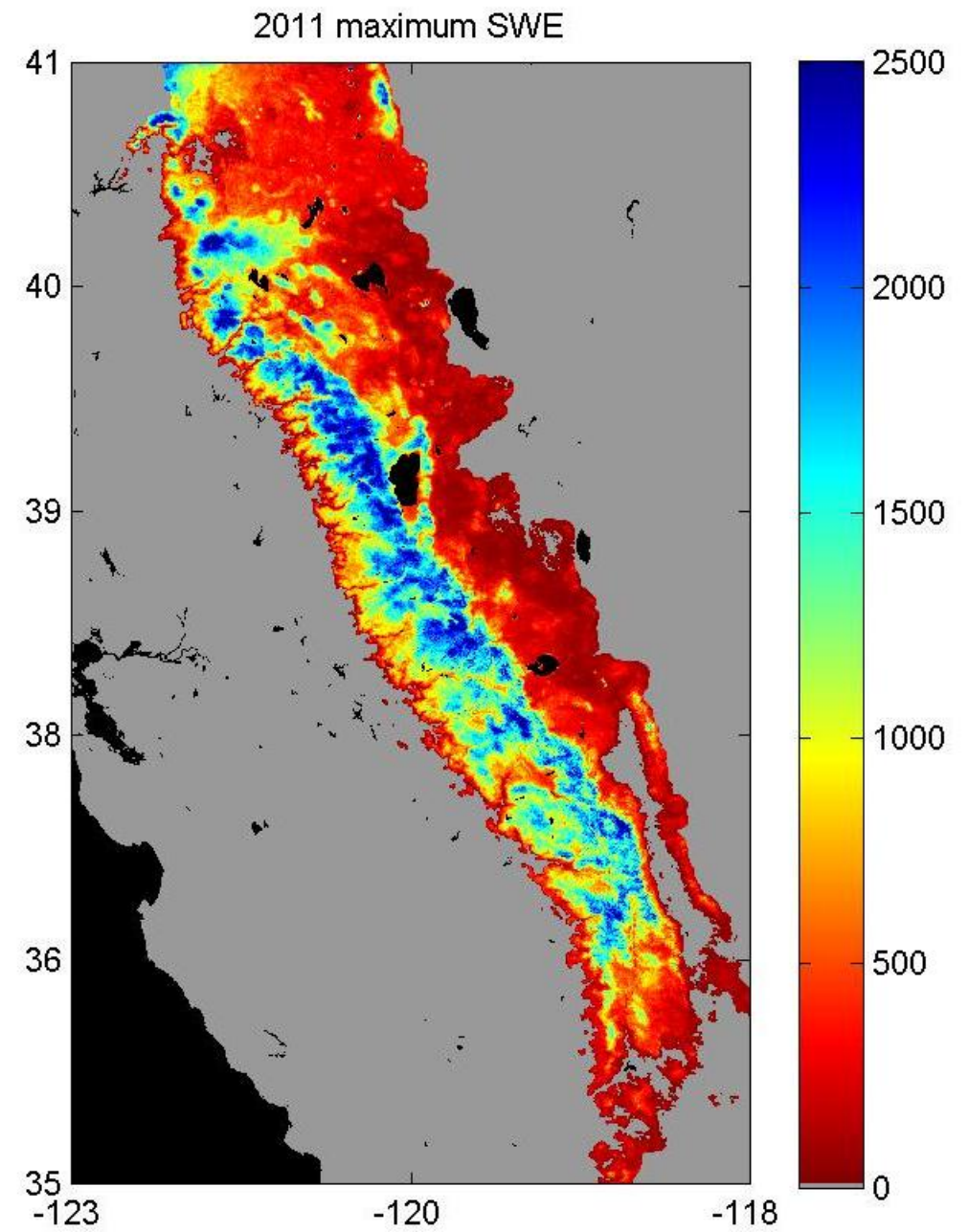
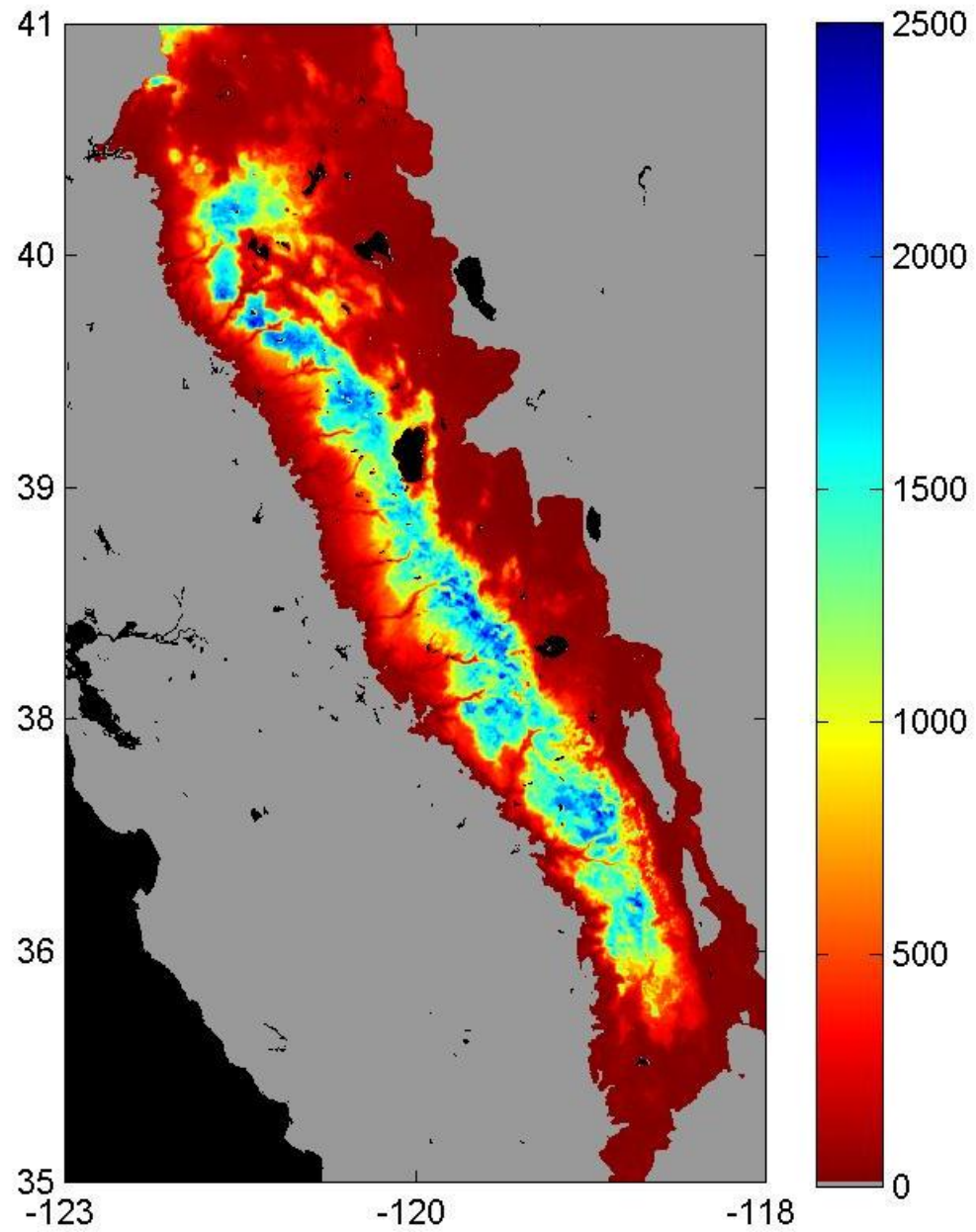
Pattern discovery problem: can experience with reconstructed SWE help improve forecasts?



American River

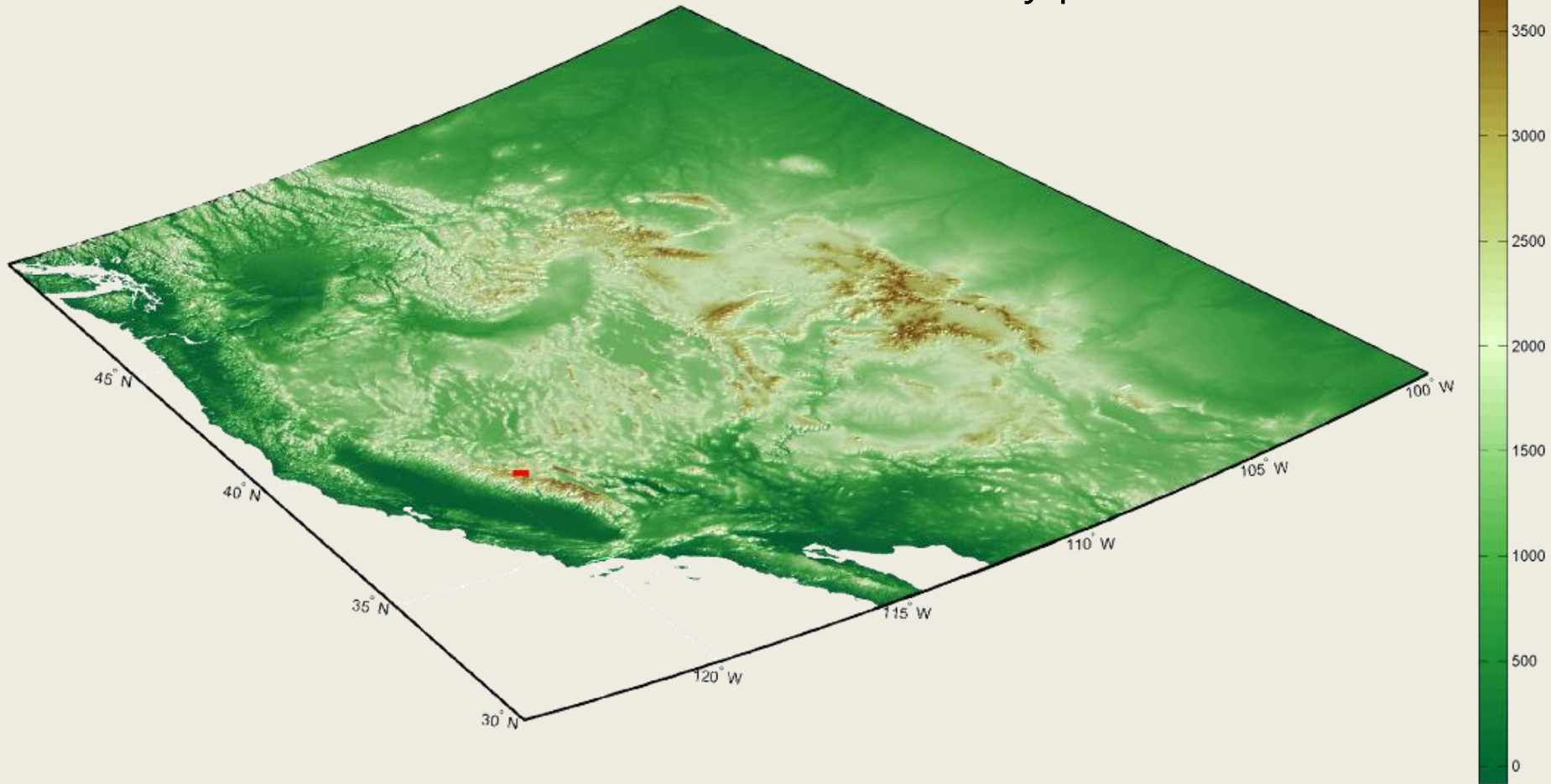
Kern River

Maximum SWE
from SNODAS &
Reconstruction
2011

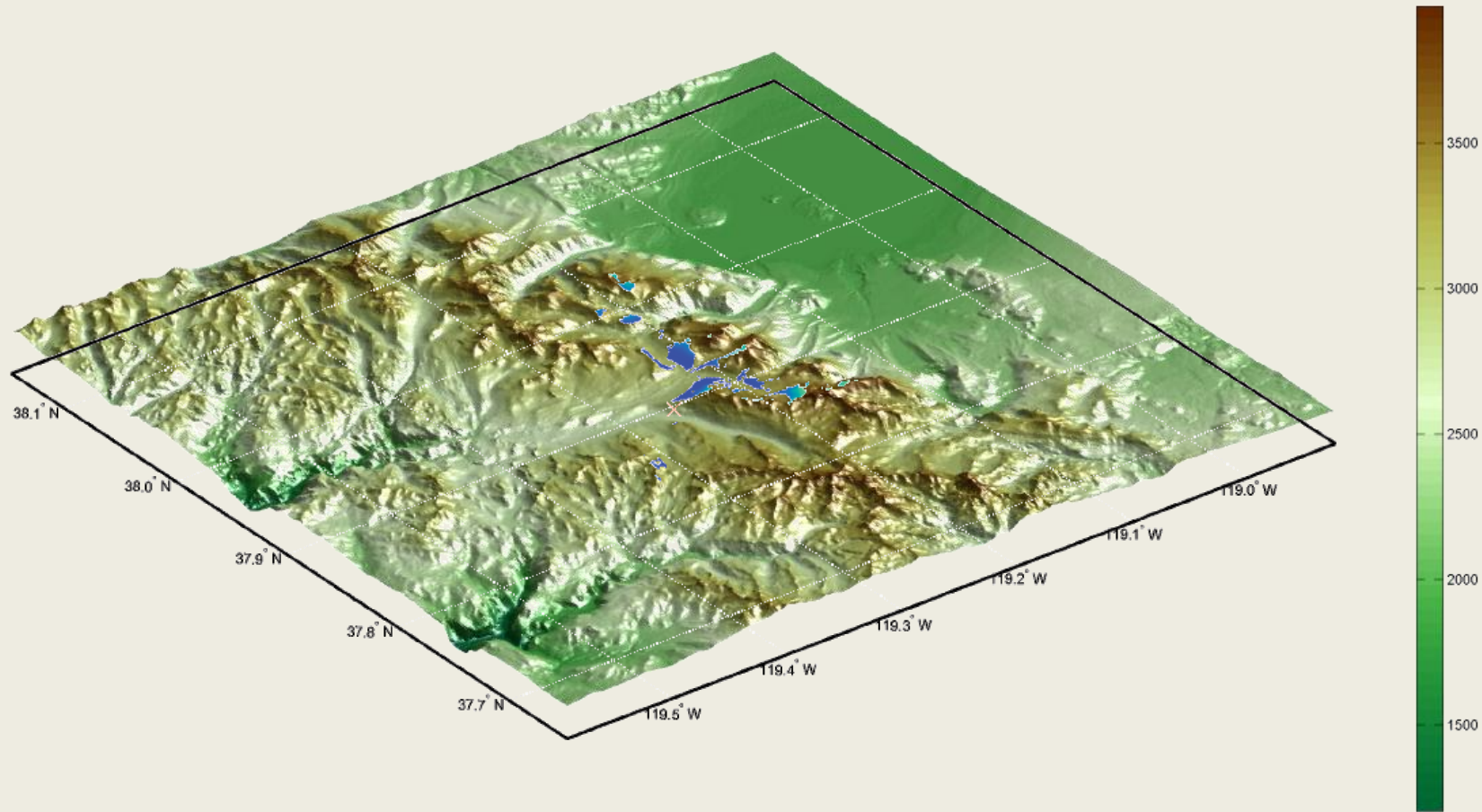


Algorithmic problem: viewshed for all points

- Elevations of western US at 3 arc-sec resolution, 720M pixels
- Better topographic radiation calculations need viewsheds for every point

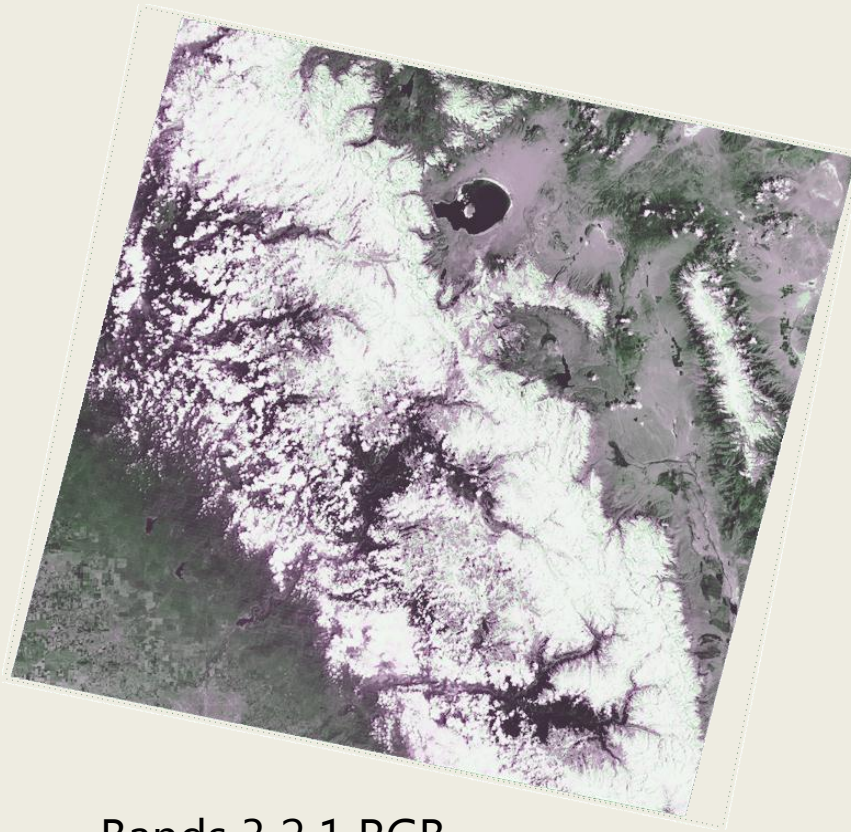


Viewshed for Dana Meadows snow pillow

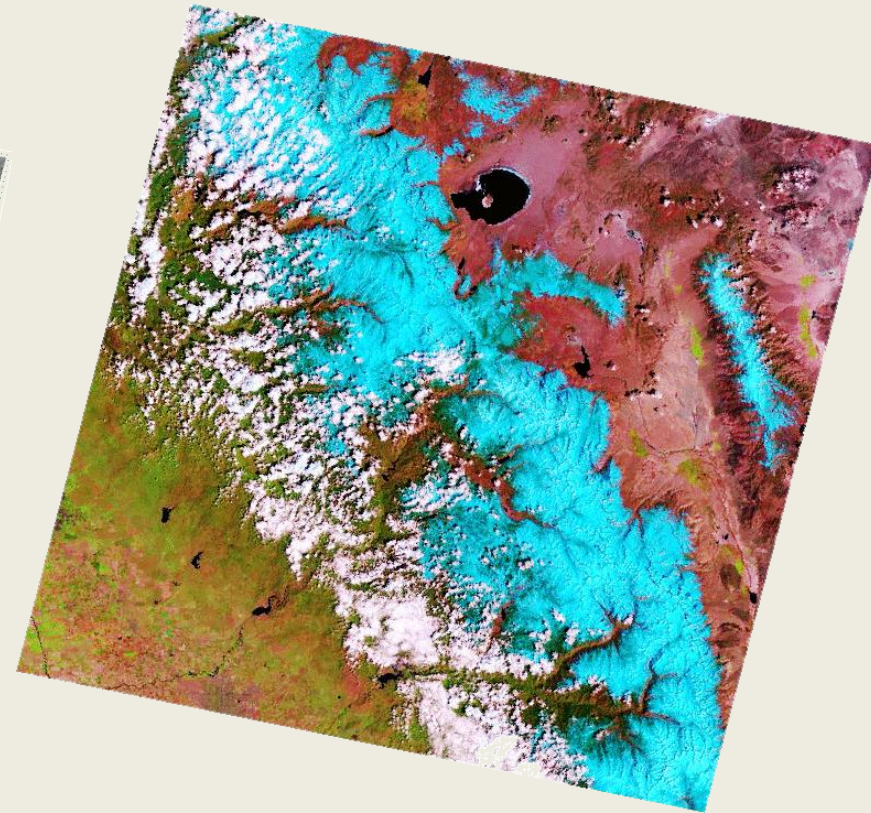


Remote sensing problem: snow-cloud discrimination

- Straightforward with thick clouds (Landsat Thematic Mapper example)



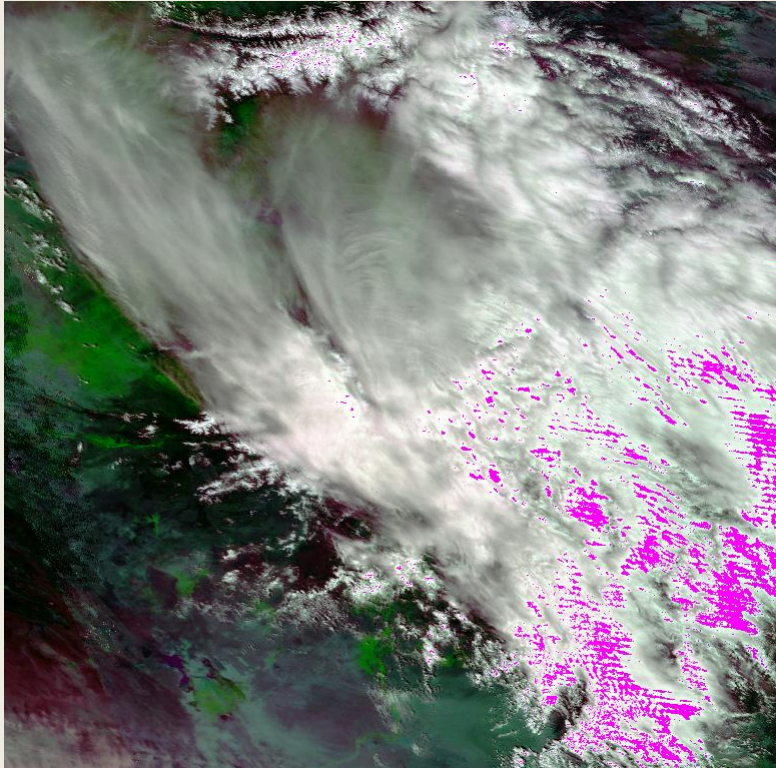
Bands 3 2 1 RGB
(0.66, 0.57, 0.48 μm)



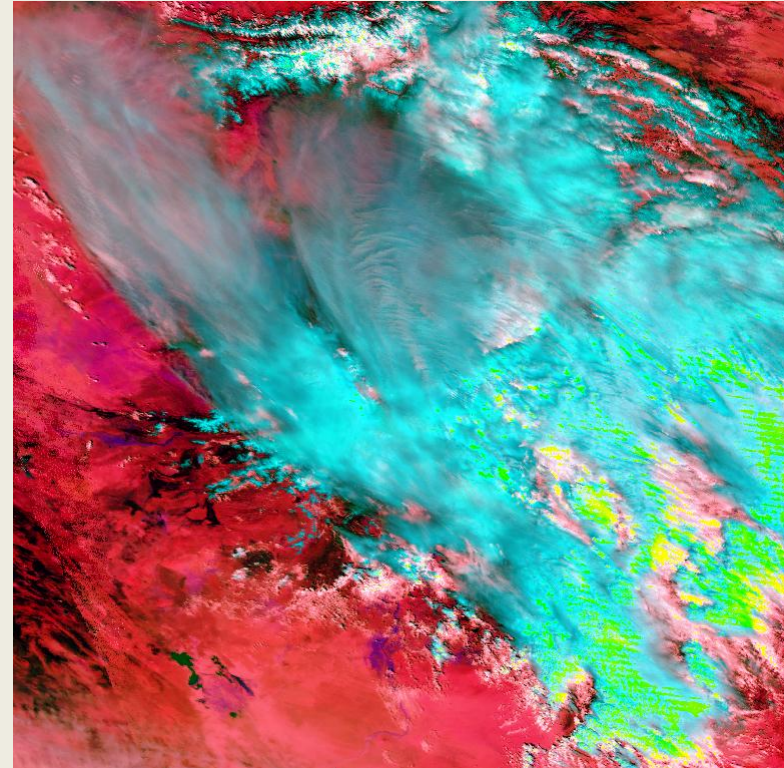
Bands 5 4 2
(1.65, 0.83, 0.57 μm)

Snow-cloud discrimination, a harder example

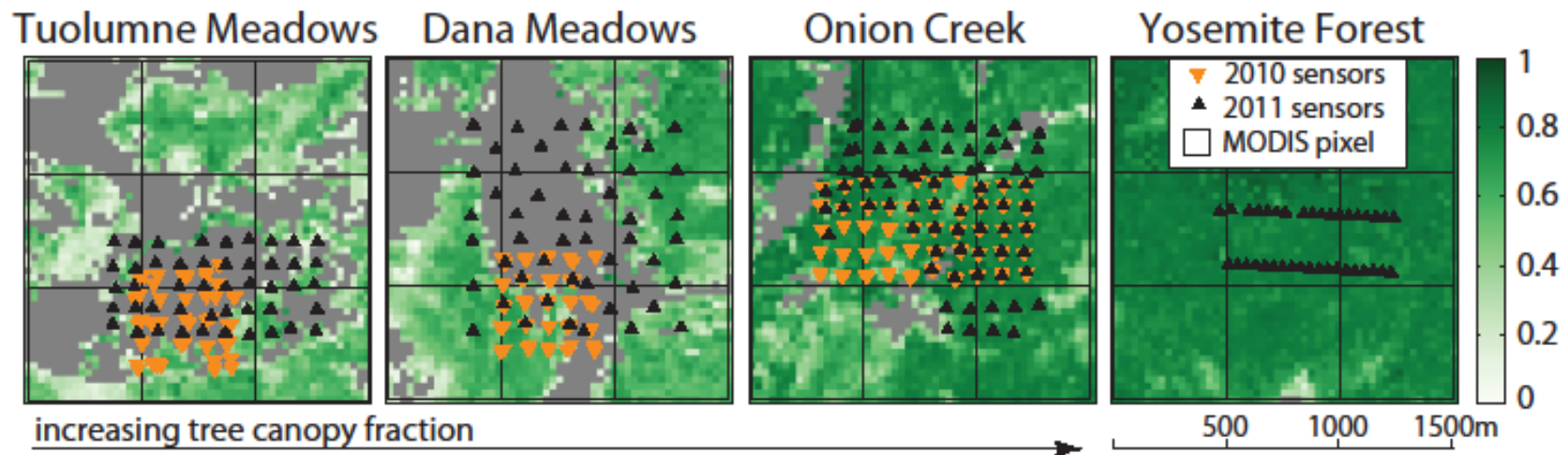
- MODIS, Hindu Kush, 2011-04-10



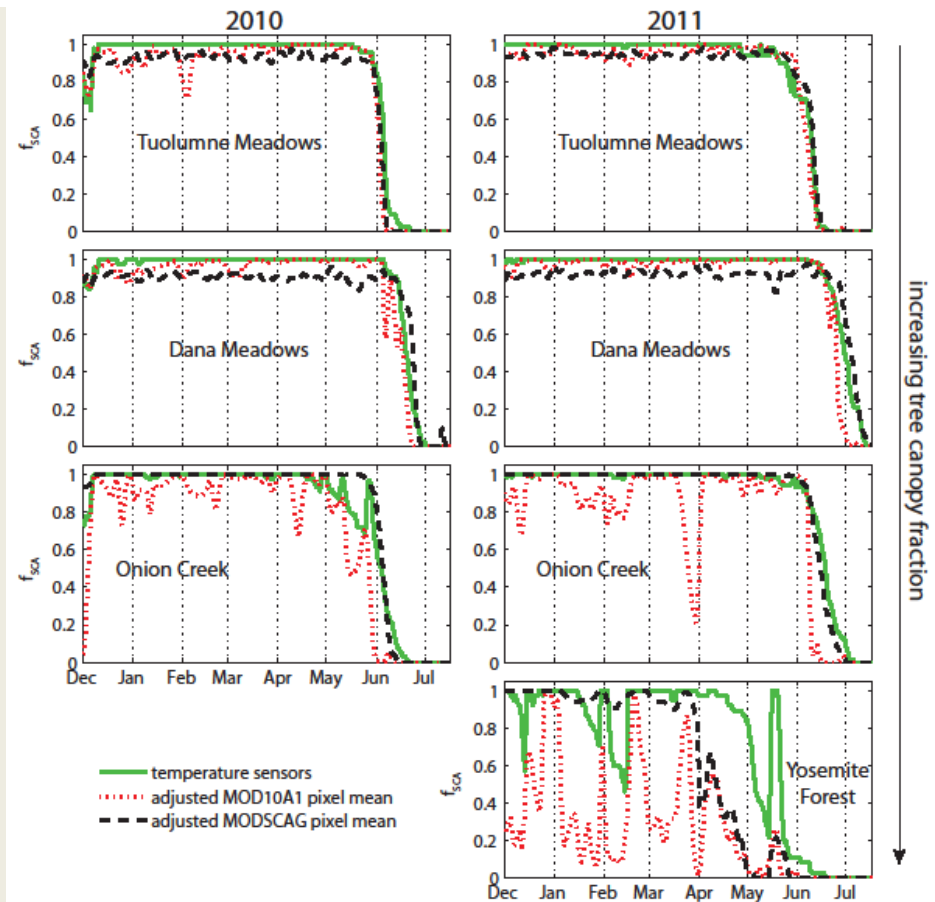
Bands 1 4 3 RGB
(0.645, 0.555, 0.469 μm)



Bands 6 2 4
(1.640, 0.858, 0.555 μm)



Finding snow in the forest



(M. Raleigh & K. Rittger)

Other examples . . .

- Error propagation: how does uncertainty in the whole processing chain create the statistical distribution of errors in the final result?
 - e.g., How does sub-grid topography affect the answer?
- Improved presentation
 - Integration with Layerscape, Bing Maps
- Your good idea goes here . . .