

From mountain crest to valley floor: monitoring and maintaining mountain ecosystem services

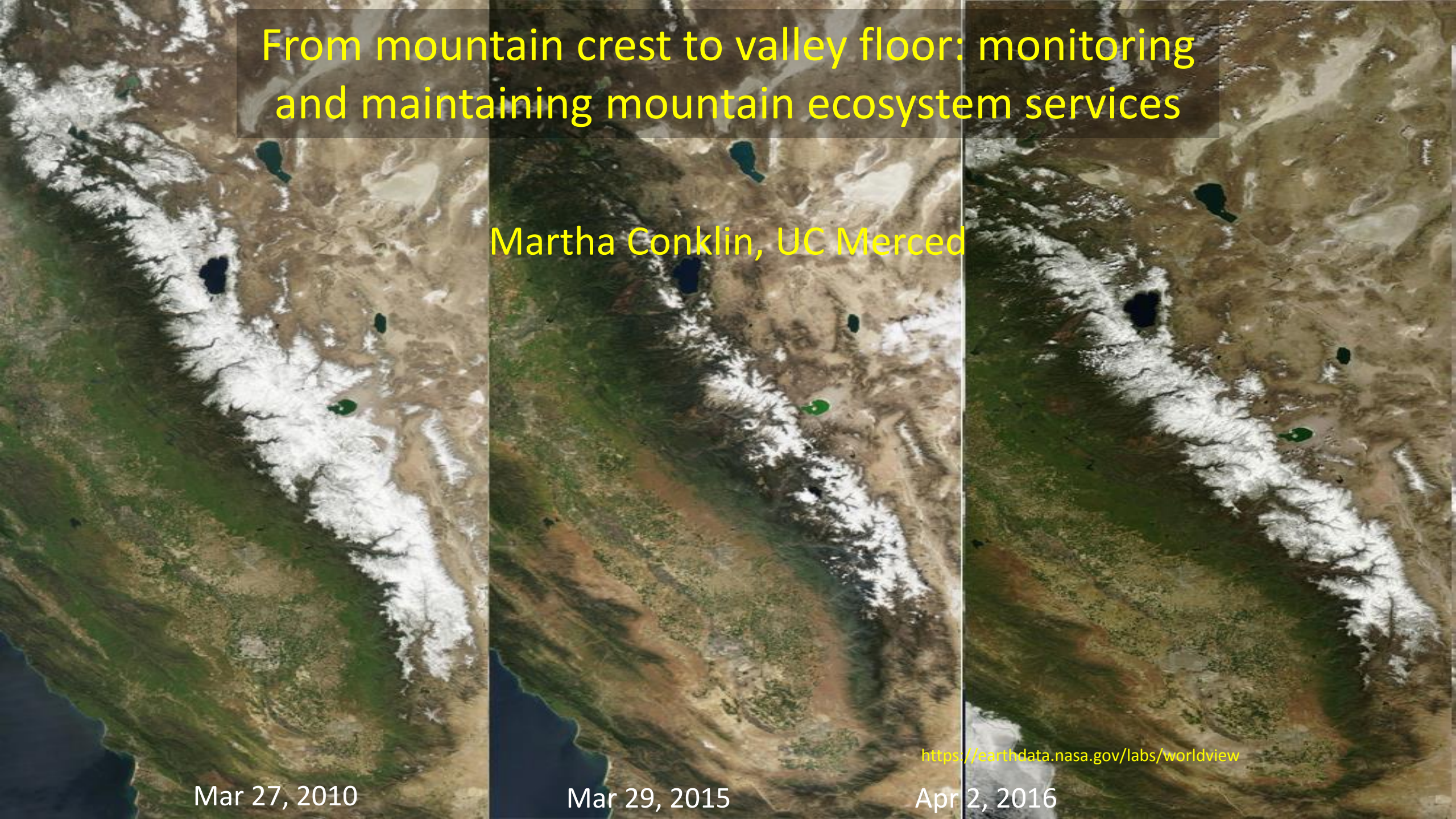
Martha Conklin, UC Merced

Mar 27, 2010

Mar 29, 2015

Apr 2, 2016

<https://earthdata.nasa.gov/labs/worldview>



Connecting headwaters & groundwater: improving California's water security

Green: restoring forests, rivers,
meadows



Information: filling data gaps &
management needs



NATURAL INFRASTRUCTURE

BUILT INFRASTRUCTURE



Subsurface: recharging & storing
groundwater



Gray: building canals,
reservoirs

Century-long experiment: suppressing fire

1896

Kyburz, S. Fork American R., 5000'

1993

We now know this was a bad idea & difficult to correct

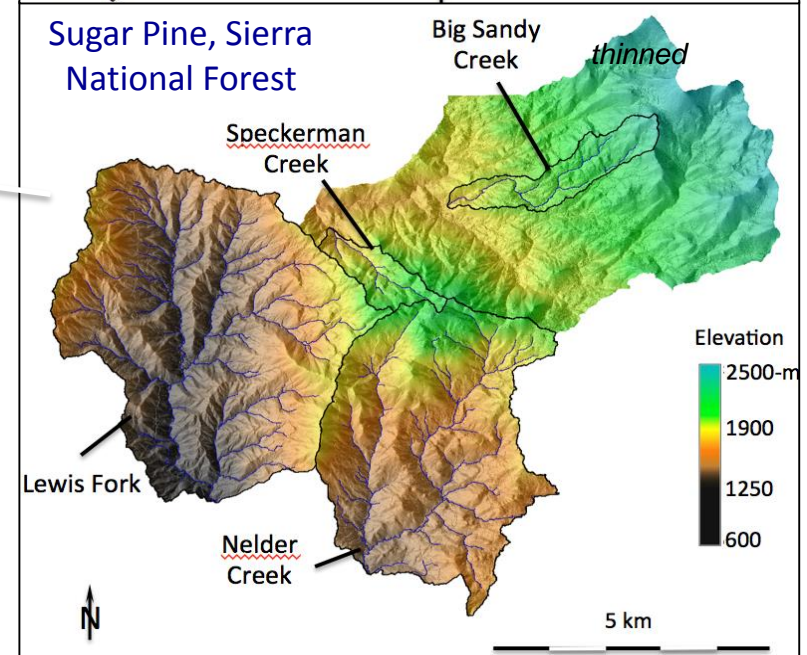
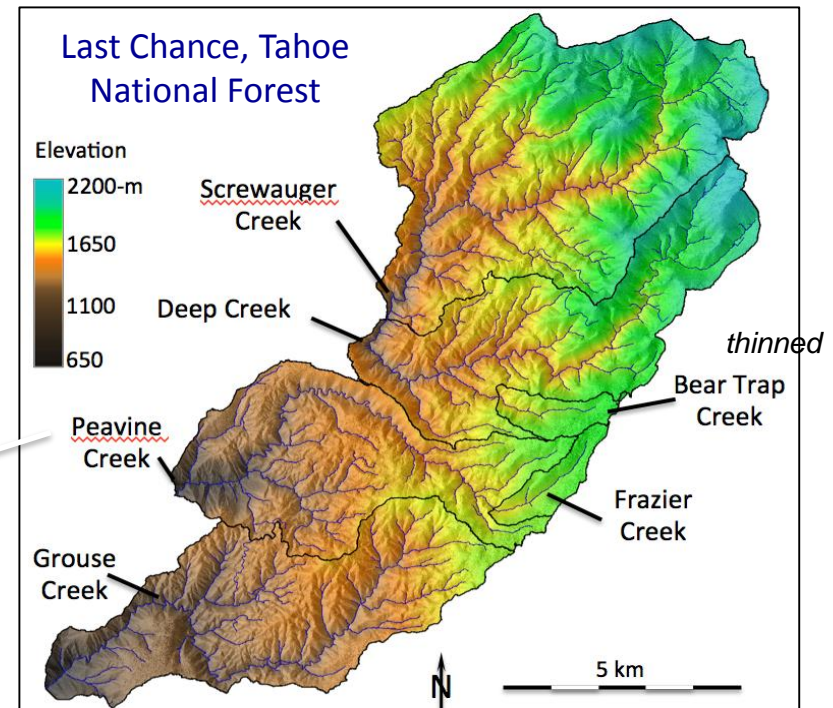
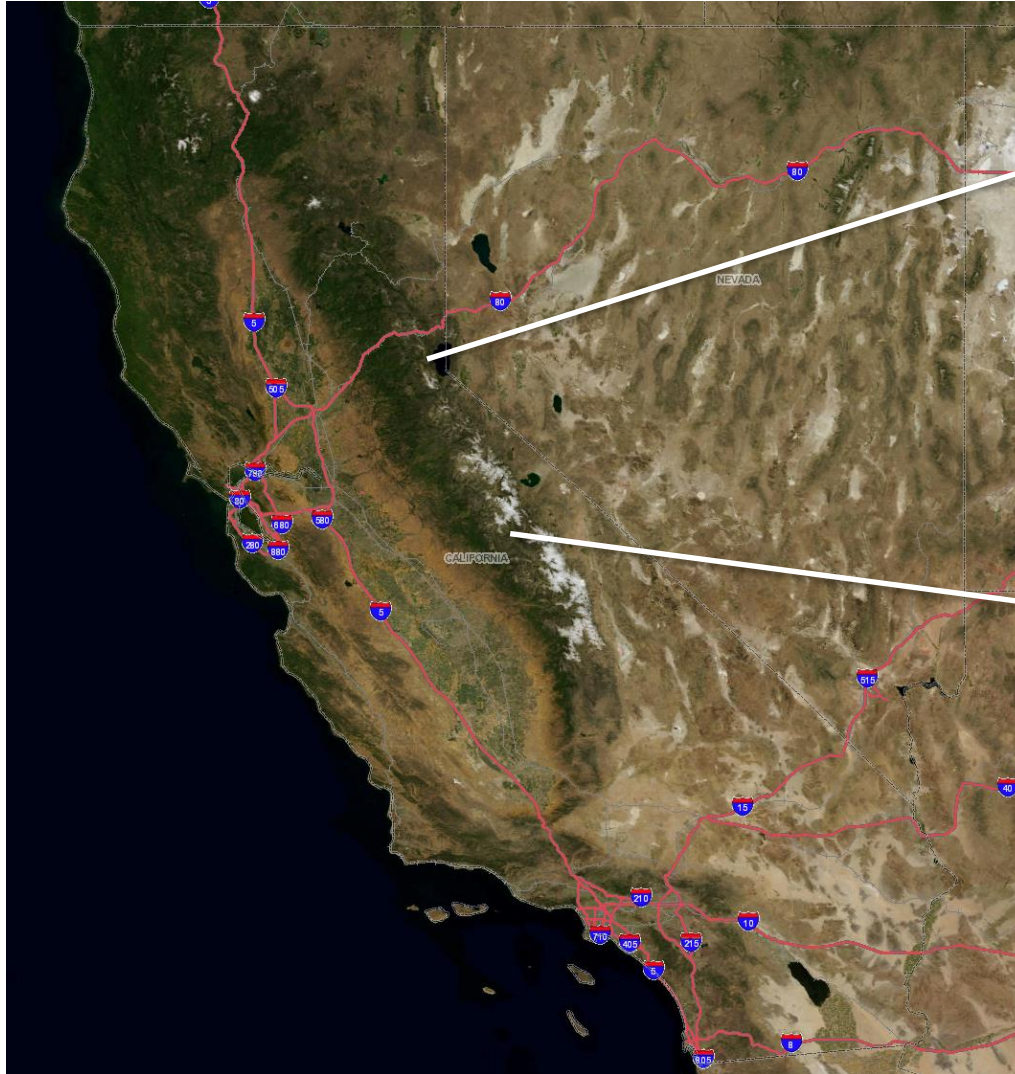
Photos from G. Gruell

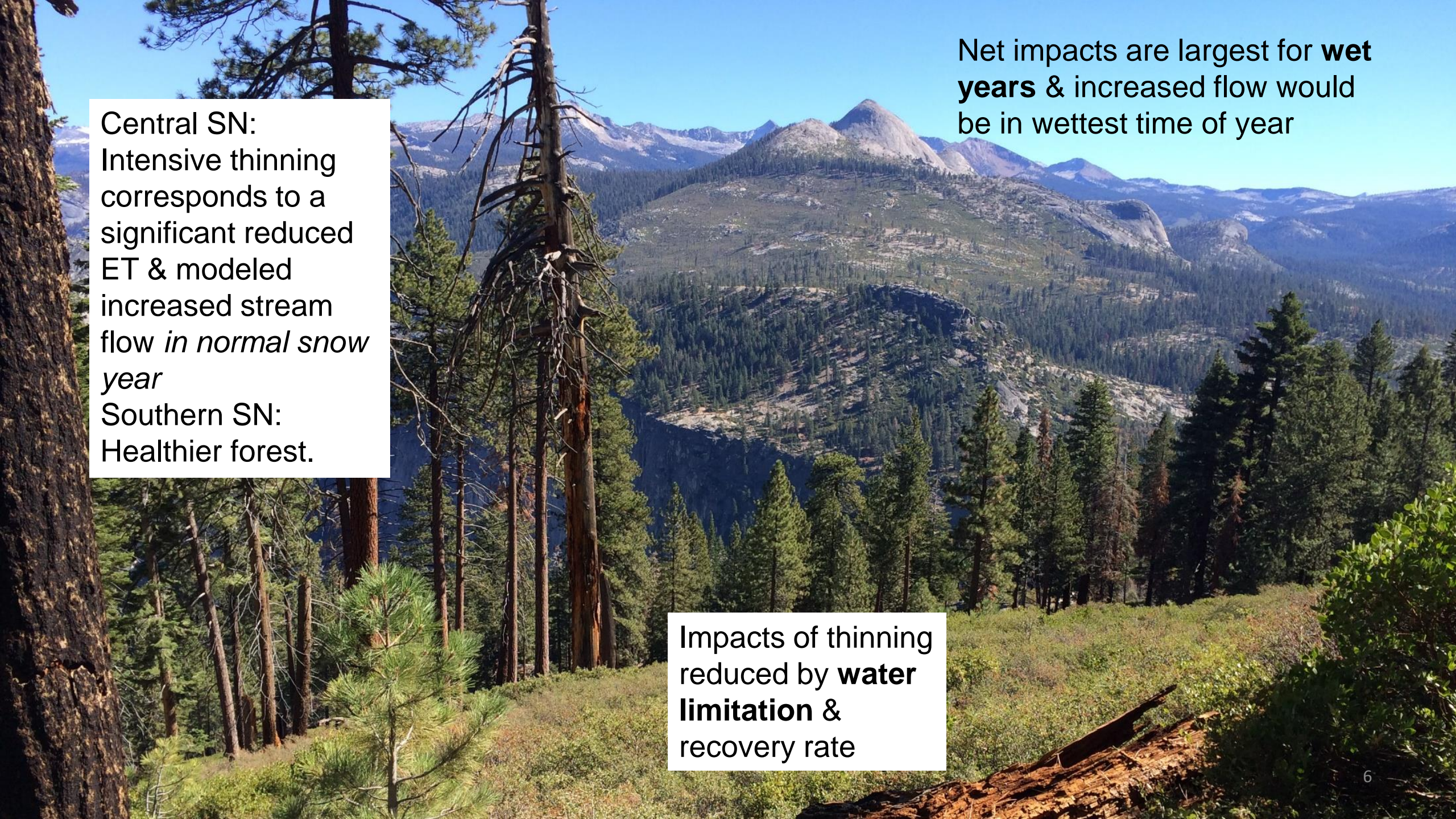


Management response:
restore (thin) forest → reduce ET

Thinned unit w/ control in background

Catchment study: Sierra Nevada Adaptive Management Project





Central SN:
Intensive thinning
corresponds to a
significant reduced
ET & modeled
increased stream
flow *in normal snow
year*
Southern SN:
Healthier forest.

Net impacts are largest for **wet
years** & increased flow would
be in wettest time of year

Impacts of thinning
reduced by **water
limitation** &
recovery rate

Headwaters



Increase water yields:
forest management



Road to water security: recharge
groundwater with high flows

Reservoirs



Operate so peak flows
available



Lowlands



Move peak flows to groundwater
recharge basins