QPE Challenges for HMT-West

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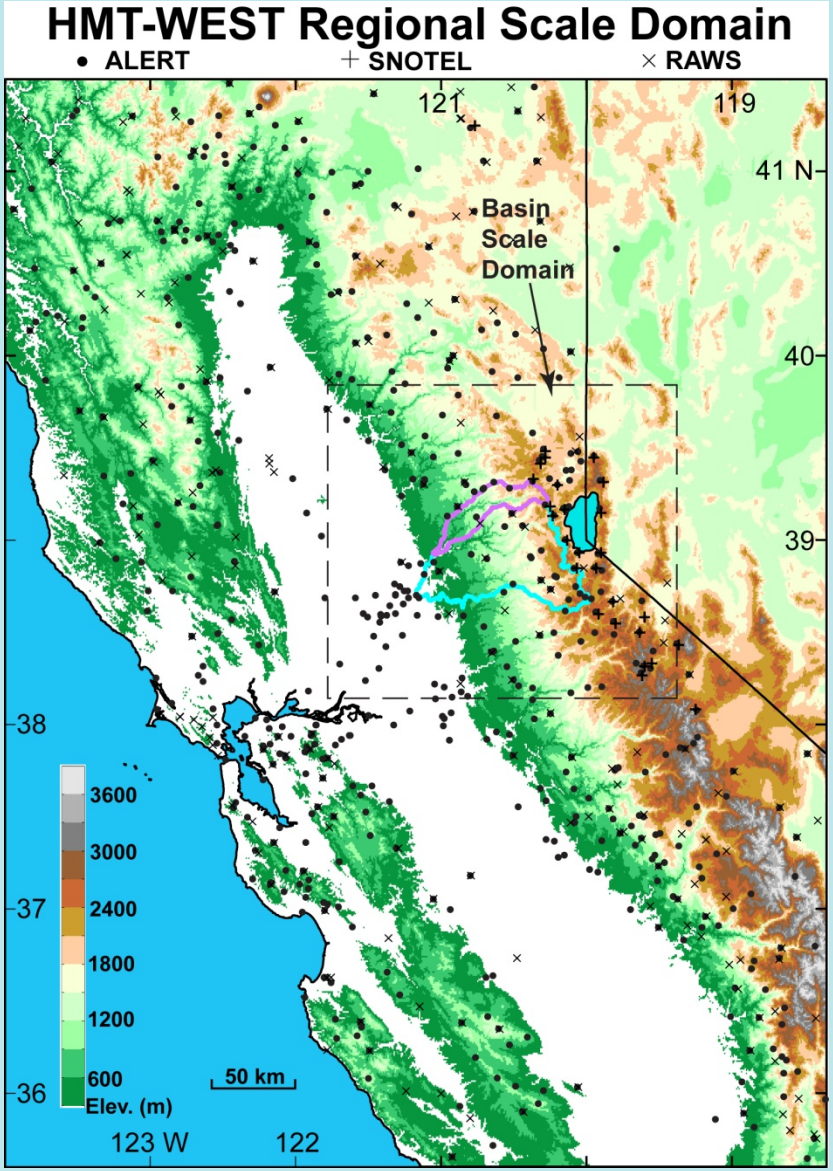
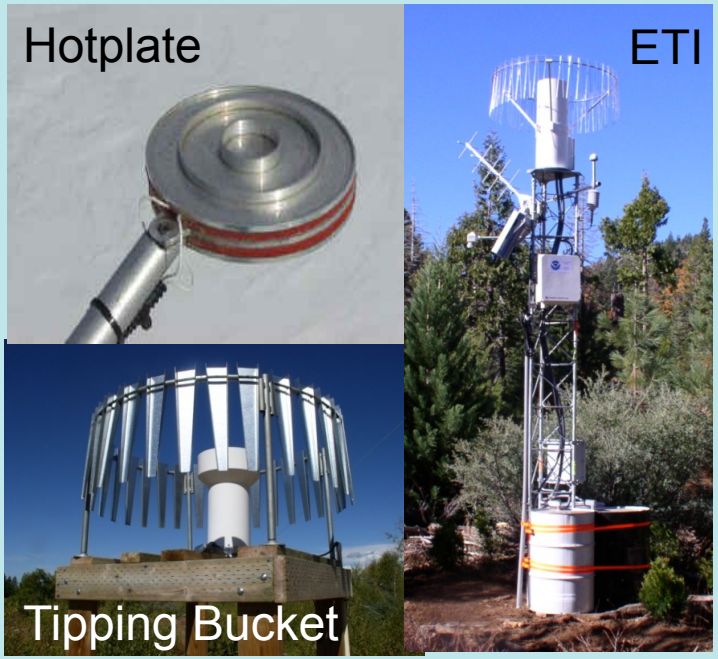
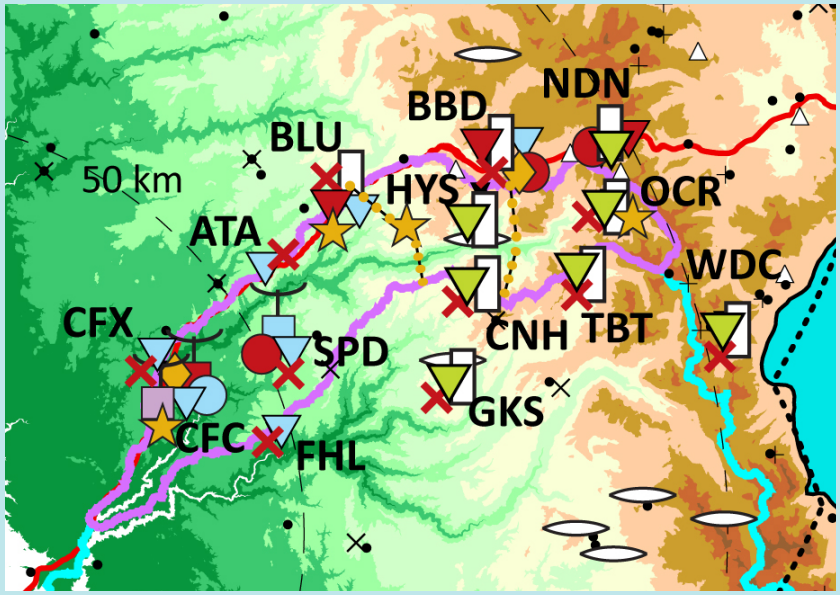
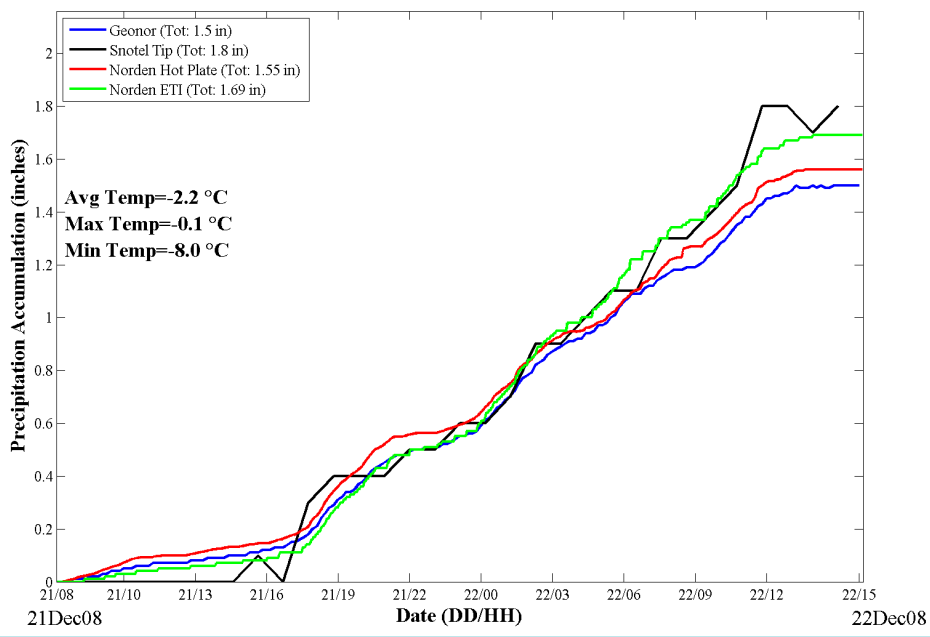
Precipitation Gauges:
Difficult measurement, especially in snow

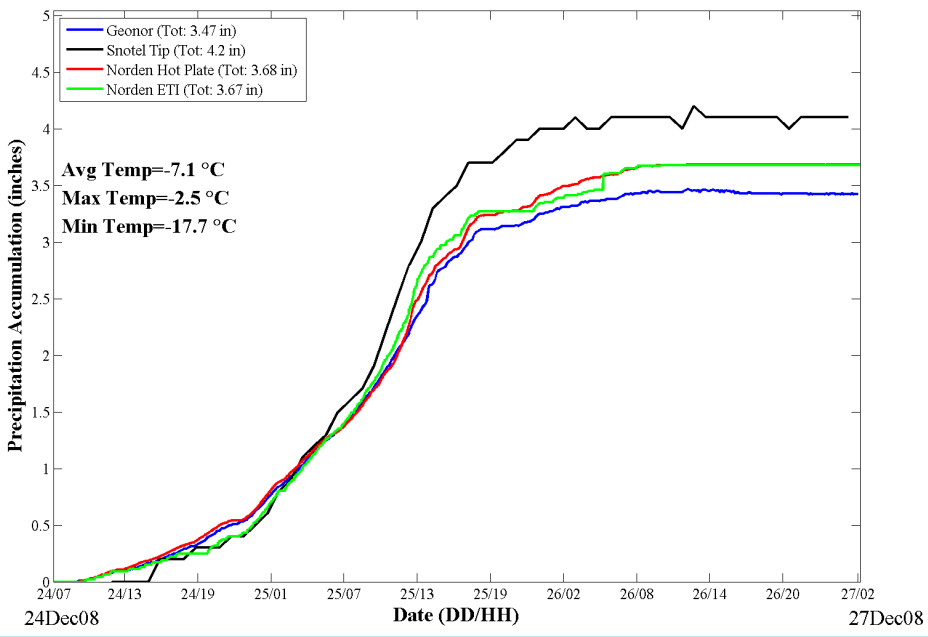


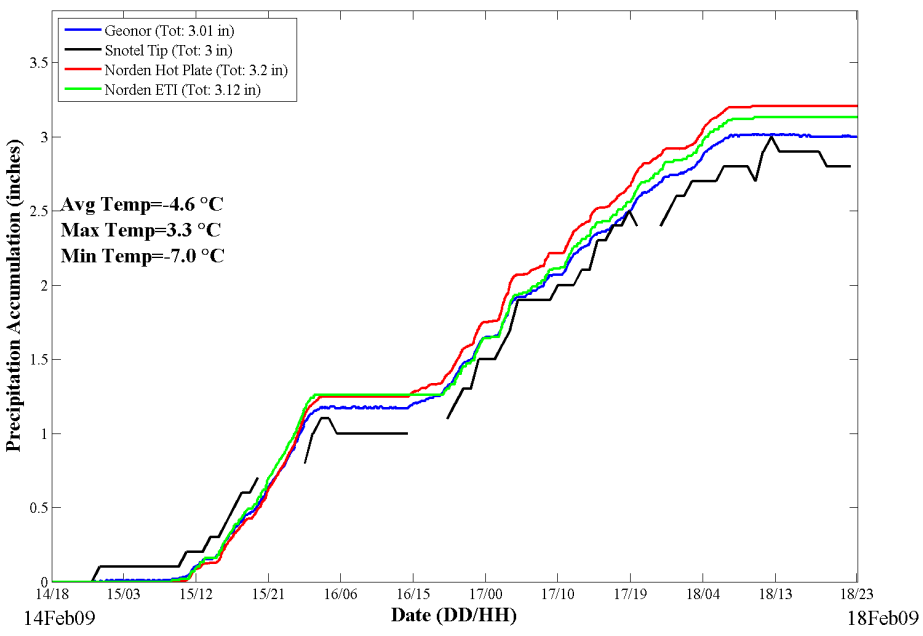


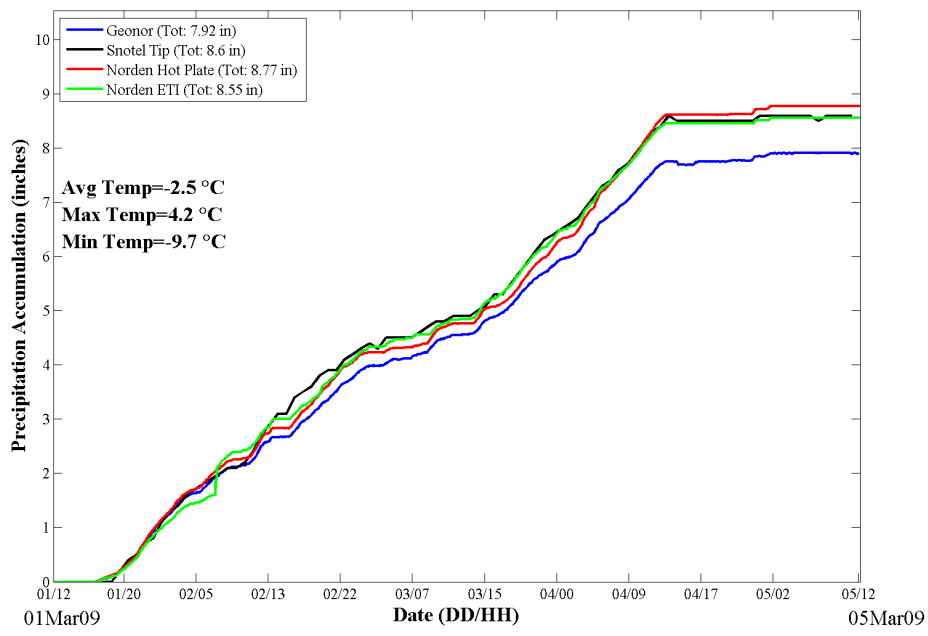


Multi-gauge comparisons at Norden



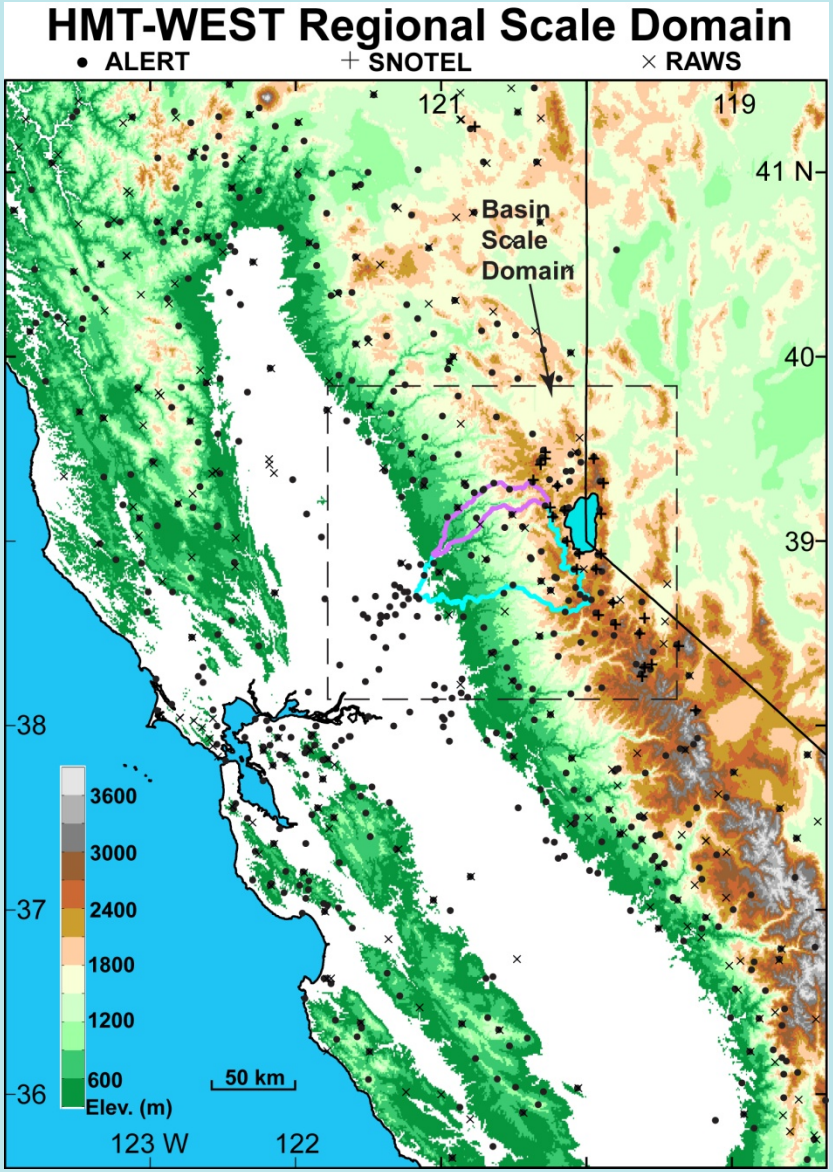




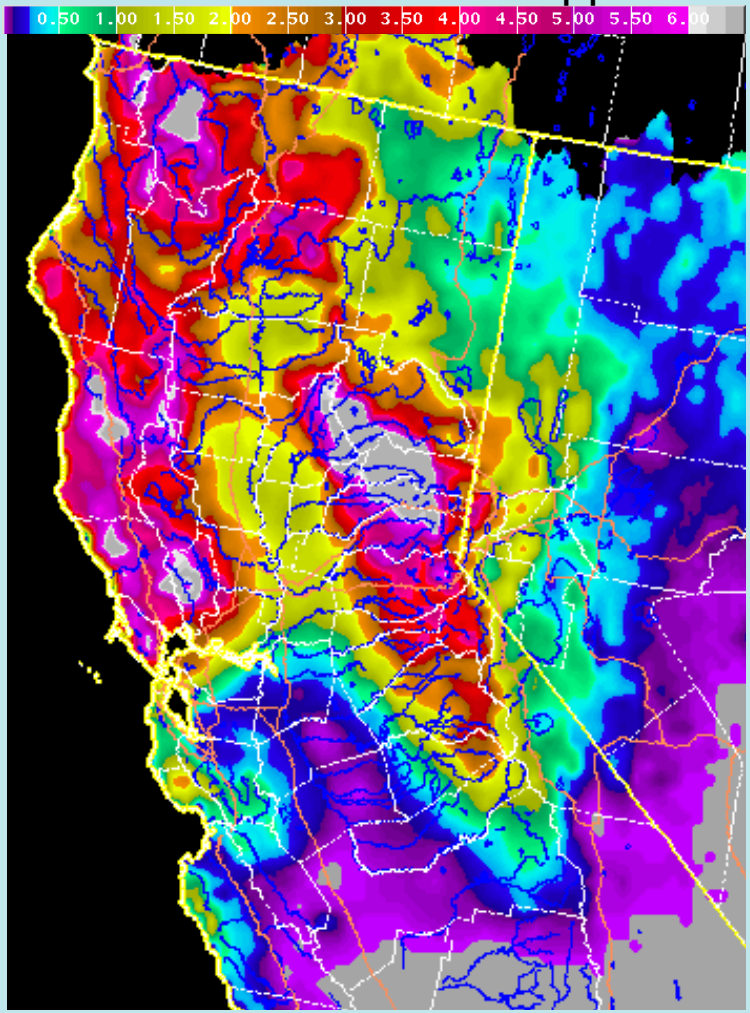


Precipitation Gauges:

Many assumptions involved in converting point measurements into a representative horizontal map

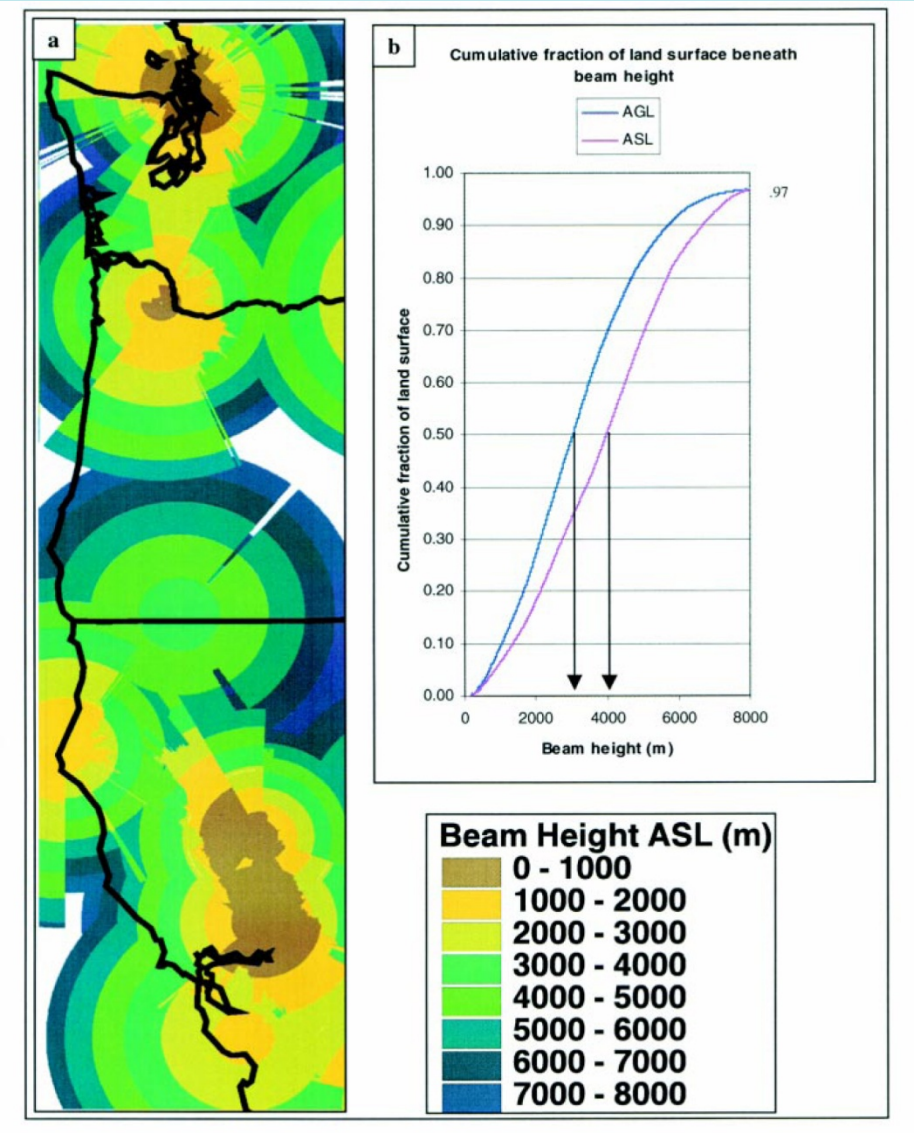


CNRFC: Mountain Mapper



24 hour total ending 12 UTC 31 December 2005

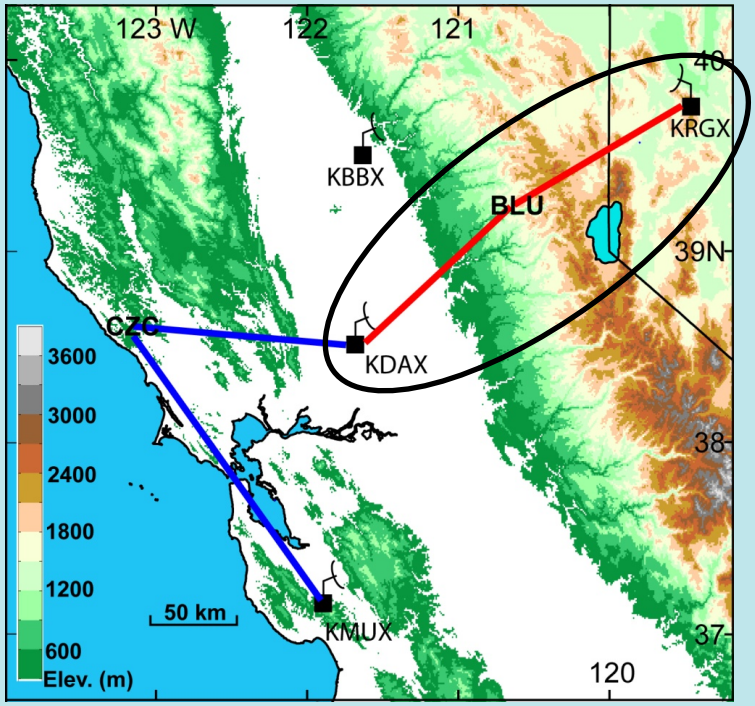
Operational Scanning Radars

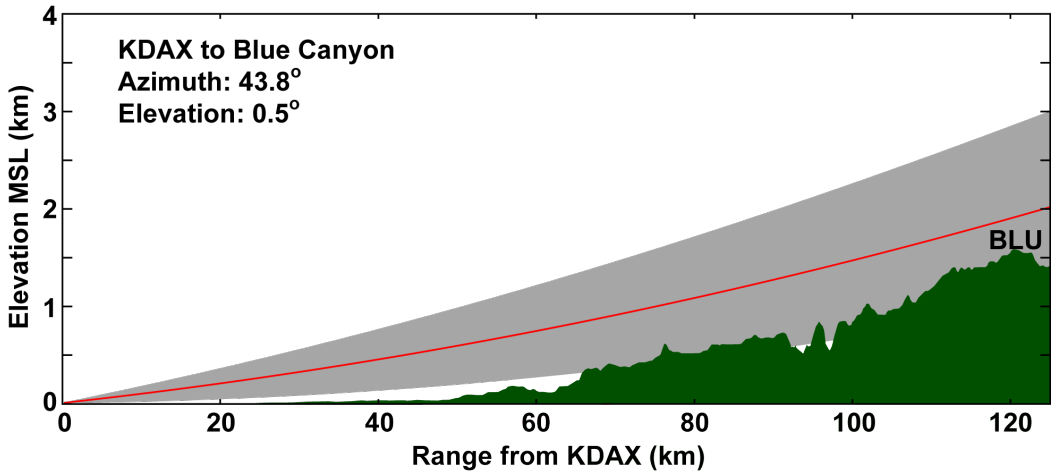


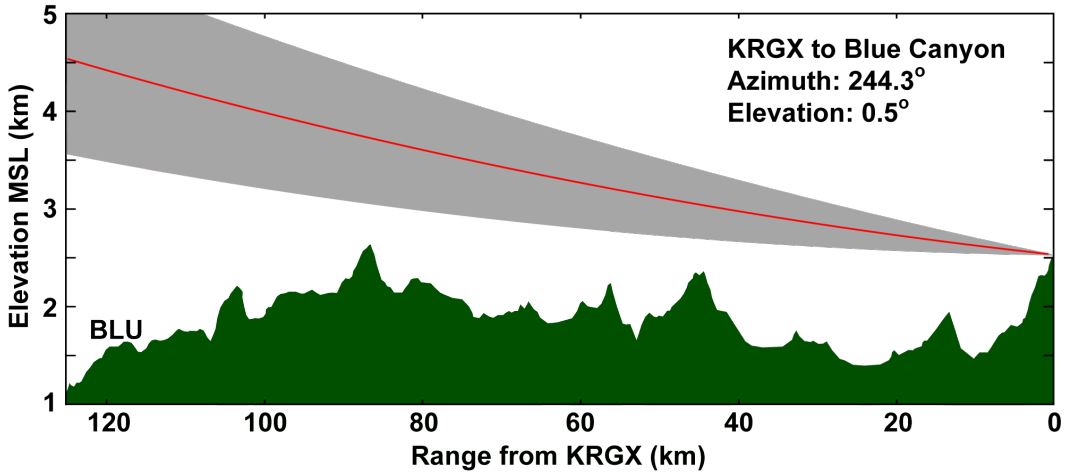
- Poor coverage in the western U.S.
- Overshooting beams for radars sited on mountains
- Terrain blocked beams for radars sited in valleys

Westrick et al. (1999)---BAMS

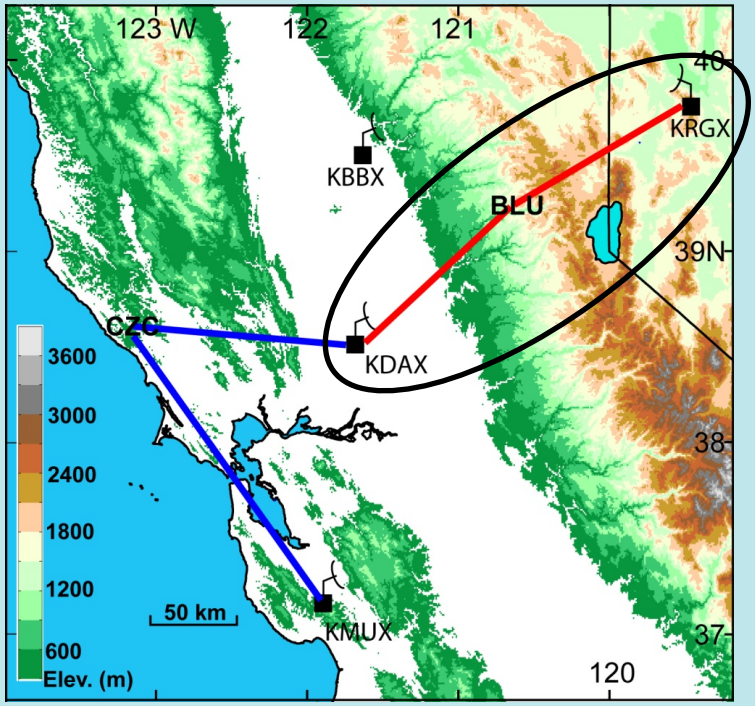
Operational Scanning Radars:
Sierra Nevada

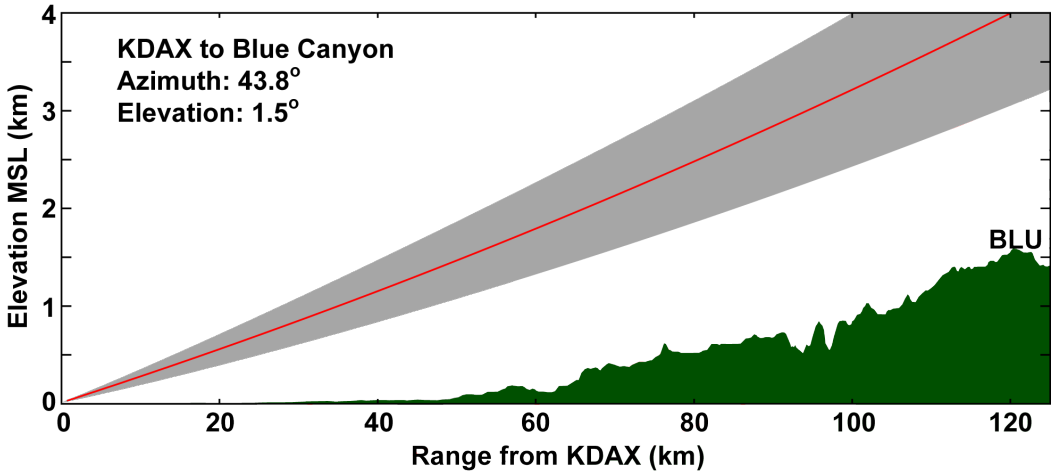


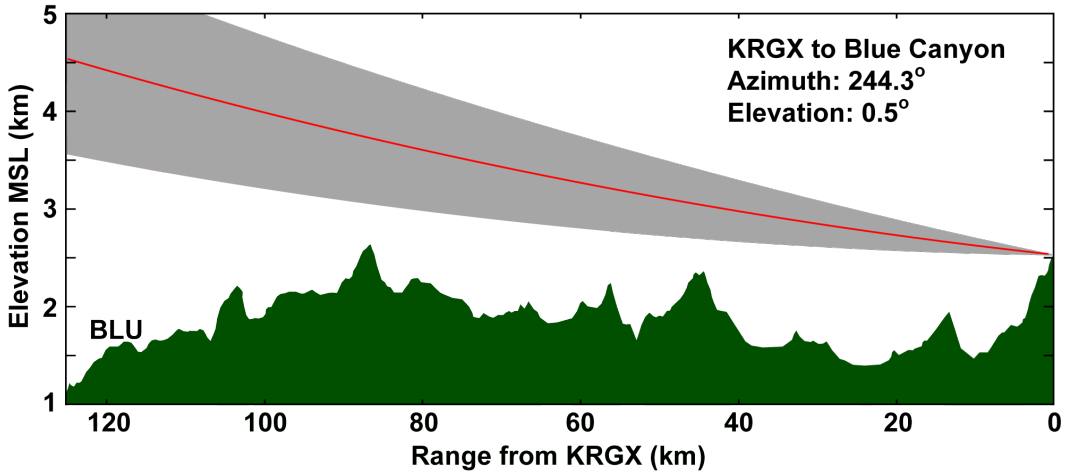




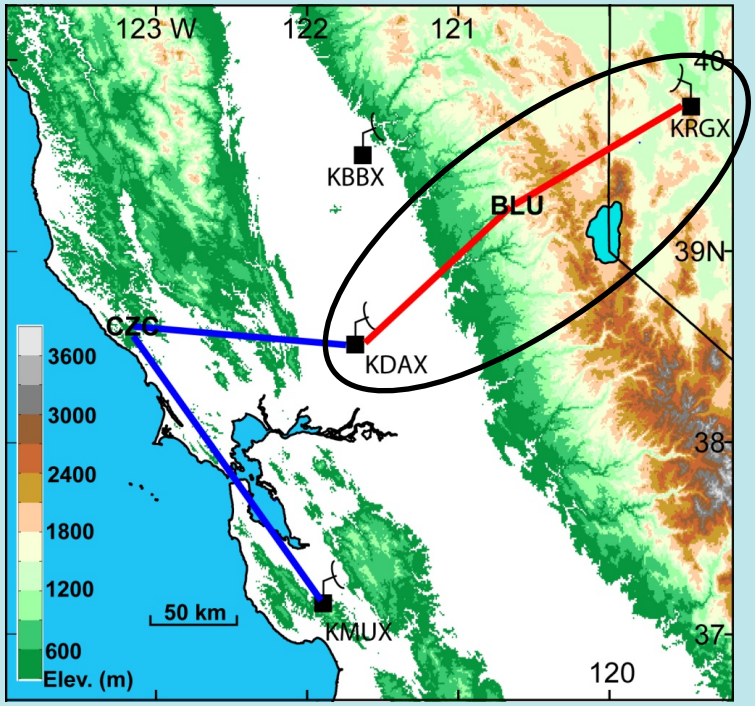
Operational Scanning Radars:
Sierra Nevada

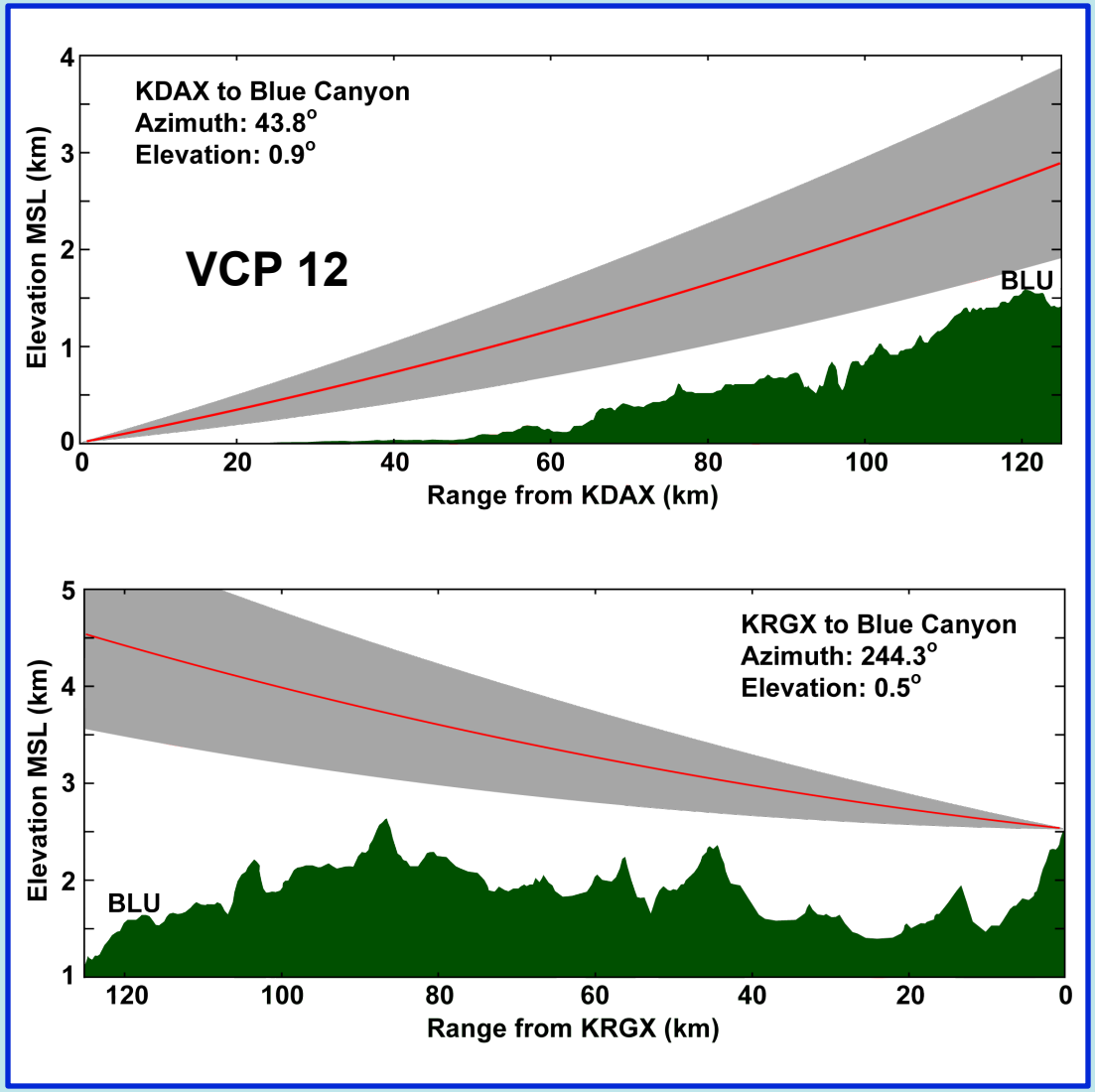




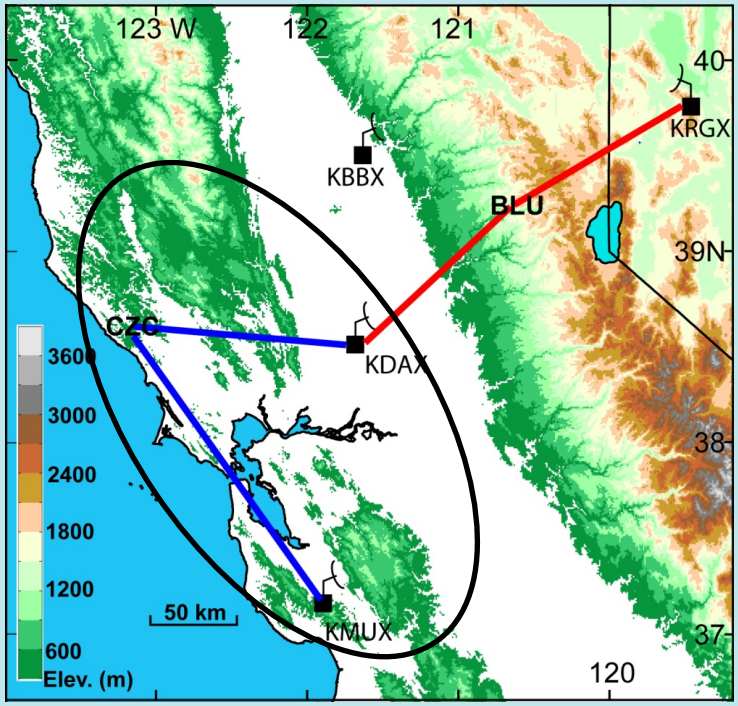


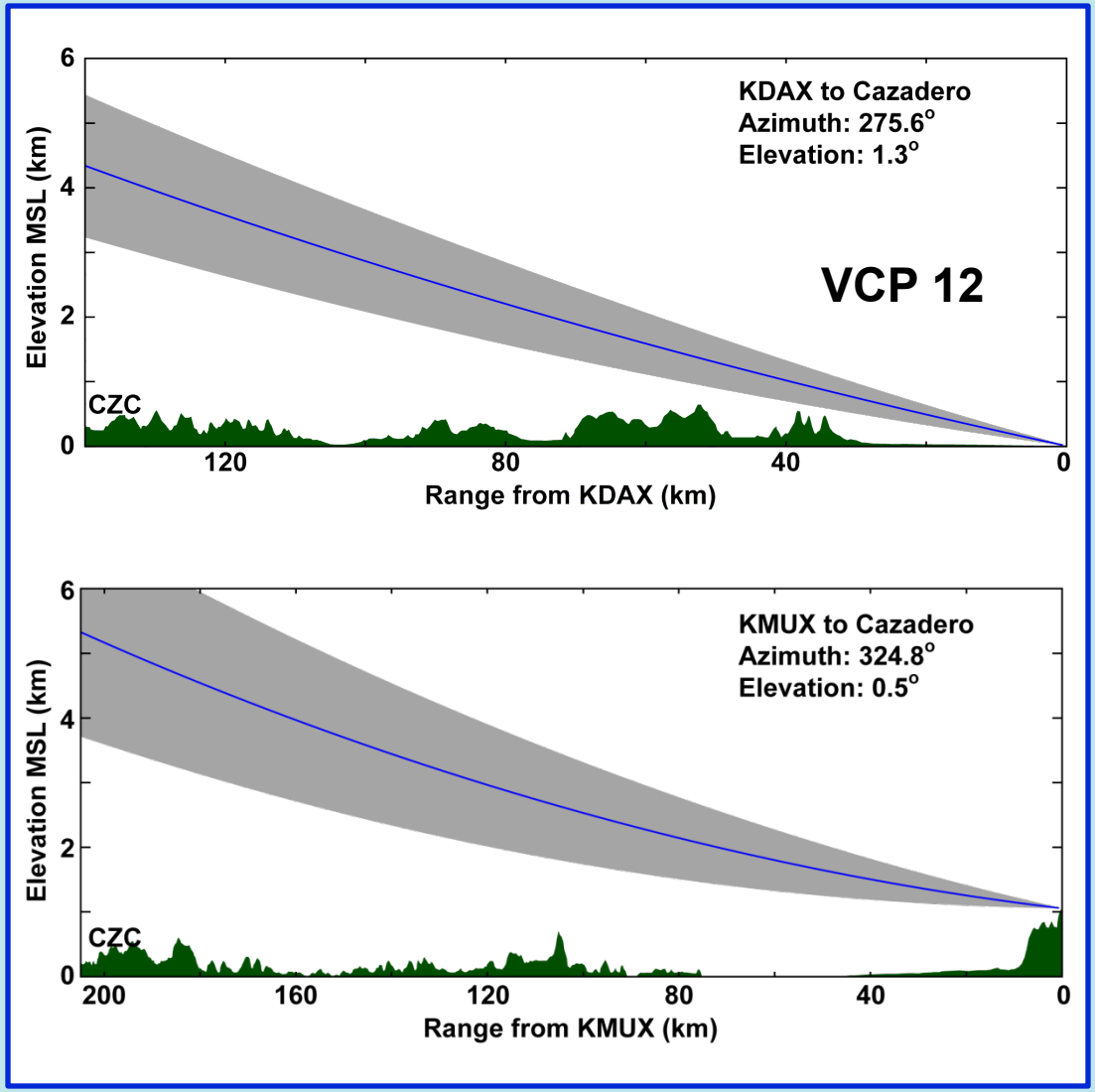
Operational Scanning Radars:
Sierra Nevada





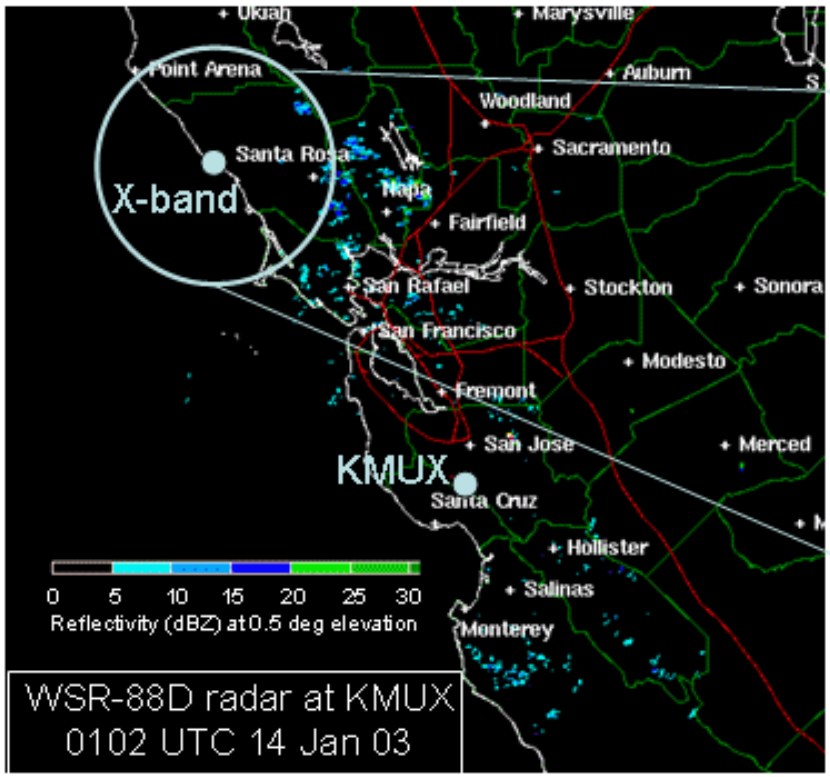
Operational Scanning Radars:
Coastal Mountains

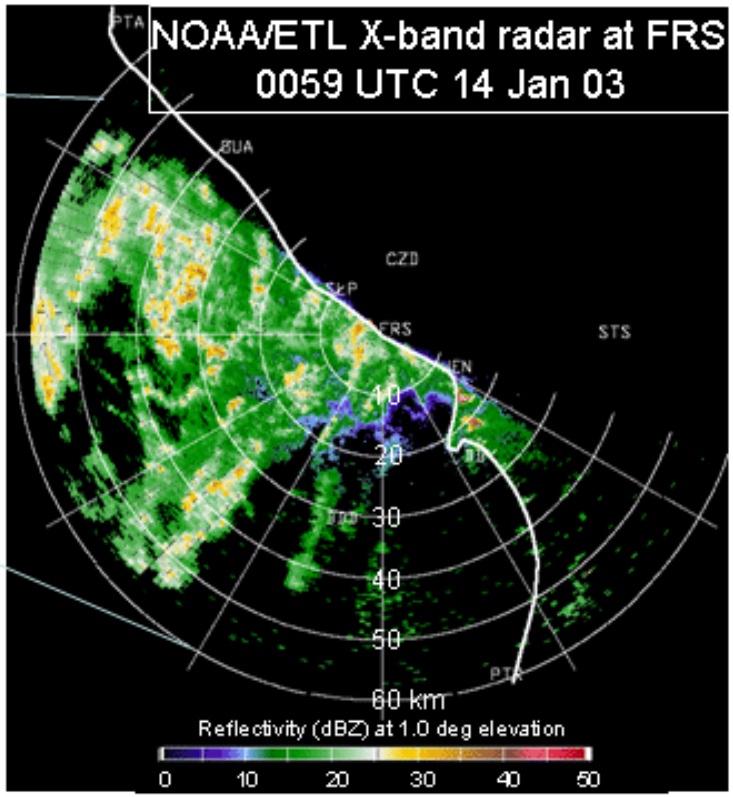




What are the operational radars missing along the coast?

PACJET-2003: NOAA/ETL Gap-Filling X-band Radar

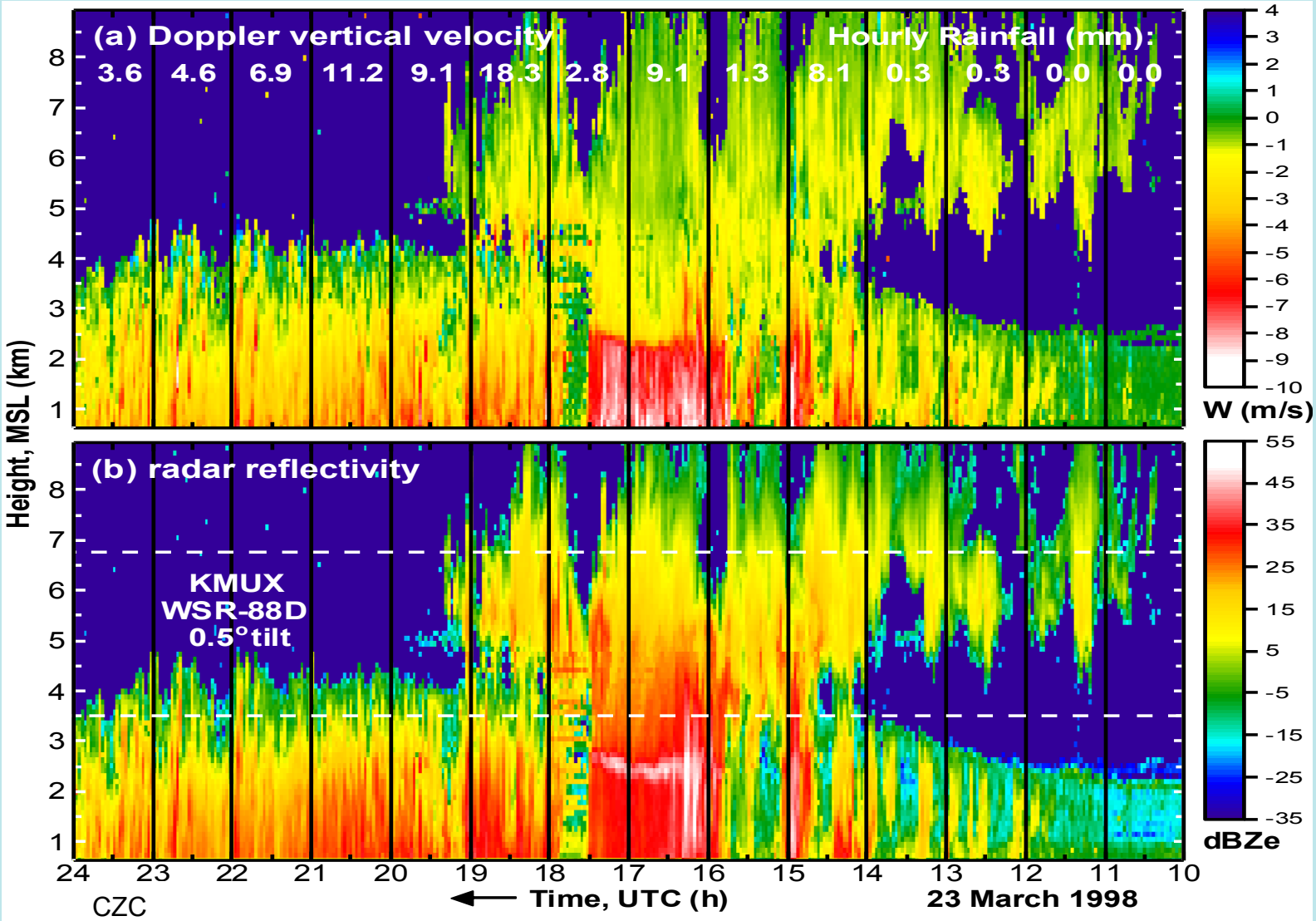




- Nearest NEXRAD radar sees no significant echoes approaching flood-prone watershed
- NOAA/ETL's Coastal X-band radar fills NEXRAD gap

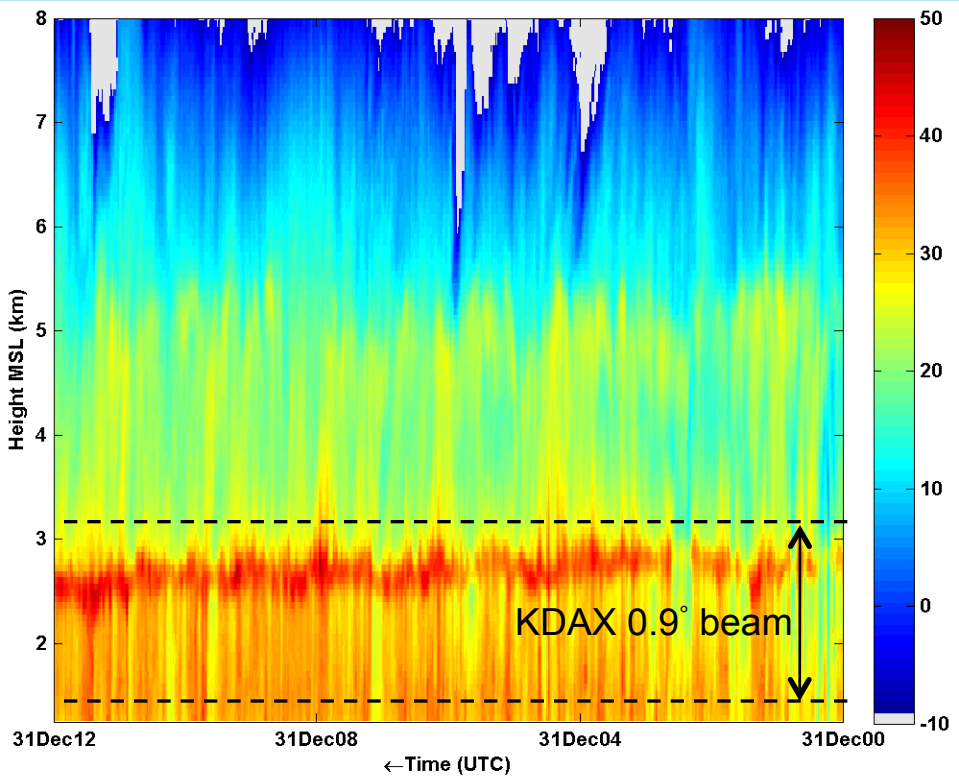
What are the operational radars missing over the coastal mountains?

S-band precipitation profiler (S-PROF) at Cazadero (475 m MSL)

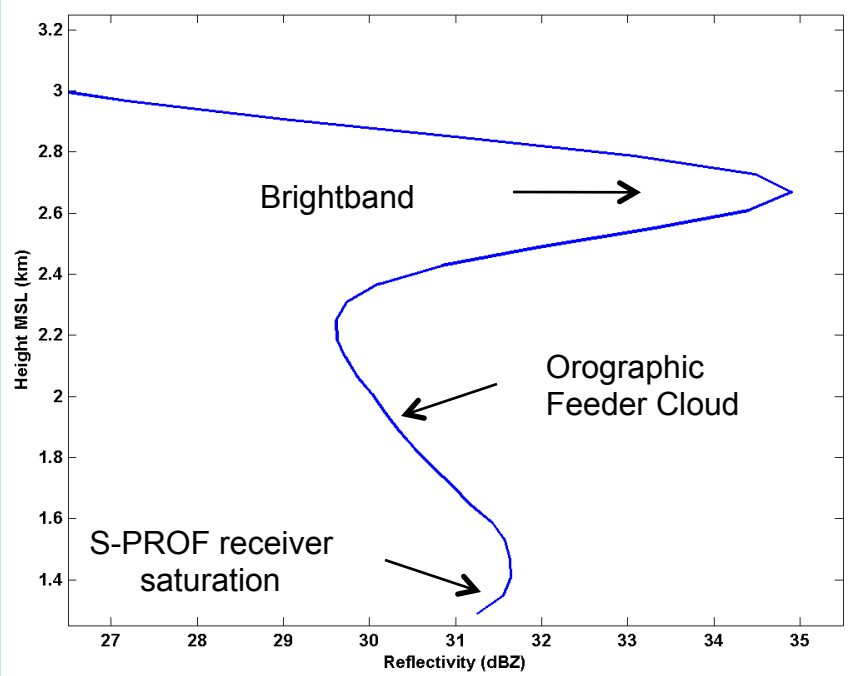


What are the operational radars missing over the Sierra Nevada?

S-PROF Reflectivity at Alta (1085 m MSL)

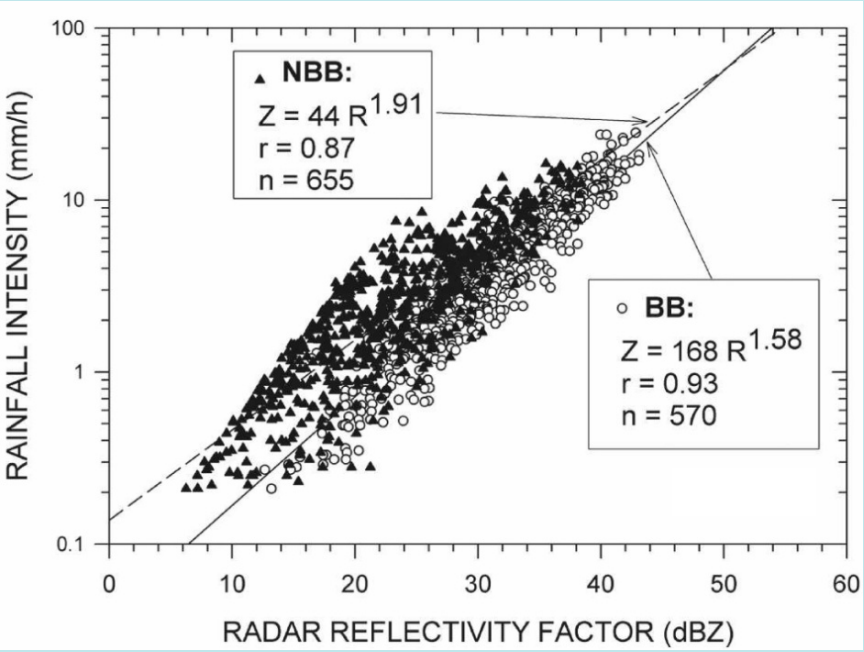


Mean Vertical Profile of Reflectivity (VPR) within KDAX 0.9° beam



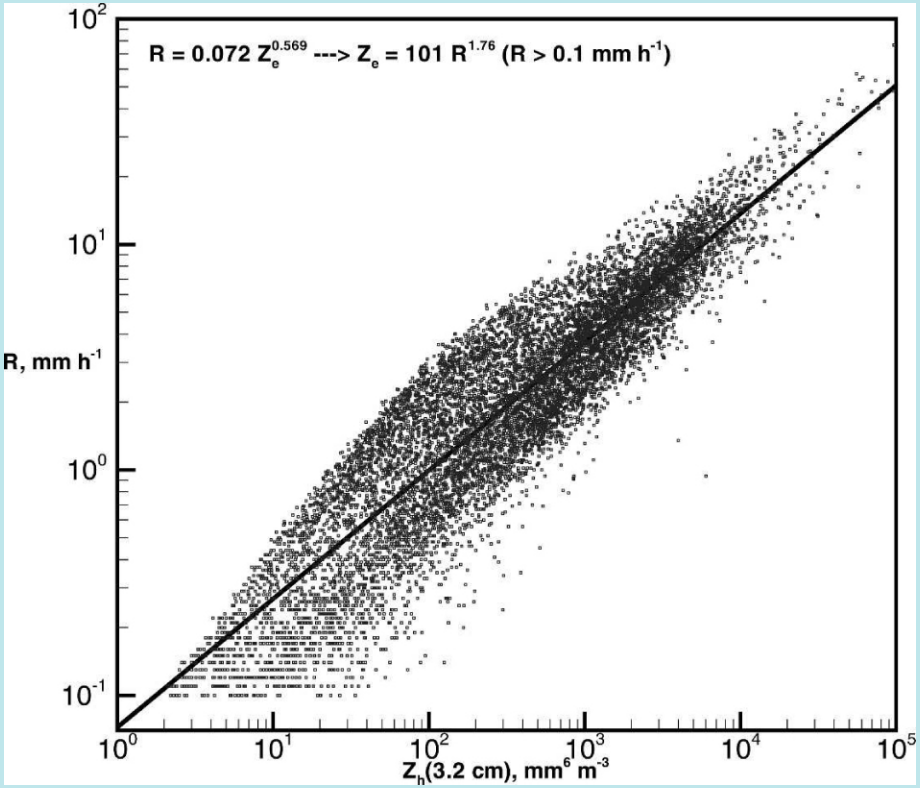
Converting radar reflectivity to rainfall rate:
Raindrop disdrometer analyses

Coastal Mountains: Cazadero



Martner et al. (2008), JHM

Sierra Nevada: Colfax



Matrosov et al. (2007), JAMC

Questions?