



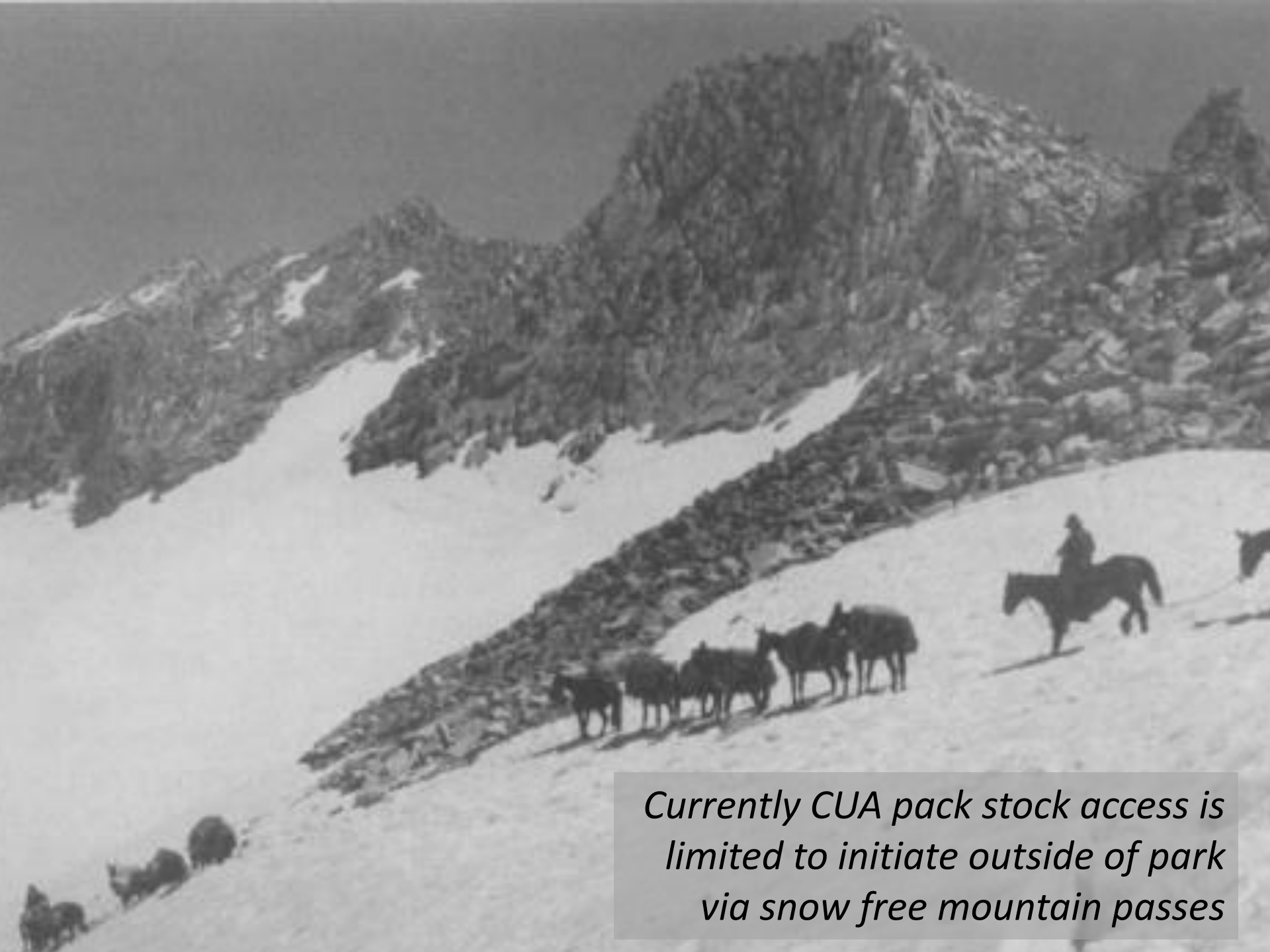
Tools to Inform Determination of Meadow Opening Dates at Yosemite National Park

(Kuhn et al. in review)

Tim Kuhn, Joy Baccei -- Yosemite RMS

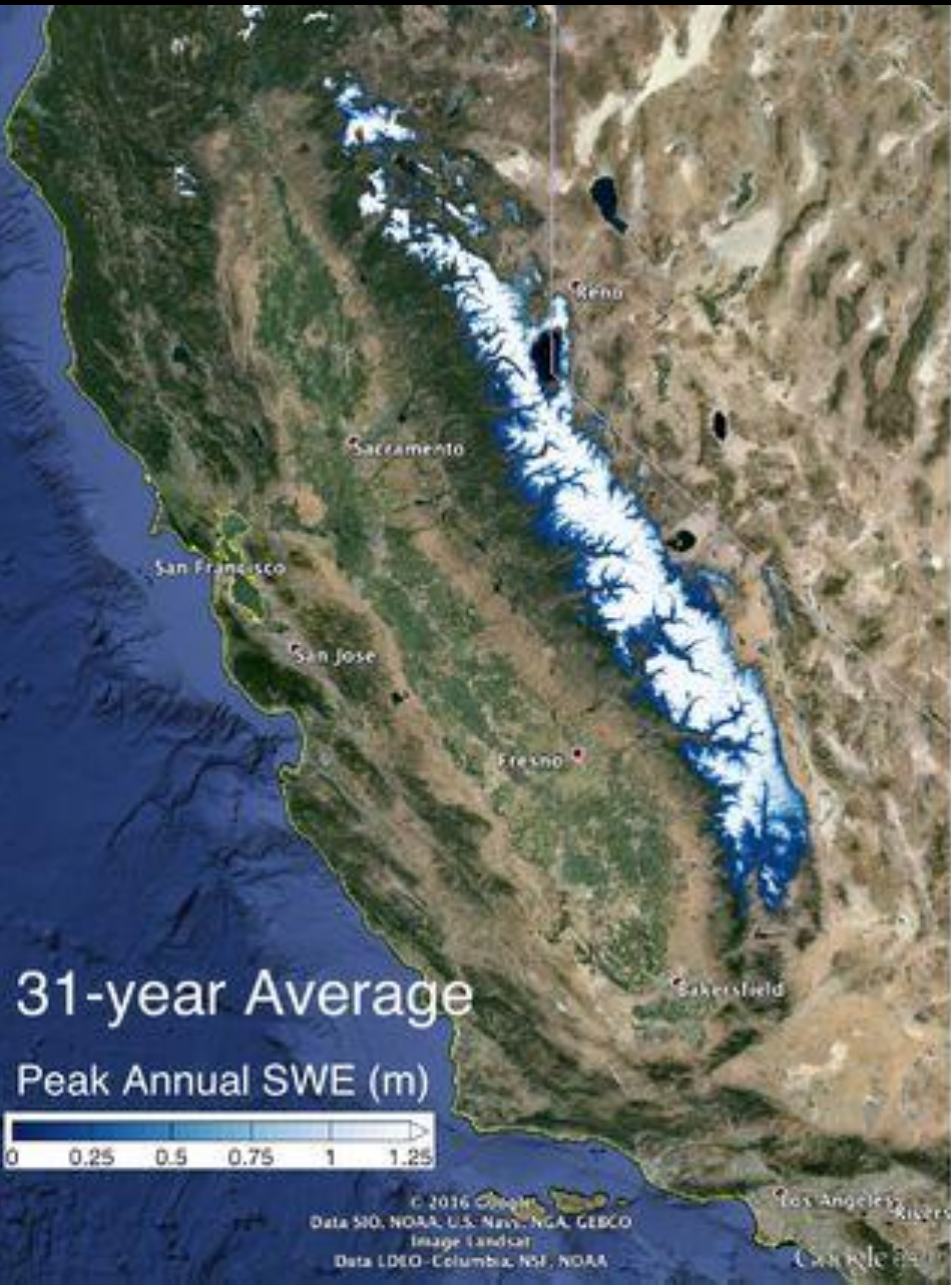
Mitch McClaran – Univ. of Arizona

Jamie Bartolome – Univ. of California, Berkeley



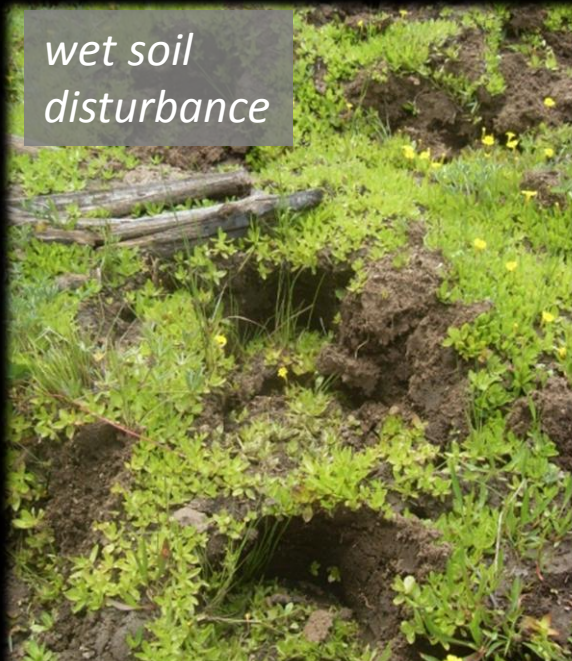
Currently CUA pack stock access is limited to initiate outside of park via snow free mountain passes

Snow pack variability



(Margulis et al. 2016)

Importance of opening dates



Based on:

Soil Resistance Study

Meadow Classification Study

Water Year Assessments SEKI & Inyo/Sierra NF



Soil Resistance Study

**Vegetation type as indicators
(wet, moist, dry)**

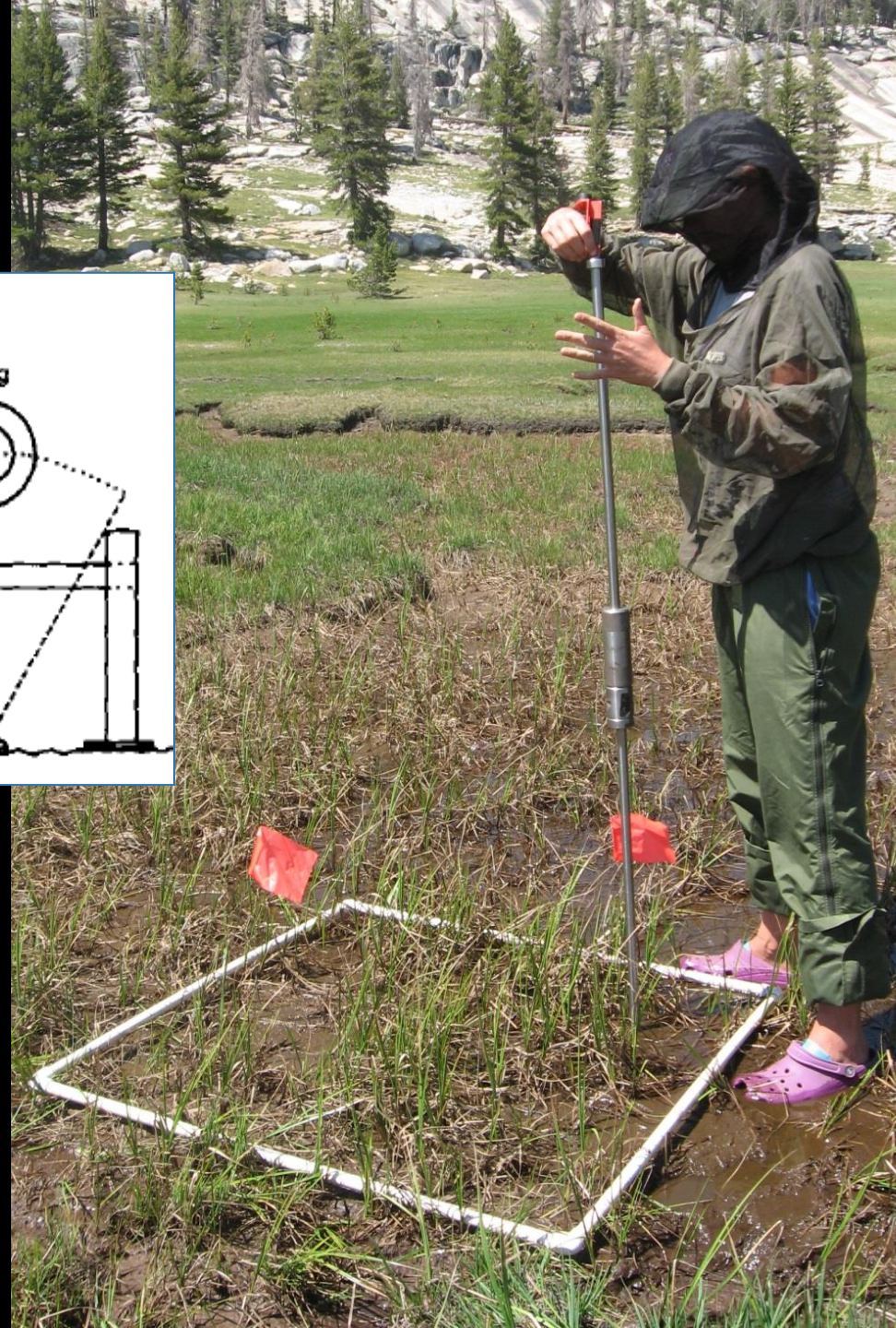
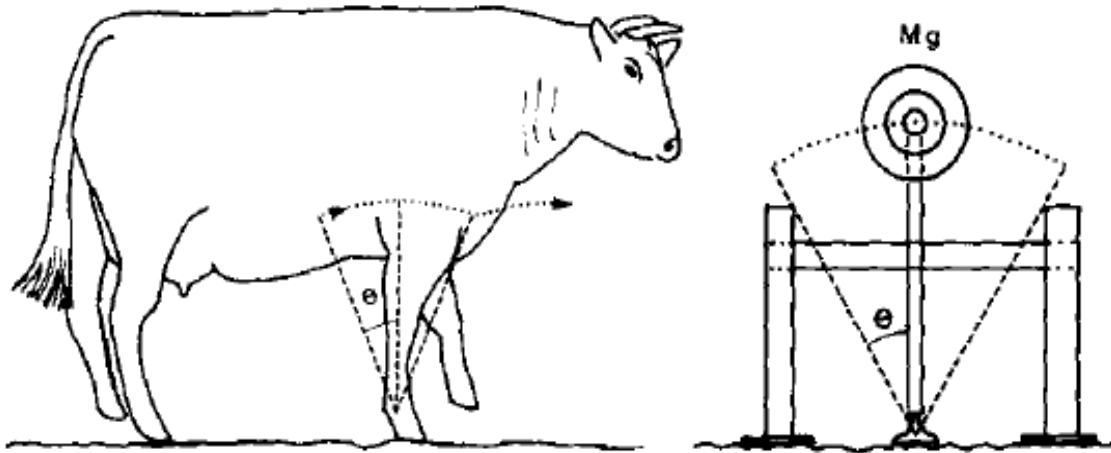
Weekly Measurements:

- **Soil resistance**
- **Vol. soil moisture**
- **Vegetation cover & phenology**

(Lichvar et al. 2012)

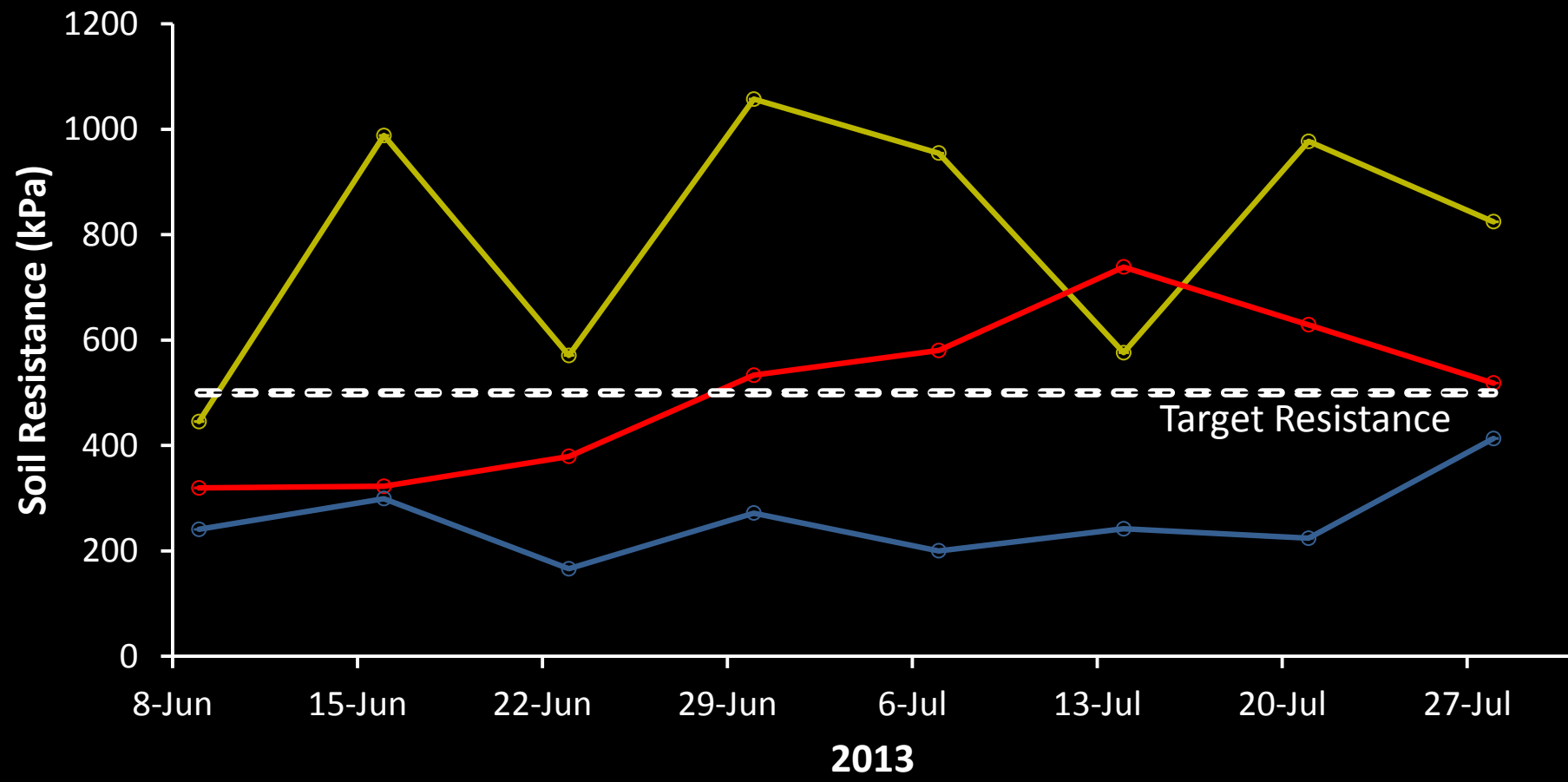


Soil Resistance Study



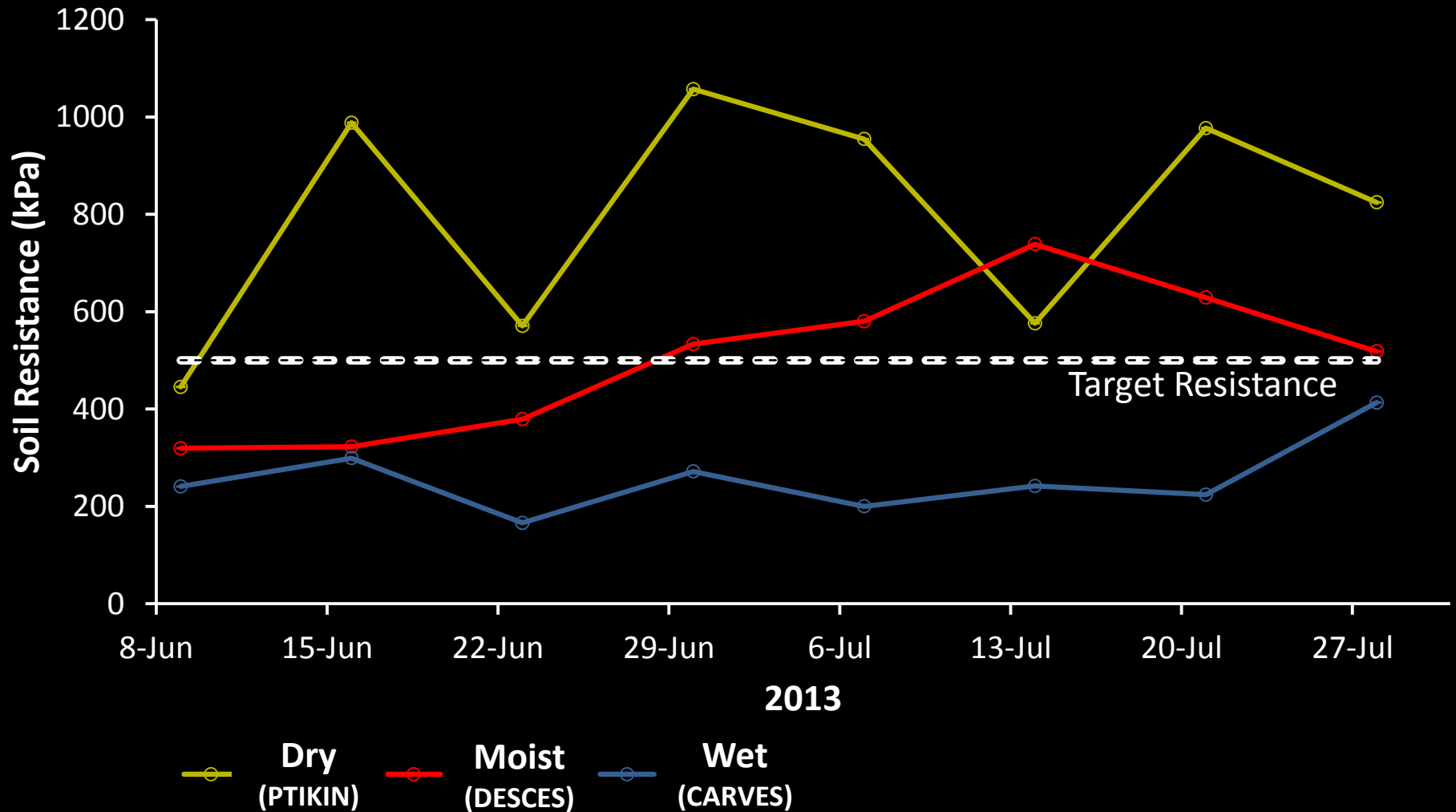
(Scholfield and Hall 1986; Kai et al. 2000)

Upper Lyell



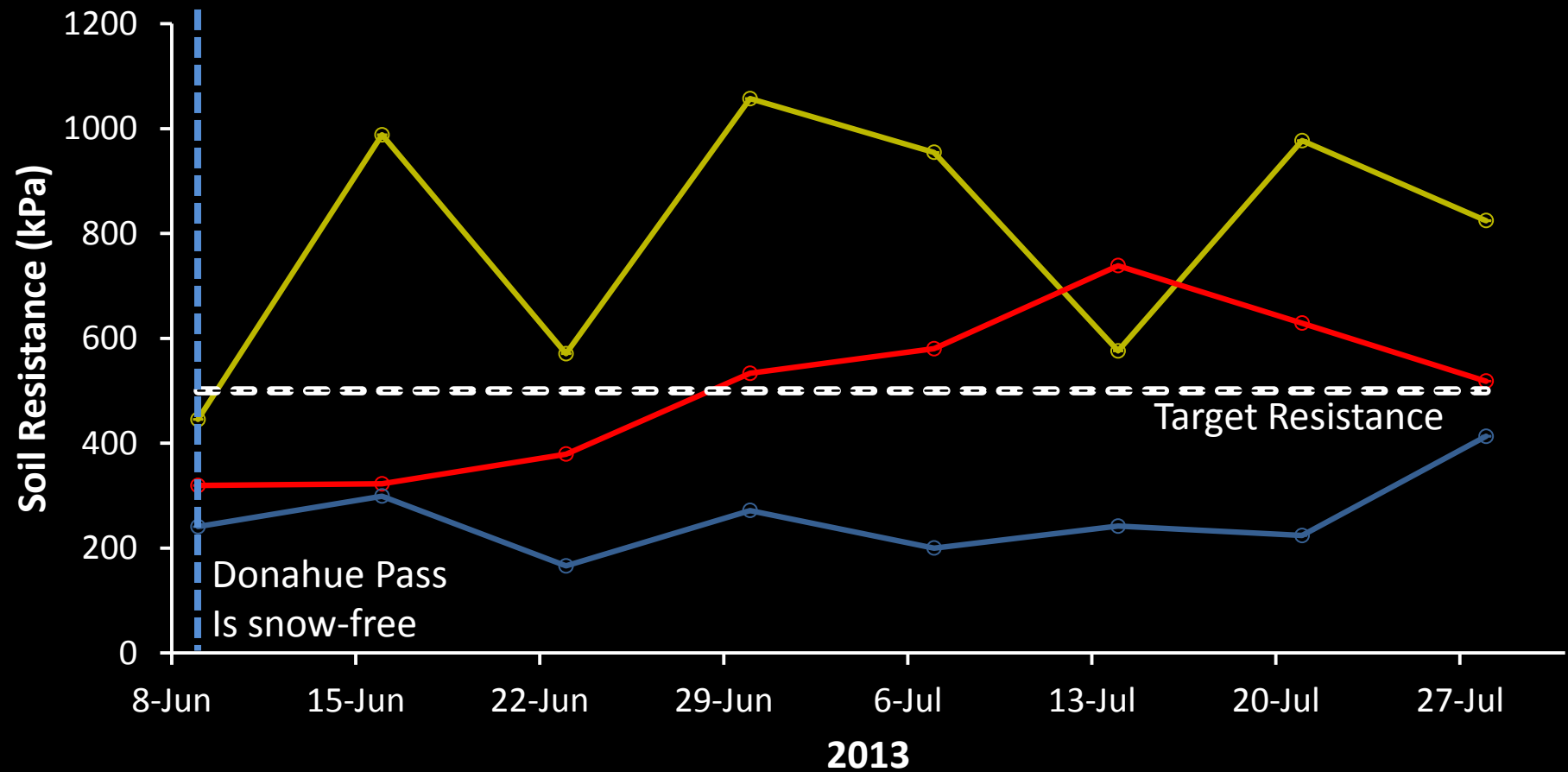
Dry (PTIKIN) **Moist (DESCES)** **Wet (CARVES)**

Upper Lyell



- Differences among vegetation types
- Differences over time
- Timing was generally consistent among types and years

Upper Lyell



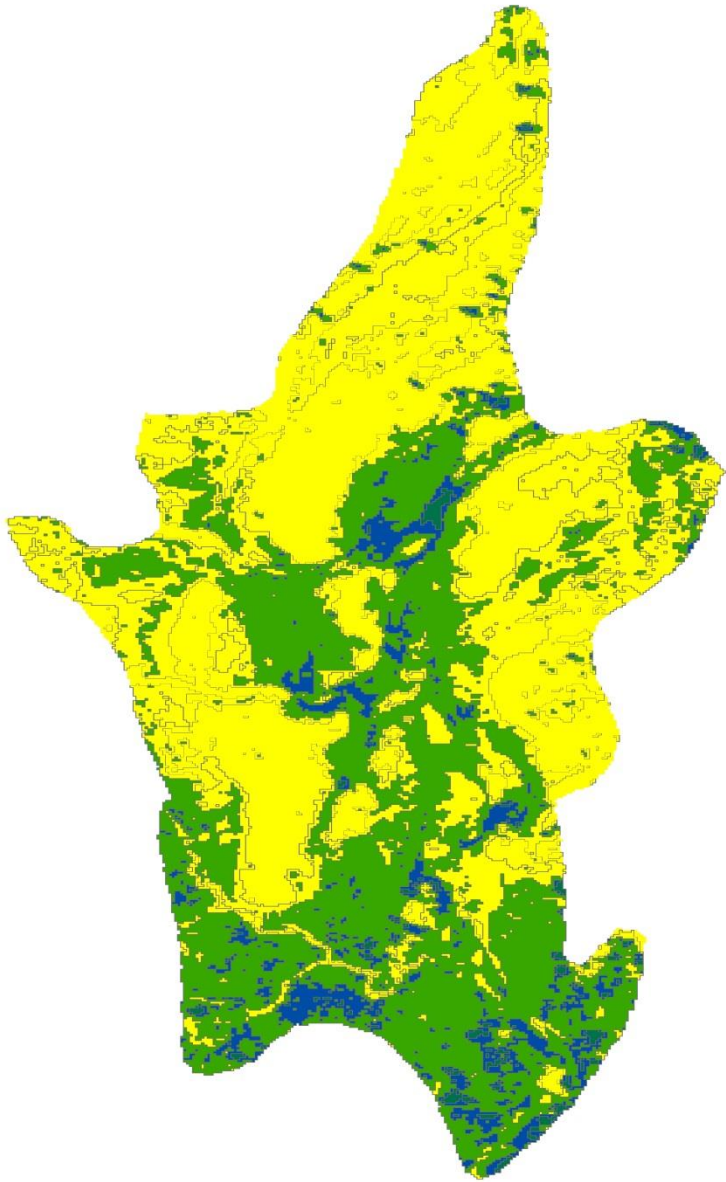
Dry (PTIKIN) **Moist** (DESCES) **Wet** (CARVES)

Extrapolating Findings: Meadow Classification via Satellite Imagery

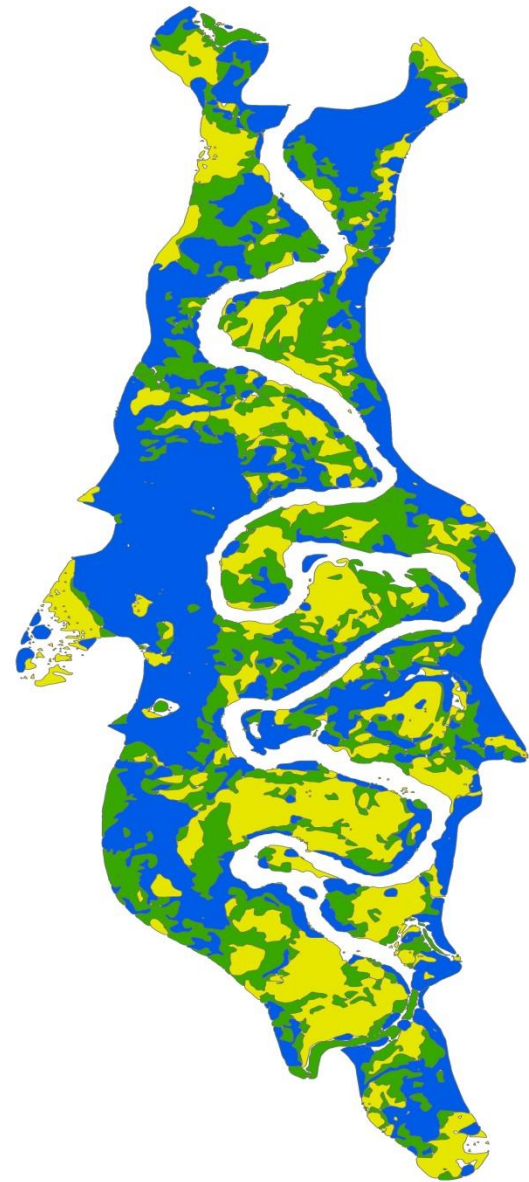


Categorization of Wetness and Greenness

Lower Kerrick North

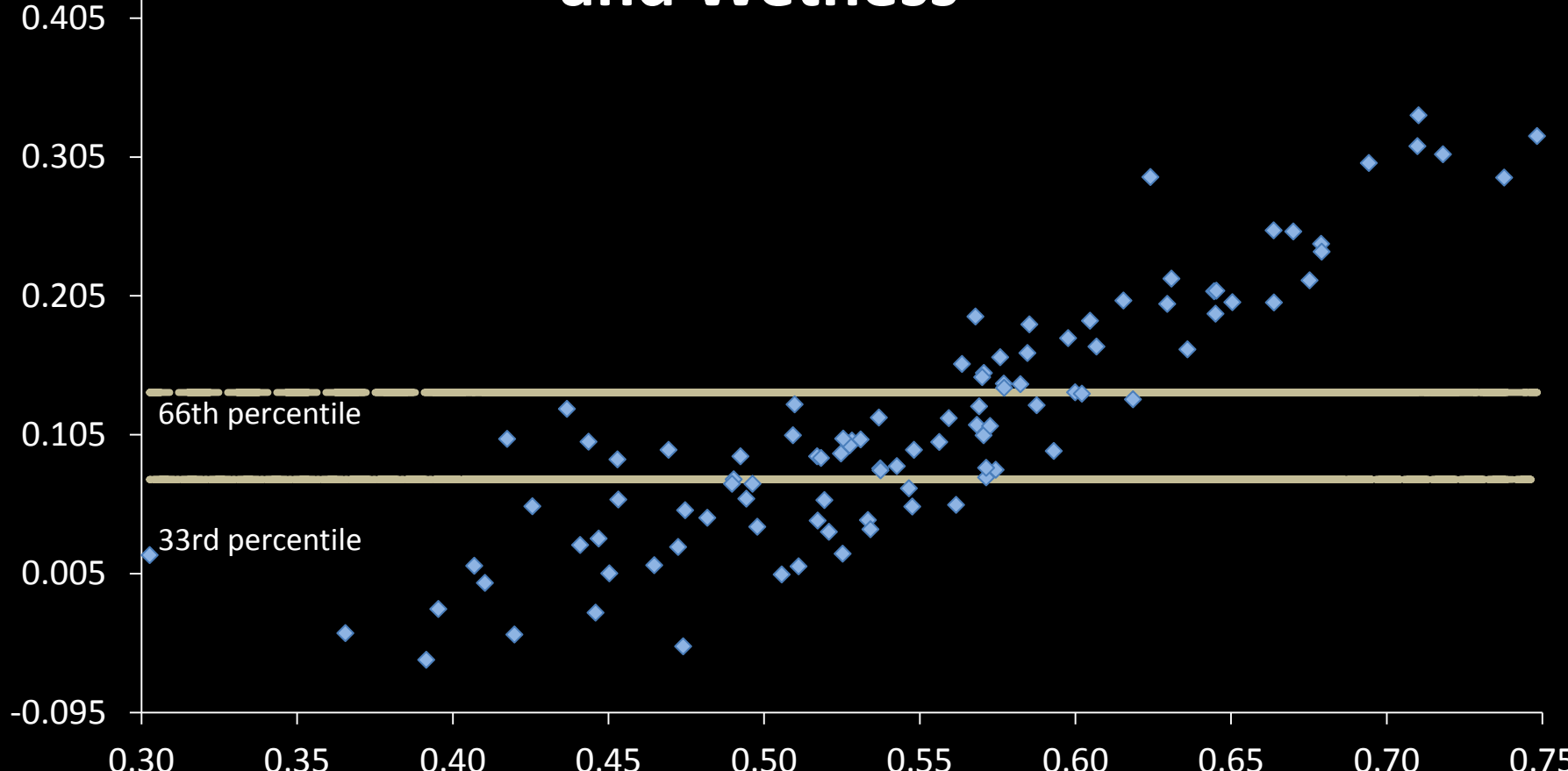


Upper Lyell South



Relative Timing of Peak Greenness and Wetness

Wetness at Peak Greenness

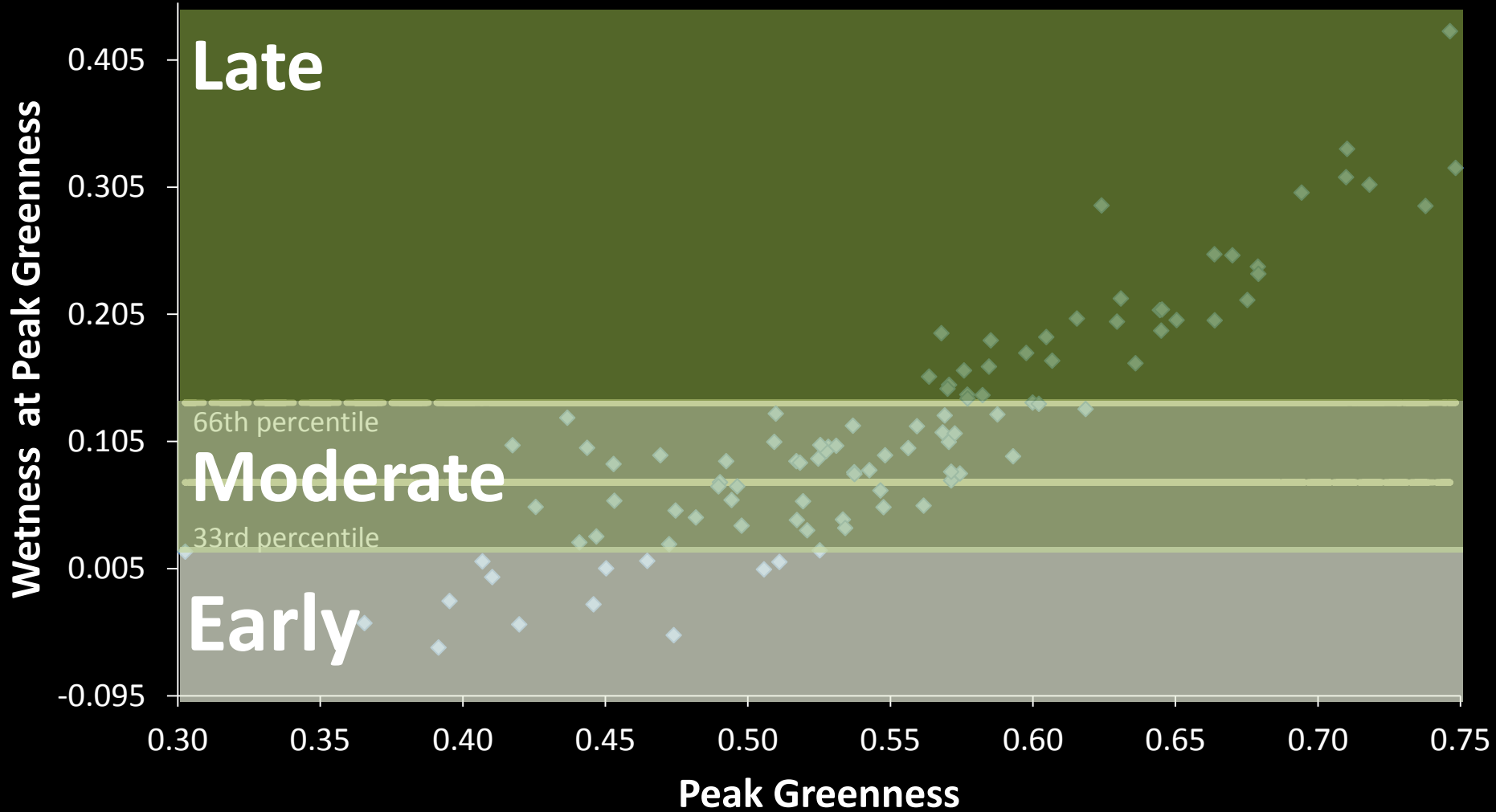


66th percentile

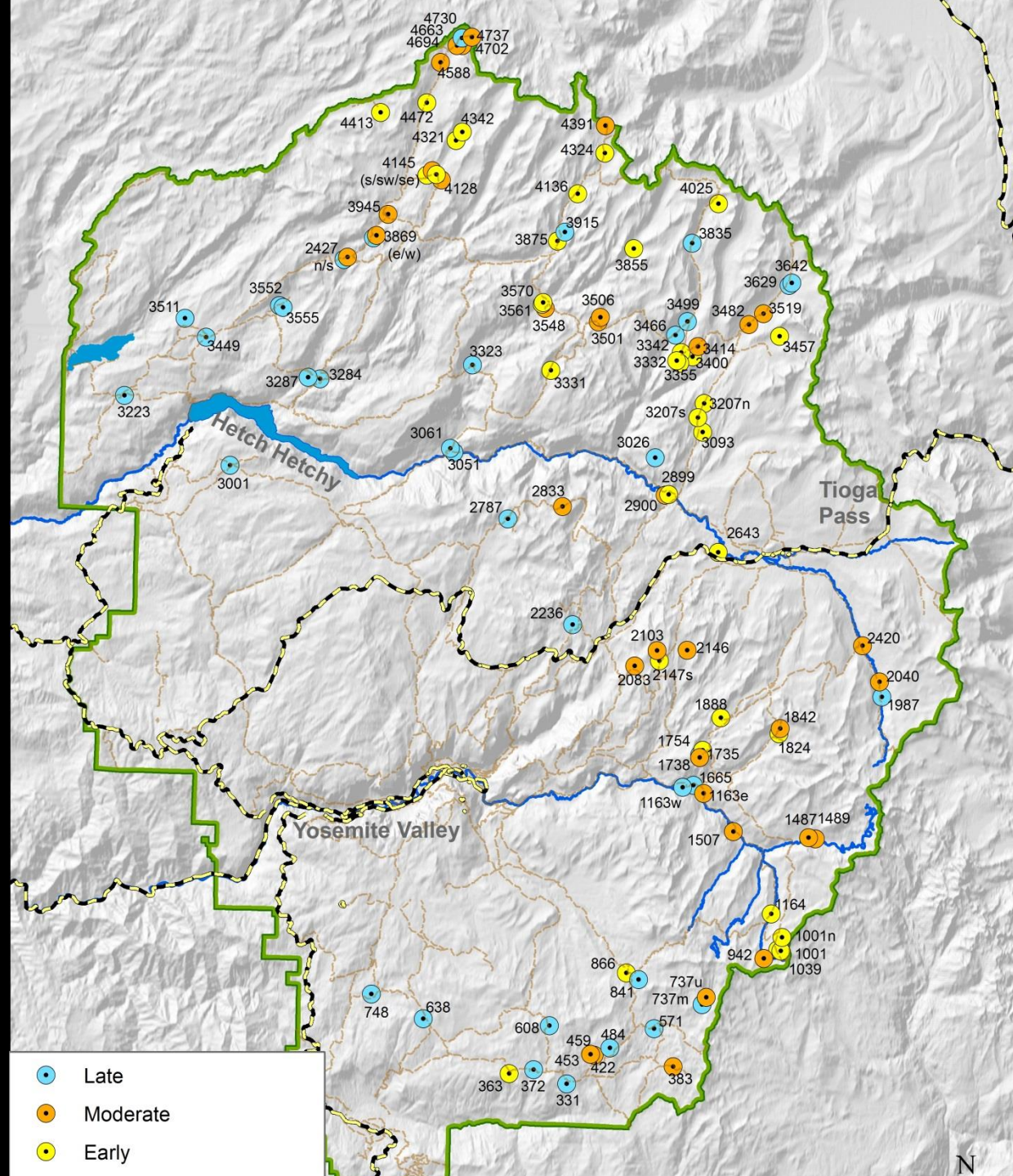
33rd percentile

Peak Greenness

Suggested Opening Dates Classes



Suggested Opening Dates Classes



Water Year Variability

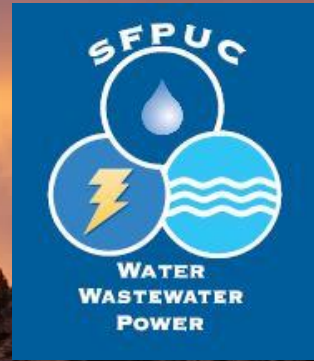
		Water Year (% of Average)		
		Below (<50%)	Average (50 - 150%)	Above (>150%)
Meadow Class	Dry	Early June	Early/Mid July	August (or later)
	Moist	Early/Mid July	Early/Mid August	September
	Wet	August (or later)	Late August or September	October

(USDI NPS 1986
USFS 2004
Blankinship et al. 2014)

Monitoring to refine dates over time



Thank You.



Tim_Kuhn@nps.gov
209.379.1307

Field staff and co-authors:

Joy Baccei (VER); Brina Mocsny (PSLE); Mitch McClaran (Univ. of Az); Jamie Bartolome and Felix Ratcliff (Univ. of Cal-Berkeley);

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