

Lessons from the Drought: What Worked and What Didn't in California

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BOTIN/ROSENBERG WORKSHOP ON DROUGHT

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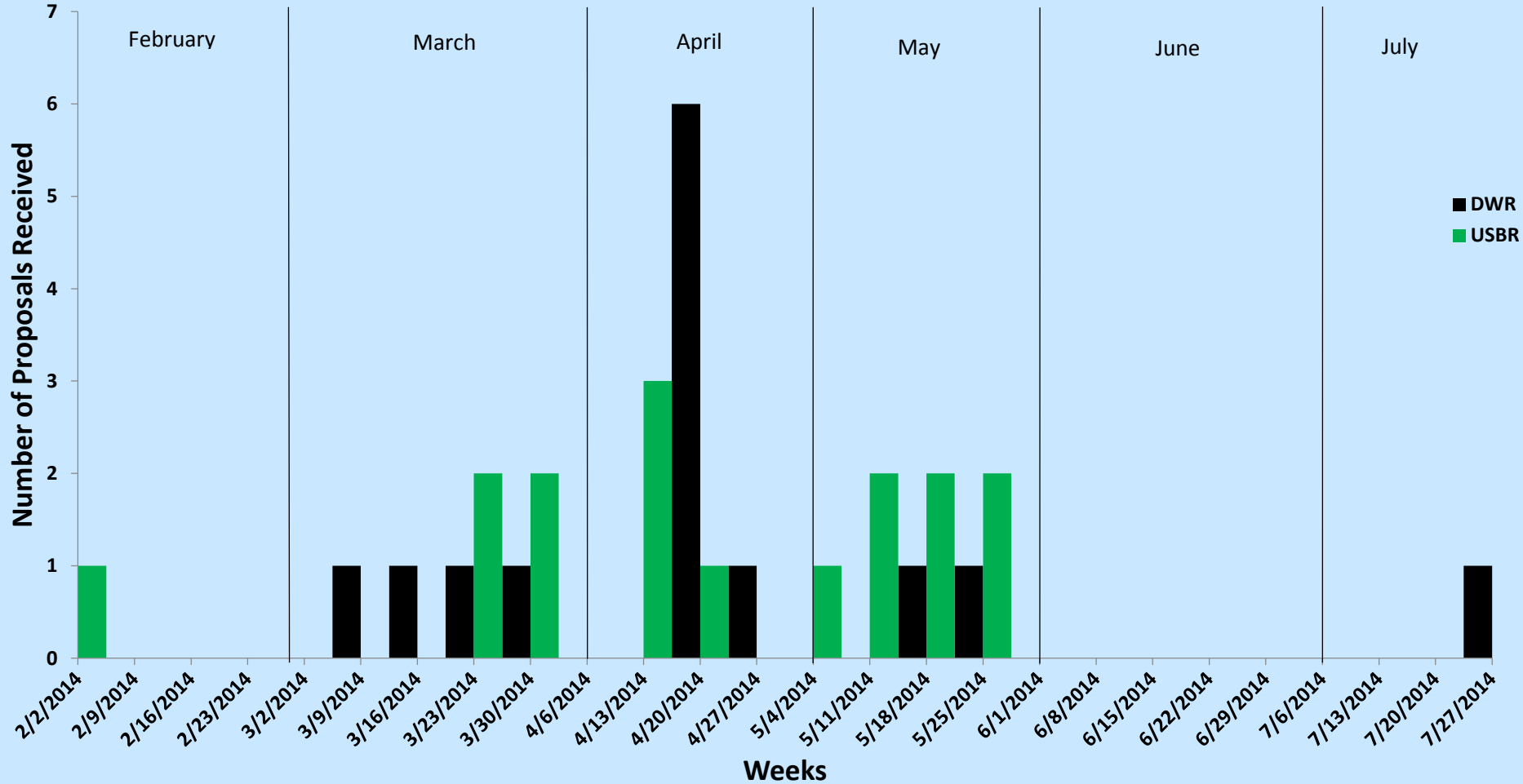
2014 California Drought Response

- Water Markets
 - Agency Authorized Markets
 - Private Local Markets
- Following crop areas
- Groundwater Overdraft

2014 Agency Water Transfers

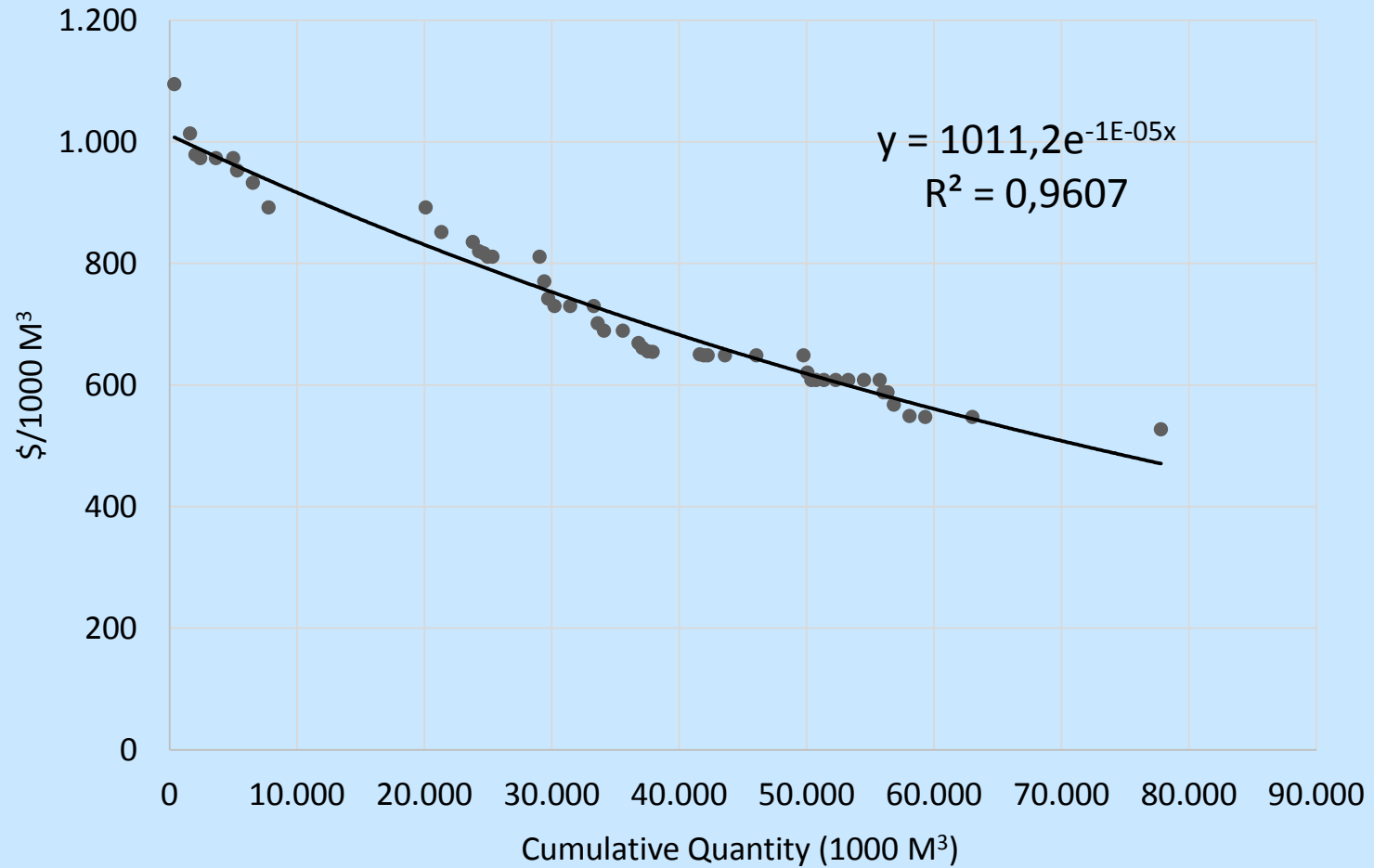
- 574 Million M³ Total
- 377 Million M³ DWR
- 12 Short-term and 3 Long-term
- 6 - Crop Idling
- 7 - Groundwater Substitution
- 5 - Reservoir Release
- Multi- benefit Transfers

2014 Water Transfer Proposals



Private water markets

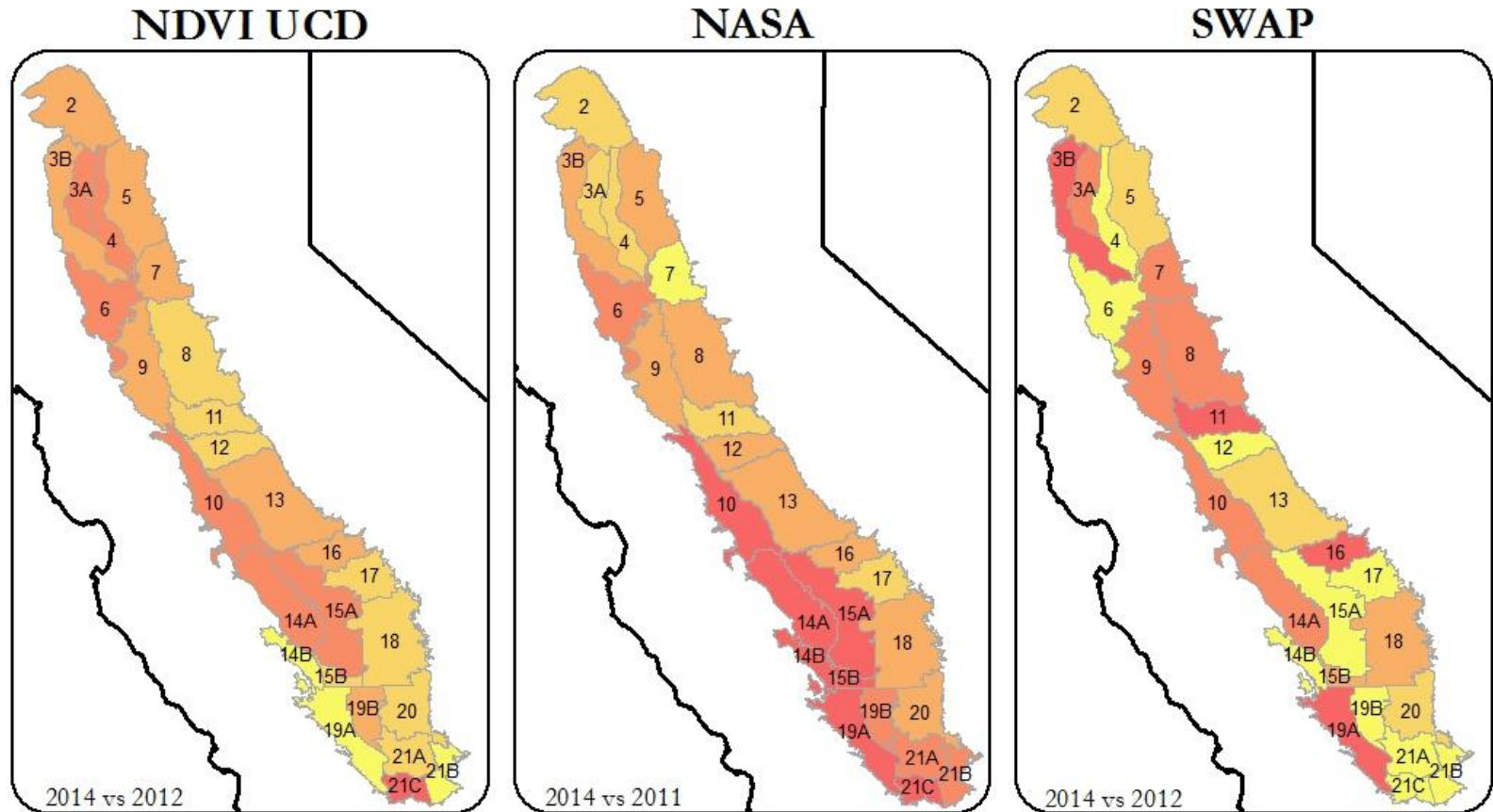
Water Bids-Buena Vista February 2014



Alternative Drought Management Data

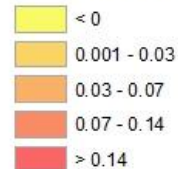
- Water supply predictions of drought response
- Satellite measures of fallowed acres

Comparison of Idle Land July/August

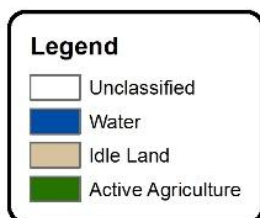
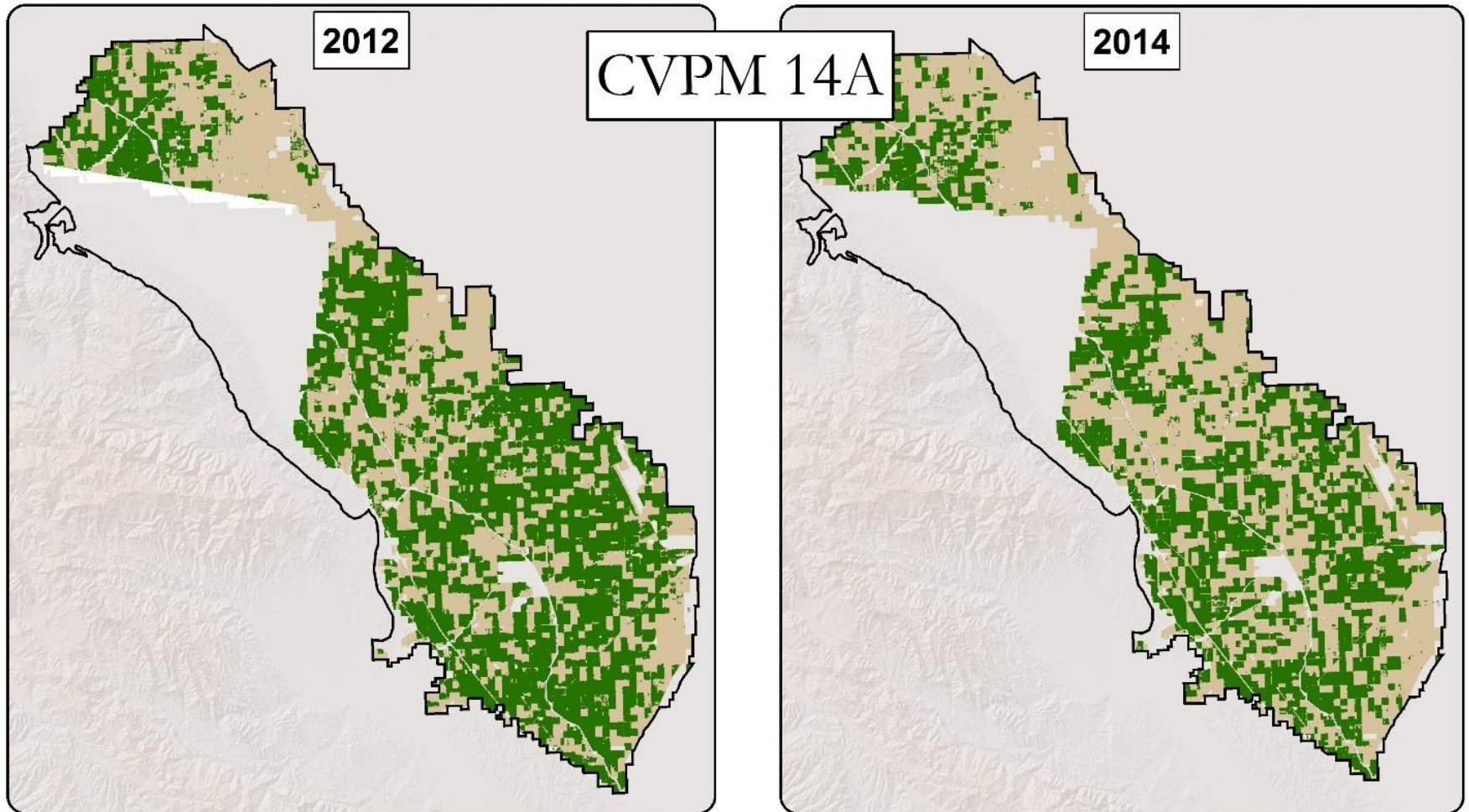


Relative Idle Land 2011-2014

Julian Day 210



A Portion of Westlands



<u>2012</u>	<u>2014</u>
Area in Agriculture	
254,967 Acres	208,201 Acres
Idle Area	
226,118 Acres	280,257 Acres



2014 Estimates of Groundwater and Surface water changes

	2014.00	(Million M ³)
	Surface Water	Ground water
Sacramento Valley	-739	1,110
San Joaquin Valley	-2,220	1,850
Tulare Lake Basin	-3,700	3,210
Central Valley subtotal	-8,010	6,170
Central Coast	0.00	0.00
South Coast	120	120
South Inland	0.00	0.00
Statewide	-8,140	6,290

What Worked

- Crop portfolio changes to minimize the impact on the specialty crops.
- Following lower value crops to optimize water use
- Interagency water trades at both State and Federal level

What Didn't Work

- Uncompensated groundwater over draft
 - Currently no groundwater replacement mechanism
- Impacts on farm labor was concentrated in particular areas
 - Areas of high base level unemployment
 - Information on actual labor payments very hard to get
- Information on prices and quantities in the “Private” water market
 - Missed trade potential
 - Under bidding prices
- Programmatic EIR for Water trades
 - Some trades prohibited after lengthy paper work
 - Need for prior approval for more market certainty
- Household water security—
 - Wells going dry
 - Quality degradation

Conclusions

- Drought impacts are predicted well by water supply forecasts.
- Forecasts are updated by satellite measures of “green-ness” NDVI
- Good potential for detailed ground and surface water use estimates by satellite energy balance measures.
- Public information on water market prices and quantities needed
- Prior environmental permits for water transfers
- California needs better information and reallocation methods to optimize drought management.