NASA Western Water Applications
Office
Water Resources Panel
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Overview

• Some Background

• Discussion Theme 1 – Benefits of NASA data and collaboration

• Discussion Theme 2 – Mind the Gaps
The west is a place of high variability
a) COEFFICIENTS OF VARIATION OF TOTAL PRECIPITATION, WY 1951-2008

b) AVERAGE NUMBER OF DAYS/YR TO OBTAIN HALF OF TOTAL PRECIPITATION, WY 1951-2008

Source: Dettinger et al (2011)
The size, number, and strength of atmospheric river events (ARs) result from the alignment of key physical processes operating on different space and time scales that will change with climate change.
Monitoring Driven by Program Need

• Real time sensors for forecast, warning and management (think CDEC, CIMIS, NWS)
• Episodic monitoring for historical matching of datasets for seasonal prediction (snowmelt) and management (think fisheries, water quality, groundwater)
• Program need often driven by mandate
• Less attention paid to coordination, collaboration, and O&M costs
• Some Background

• **Discussion Theme 1 – Benefits of NASA data and collaboration**

• **Discussion Theme 2 – Mind the Gaps**
Almost a decade of collaboration

• ARRA funded efforts and initial work

• Drought Response – demand (ET data), crop fallowing, subsidence, ARs, and ASO

• The Great Wet of 2017 – ASO and rapid response analyses

• Indicators of Change - ARs
Measures of Success

• Finding a data set and a use for the data
• Learning to use the data
• Adapting methodologies to accommodate new data streams
• Developing team for long-term implementation with occasional efforts at improving methods and implementation
• Some Background

• Discussion Theme 1 – Benefits of NASA data and collaboration

• Discussion Theme 2 – Mind the Gaps
There are a lot of gaps!

Offshore Conditions

Scale Issues

Physical processes

Change detection and thresholds
Changing the Monitoring Paradigm

• Rather than be reactive to mandates and isolated programs, strive for integrated strategic monitoring initiative that links in situ and remote sensing platforms to deliver timely, relevant, and spatially appropriate data

• Transform ongoing life-cycle funding from individual agency responsibilities to collaborative and cooperative actions with a coordinating committee
Monitoring from General Circulation to Local Outcome

Identify conditions that lead to plausible scenarios that are actionable from a water management perspective from advance planning to emergency response.