THE PAST, THE PRESENT, AND THE FUTURE

Long-term Climate Trends and Water Management History in California

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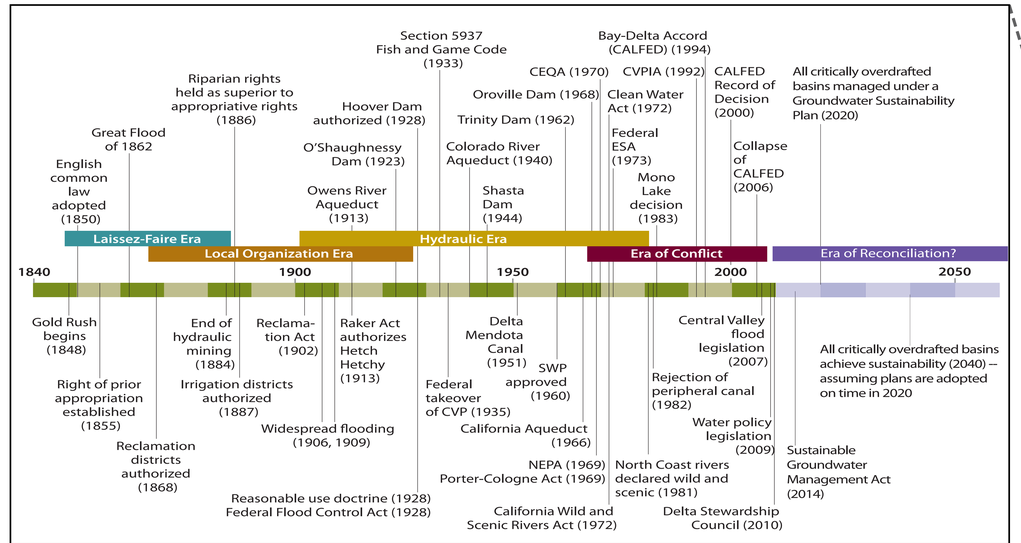
Most of California's dynamic relationship with water takes place within a relatively wet period of history (Cook et al., 2004). The Drought Area Index defines the extent to which a defined threshold of the Palmer Drought Severity Index (PDSI) is exceeded. The figure below shows that California's climatological history oscillates between dry (red) and wet (blue) periods relative to the mean PDSI.

Hanak et al. (2007) characterizes four "eras" of California's complex water history, depicted in the timeline to the right. Note that most policies were enacted during the latest wet period in California's history; however, the occurrence of 200-year megadroughts in the distant past, as well as other decades-long droughts later on, suggest the possibility of extended dry periods in the future. Legislation such as the 2014 Sustainable Groundwater Management Act (SGMA) is meant to prepare for this possibility, but it means changing the way that water has previously been managed in California.

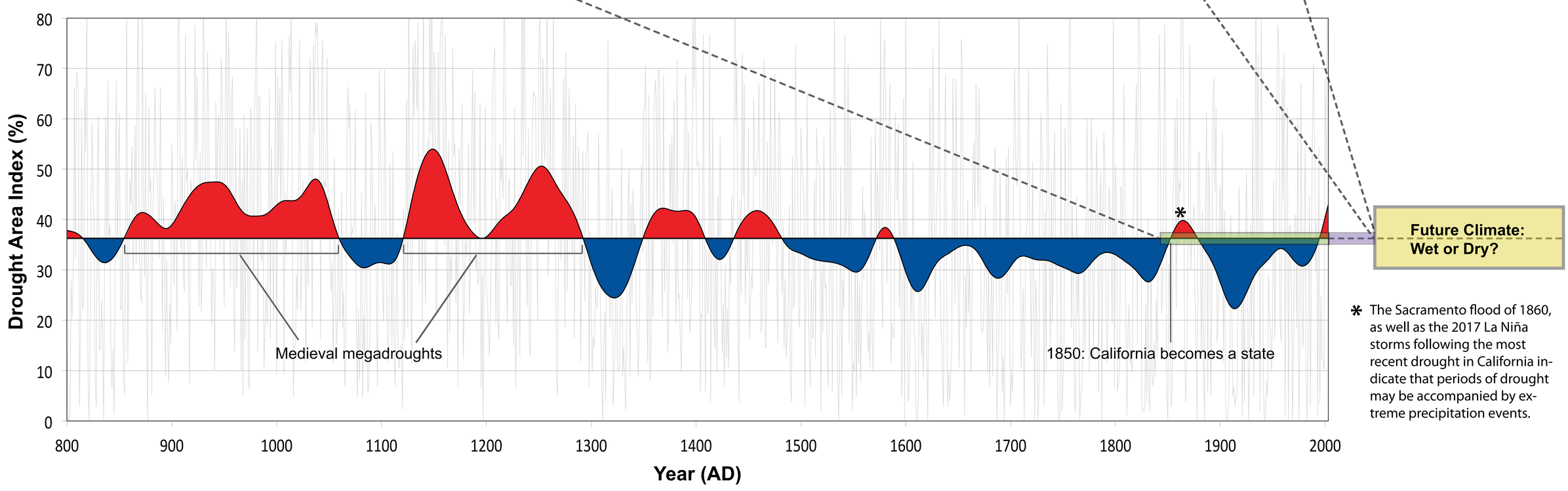


Questions to Consider:

What variability in California's future climate is possible?

How will climatic variability influence California's relationship with water?

Can California transition from an Era of Conflict to an Era of Reconciliation? What will that transition look like?



* The Sacramento flood of 1860, as well as the 2017 La Niña storms following the most recent drought in California indicate that periods of drought may be accompanied by extreme precipitation events.

Sources: [1] Cook, E. et al. 2004. Long-term aridity changes in the western United States. *Science*, 306, 1015-1018. [2] Hanak, E. et al. 2007. *Managing California's Water: From Conflict to Reconciliation*. Public Policy Institute of California.

Water law timeline: Modified from Hanak et al. (2007), Figure 1.1. ***Drought area index figure:*** Recreated from Cook et al. (2004), Figure 2A. Drought area index data from E. Cook, personal communication, February, 2016. Figures created or modified by Rich Pauloo, Marcos Pinheiro and Marielle Pinheiro.

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