Climate Change and Water

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Climate change will impact many facets of our lives including agriculture, water supply and precipitation, public health and our forests. Water is one of increasing importance to the state of California.

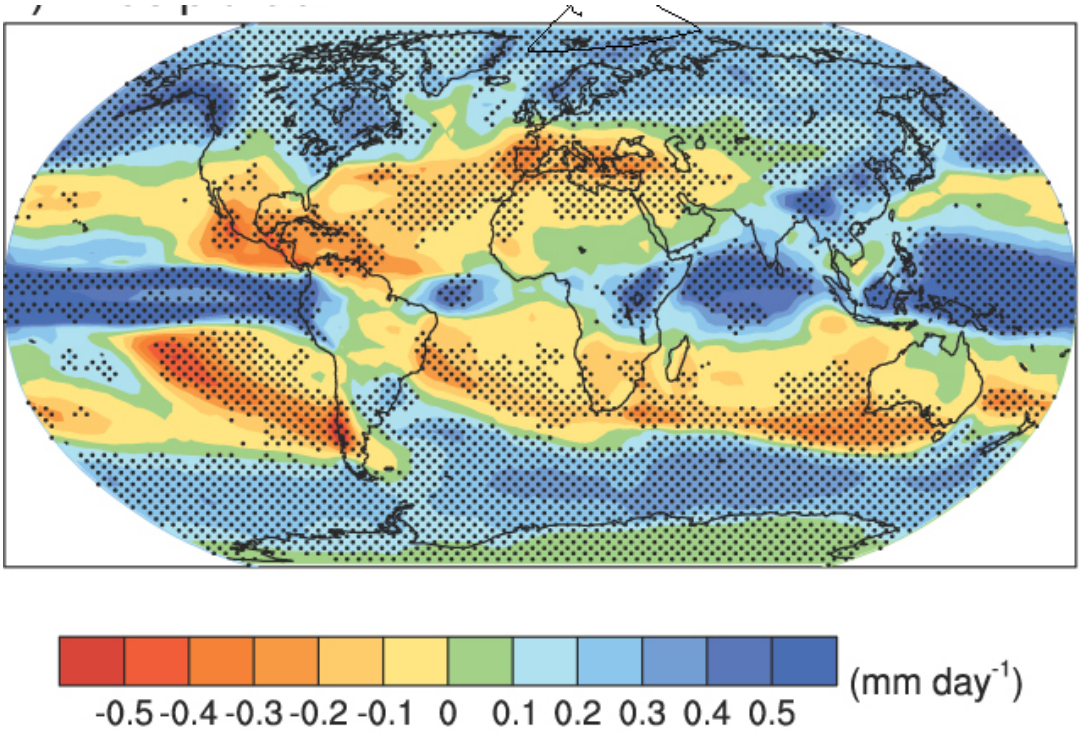
In January of this year, the AAAS (American Association for the Advancement of Science) organized a series of presentations to the U.S. Congress from noted climate change experts[1]. All mentioned the effect climate change will have on our water supply. One expert, Susan Solomon from NOAA explained that some areas will get more rainfall, much more, while other areas will get less rainfall, much less. California is one of those areas that will get less. Peter Gleick, a noted water expert said the changes are already happening and represent significant challenges. One challenge is as the weather gets warmer, we will need more water, not less.

There are a number of theories on how global warming leads to less water in the West and Southwest of the United States. In an article in the Sacramento Bee in November 2007[2], John Cox explained that one of the theories for less rain in California relates to the shrinking Arctic Ice cap. As the cap shrinks, the high pressure regions over California become more intense and longer lived. These high pressure systems impede rain in the winter in California, when the state normally gets the majority of its precipitation (~75%), while pushing more rainfall to our neighbors to the North. .

All the models show significant decrease in rainfall in California over the next century. A global map from the 2007 IPCC (Intergovernmental Panel on Climate Change – U.N sponsored) shows this trend clearly (below)[3]. This map shows predictions for the 2080 to 2099 timeframe with medium emissions. Climate change seems to be leading to a poleward expansion of the subtropical dry zones. Other maps in this report also show decreasing snow pack and decreasing soil moisture for the West and specifically California over the next century. In recognition of the critical impact climate change will have on water, the IPCC released a special report of water[4] and the executive summary makes edifying reading[5].

While efforts to slow global warming and the release of greenhouse gases are important to help minimize the effect on our water supply, conservation will become ever more important. In fact water conservation will need to be an integral part of how one lives in California. In recognition of this, the State of California has launched an effort for water conservation http://www.saveourh2o.org/. The California Natural Resource Agency (CNRA) has released a draft report of recommendations for adaptation to climate change in California[6]. Water is one area focused on in this report and one recommendation is to strongly support a 20% per capita reduction in water usage by 2020[7].In April of 2009, the city of Woodland passed a voluntary water conservation effort. Other cities in California have initiated mandatory conservation. Depending on how successful the voluntary efforts are in Woodland, mandatory efforts may be needed. In addition to basic conservation efforts one can consider xeriscaping . Xeriscaping involves using plants, often native plants, which do not require much or any

supplemental irrigation. Rainwater capture is another option homeowners and other can consider. Rainwater is a good option for the garden as it often has fewer salts than well water. Agriculture is very susceptible to water uncertainties and the more we all can do in California to conserve water as residents, the better we all will be.



2080 to 2099 Precipitation Predictions IPCC 2007 WG1 ch10 fig 10-12

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[1] http://www.aaas.org/spp/cstc/pne/events/climate09briefing.shtml

[2] Sacramento Bee, November 4, 2007 pages E1 and E4. "Shrinking ice cap, growing crisis", John D. Cox

[3] **IPCC 2007 WG1 ch10 fig 10-12 http://www.ipcc.ch/ipccreports/ar4-wg1.htm**

[4] **http://www.ipcc.ch/ipccreports/tp-climate-change-water.htm**

[5] **http://www.ipcc.ch/pdf/technical-papers/ccw/executive-summary.pdf**

[6] **http://resources.ca.gov/**

[7] **http://www.energy.ca.gov/2009publications/CNRA-1000-2009-027/CNRA-1000-2009-027-D-ES.PDF**