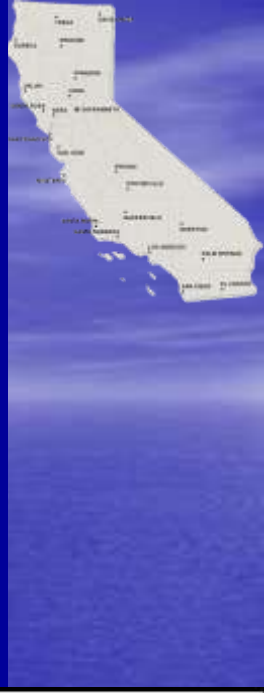
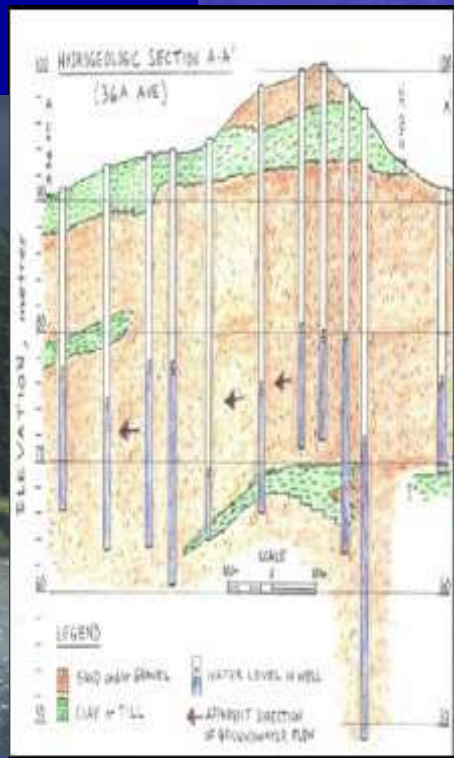
California's Water Resources

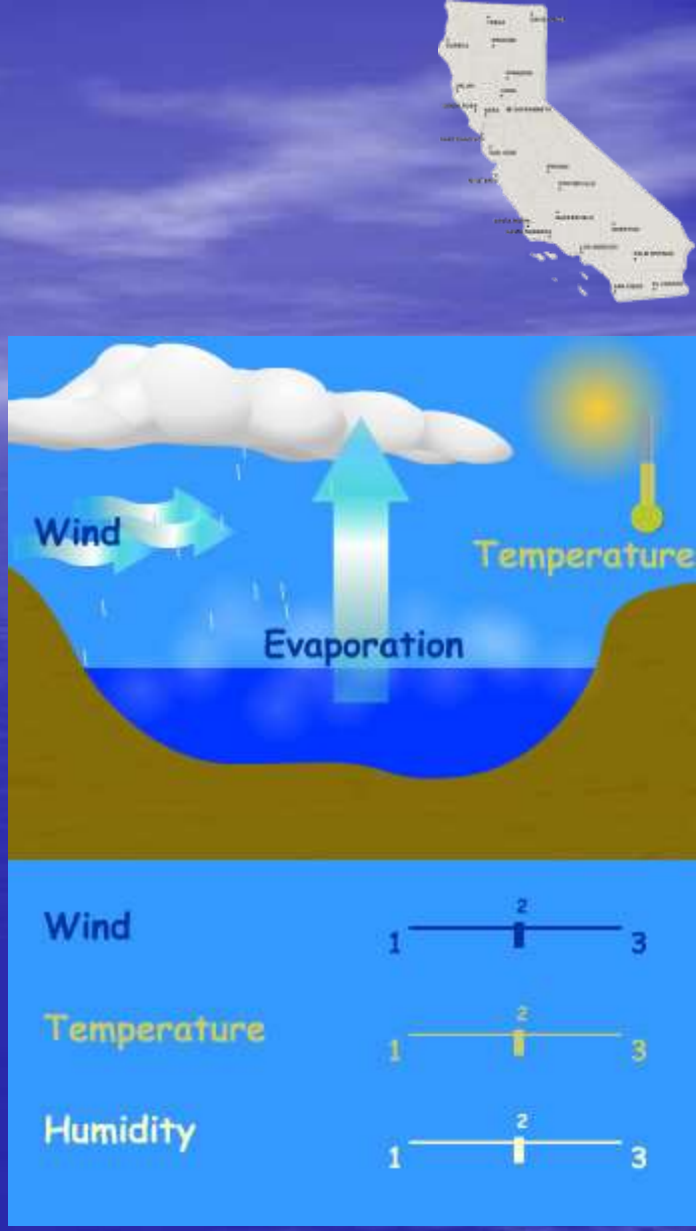
- California has many resources, none more important than **water**. The main sources of California's freshwater supply are **precipitation**, surface water or runoff, and groundwater.

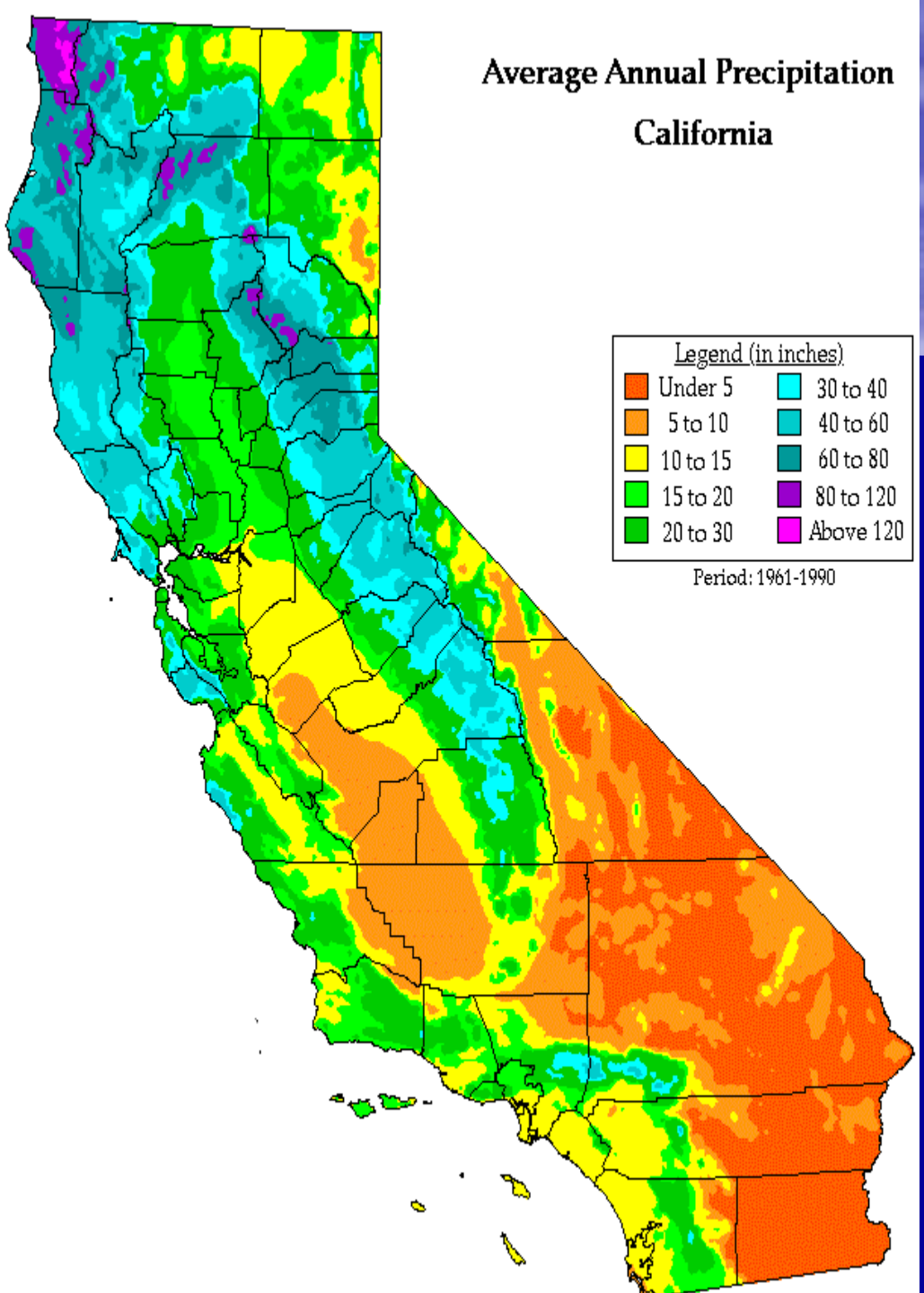




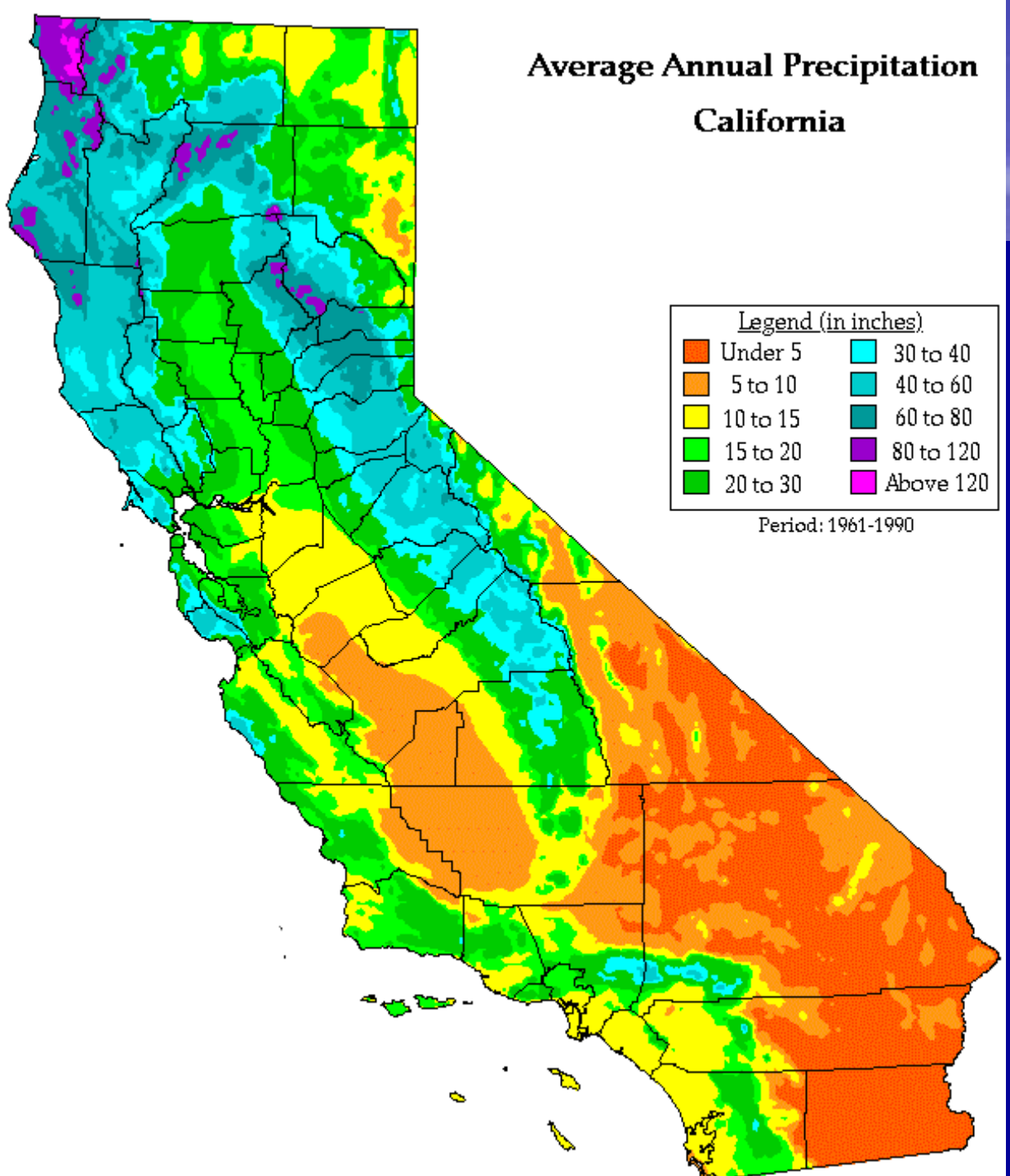
Most of the state's fresh water begins as snow in **Northern** and Central California Mountains.

More than **50%** of all precipitation in the state is lost to **evaporation** and **transporation**. Only about **35%** of the precipitation stays on the surface or seeps into the ground. This water helps meet the state's needs.



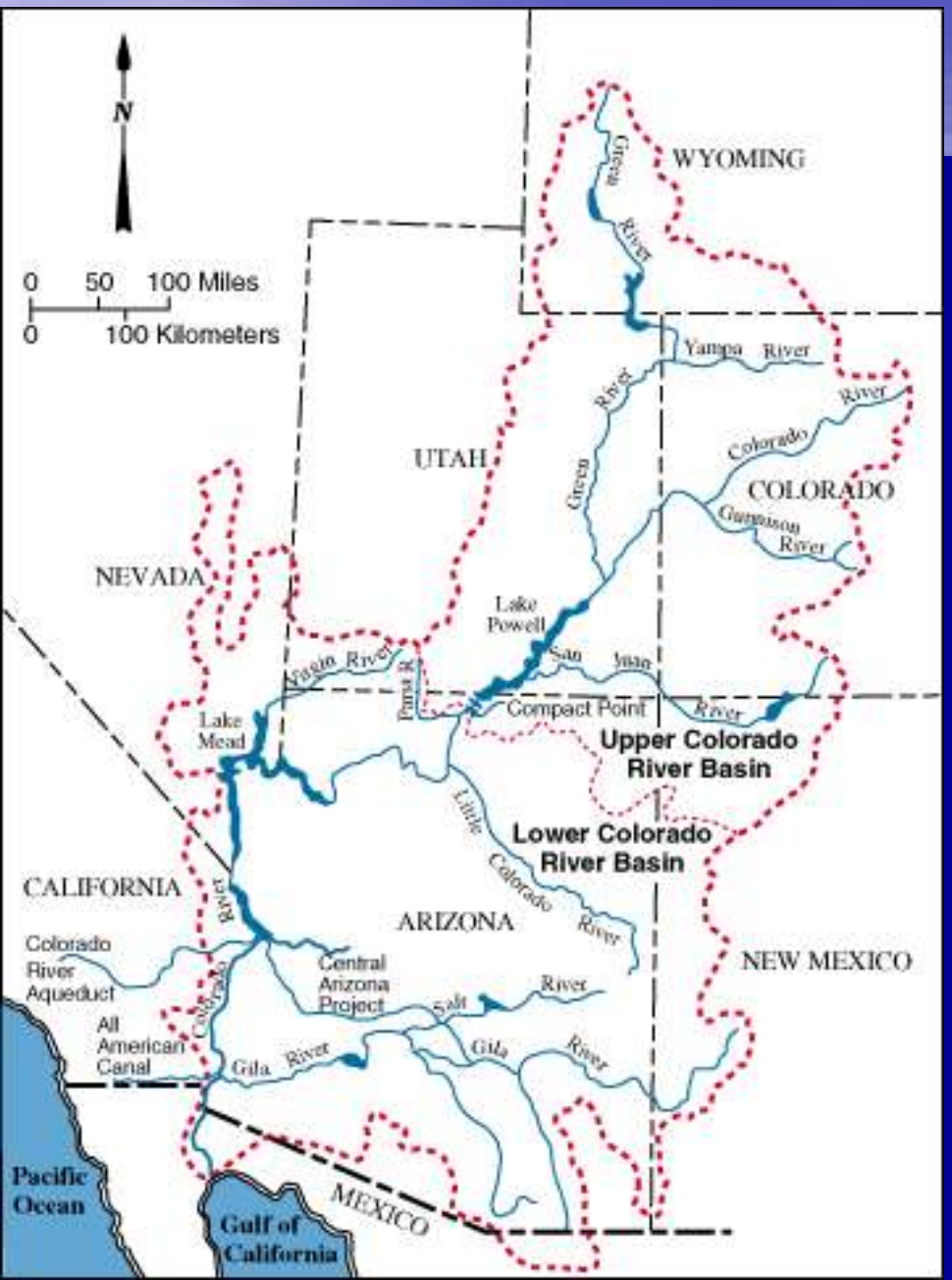


The average precipitation California receives is **58** cm. (24 in.) although the amounts are not evenly distributed.



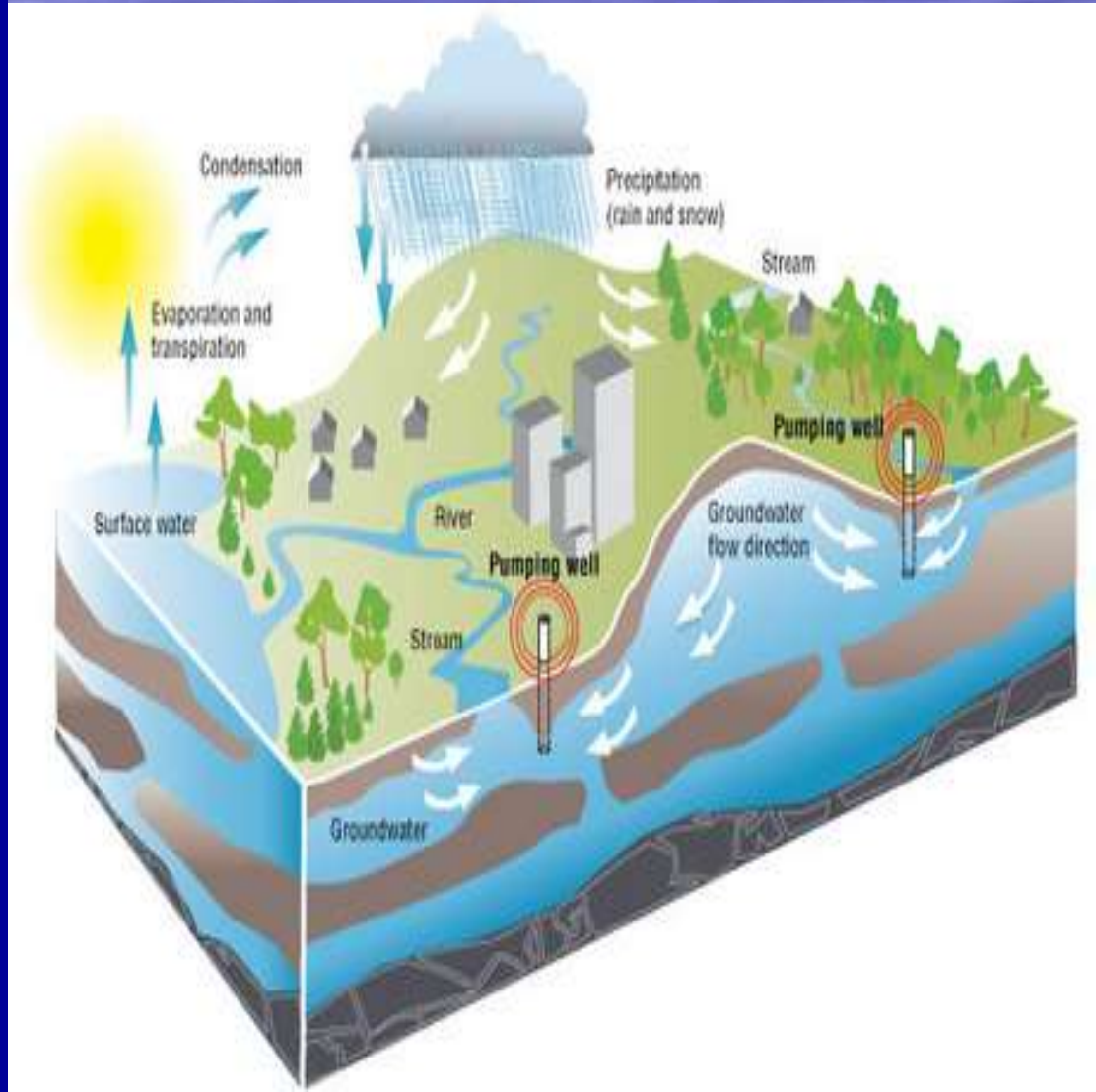
Northern California and the mountain regions receive the bulk of precipitation where the deserts and **Southern** California receive the least.

Some of the precipitation flows back into rivers and lakes which is California's drainage basin or **<u>water</u> <u>shed</u>**.

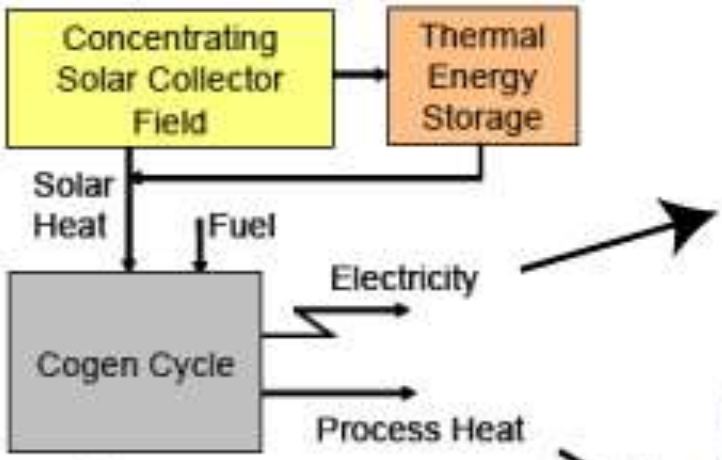


Another source of surface water that originates out of the state forms the border between California and Arizona. The **Colorado River** starts in the Rocky Mountains and provides water for all of the southwestern states.

Groundwater is another important source of fresh water and comprises about **30**% of water used in California. In times of drought groundwater levels can be depleted. Rocks and soils that contain groundwater are called **aquifers**.



Desalination is growing in importance when it comes to some coastal cities. Desalination is the removal of salt from ocean water to obtain **fresh** water.



Reverse Osmosis

Multi-effects desalination

California's Water Projects:

Due to the unevenness of California's population distribution, the fresh water needs of the state is distributed in an intricate network of water **storage** and distribution systems, or water **projects**.

These projects are operated by local, state, and **federal** agencies. California's major water projects consist of long aqueducts that carry water from its sources to where it is needed.

Local Water Projects

In Southern California local water project include the Los Angeles and **Colorado** River aqueducts. The L.A. aqueduct has been carrying water from the Owens River in the Sierras to Los Angeles since 1913.

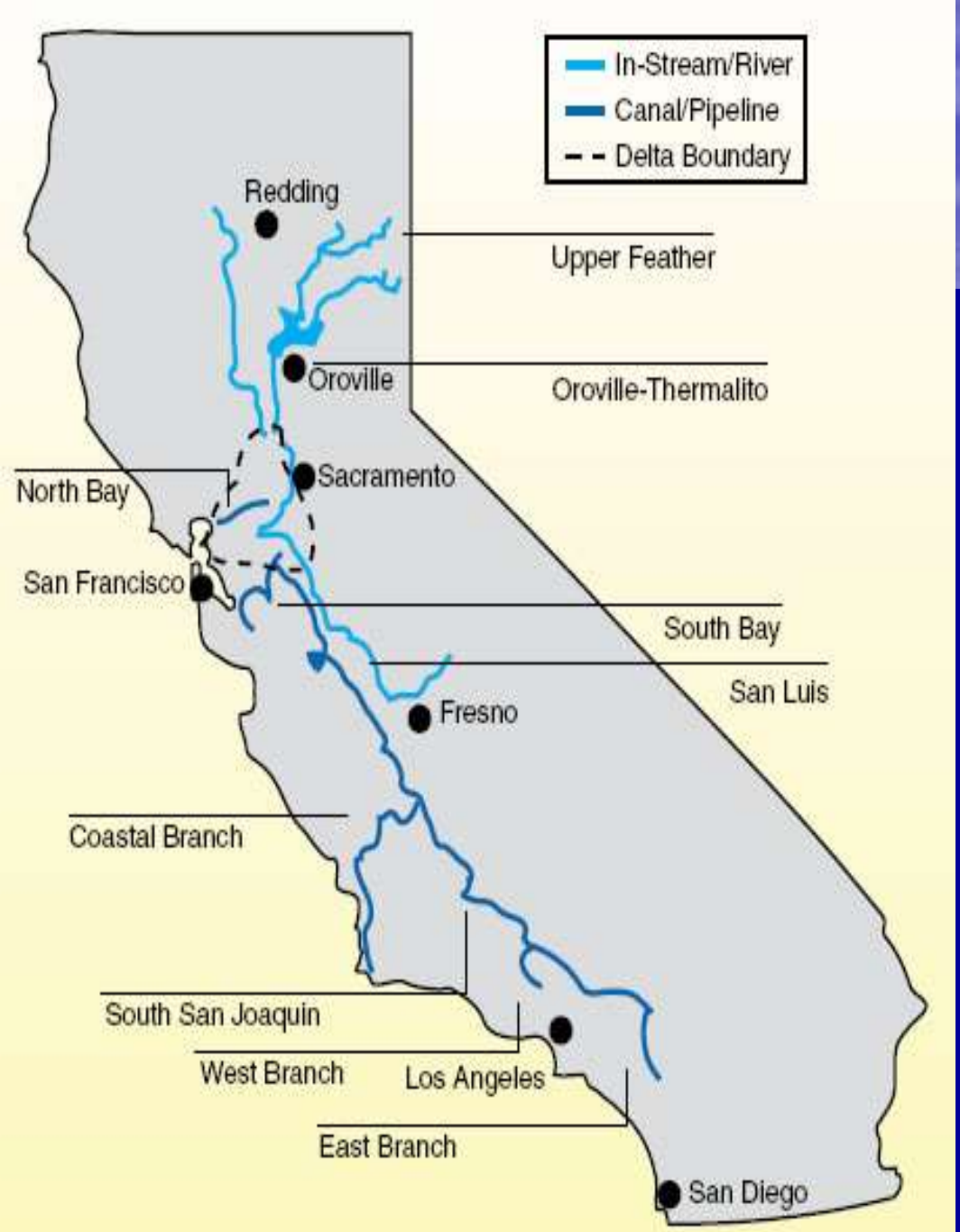
Another local water project is the Colorado River Aqueduct which brings water in to supply water to the **Inland** Empire, San Diego and L.A.

Diamond Valley Lake holds much of the water before being sent off to Lakes Mathews and Skinner for treatment and distribution.

Lake Mathews

Diamond Valley Lake

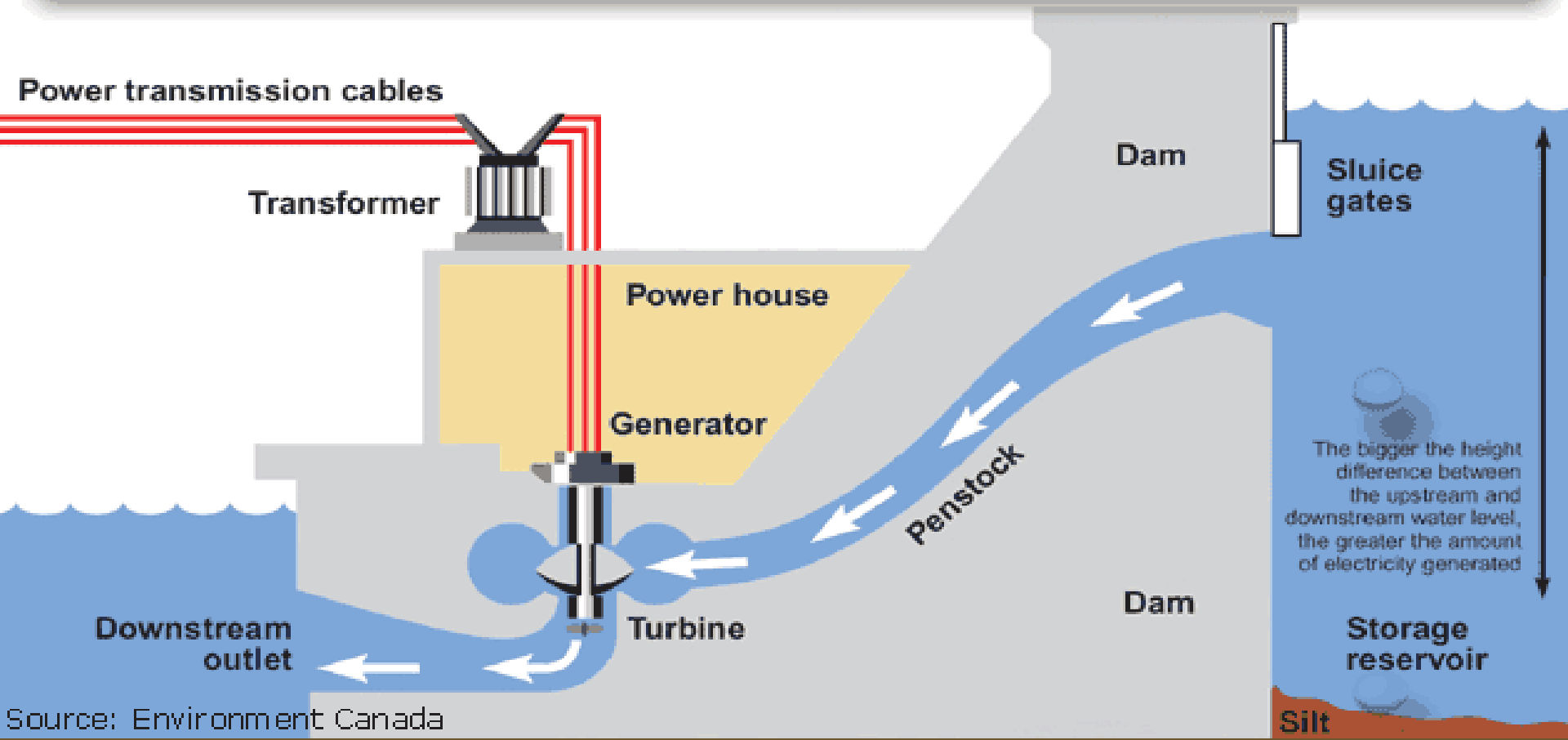
Lake Skinner



The State Water Project (SWP) is one of the nation's **largest** water distribution systems. It uses the water sources in the central Valley and distributes it to the San Francisco Bay Area and Los Angeles.

The SWP also operates **5** hydroelectric plants to generate **electricity**.

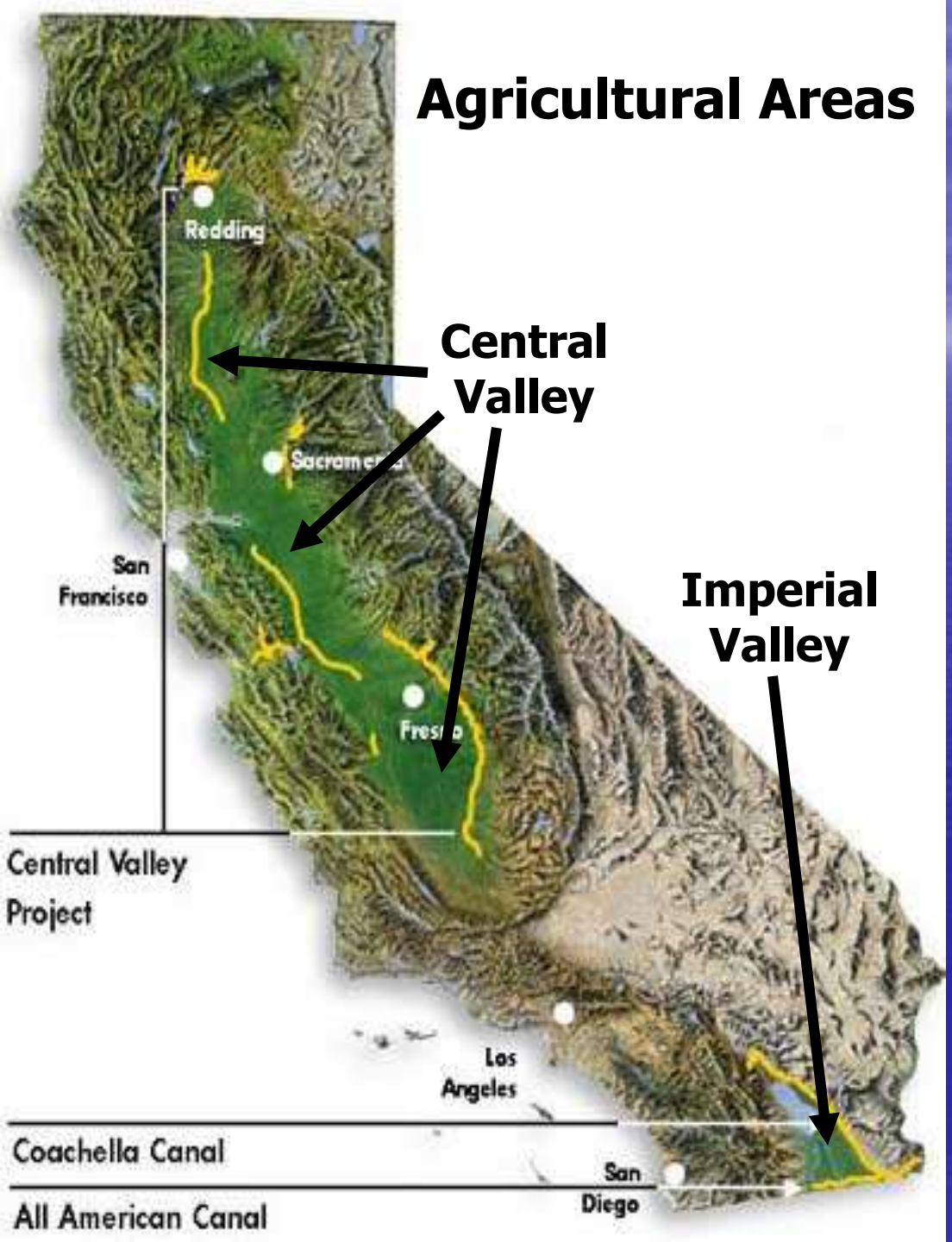
Hydroelectric power generation



Source: Environment Canada

The federal government has also constructed major water projects in California. These projects include the All-American Canal, the **Coachella** Canal, and the Central Valley Project.

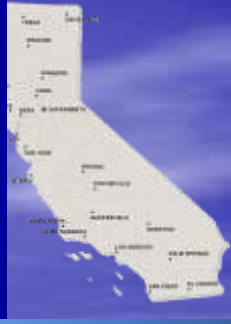
Agricultural Areas



A lot of the water is used for irrigation of crops. Most of California's water supply is used to grow crops.

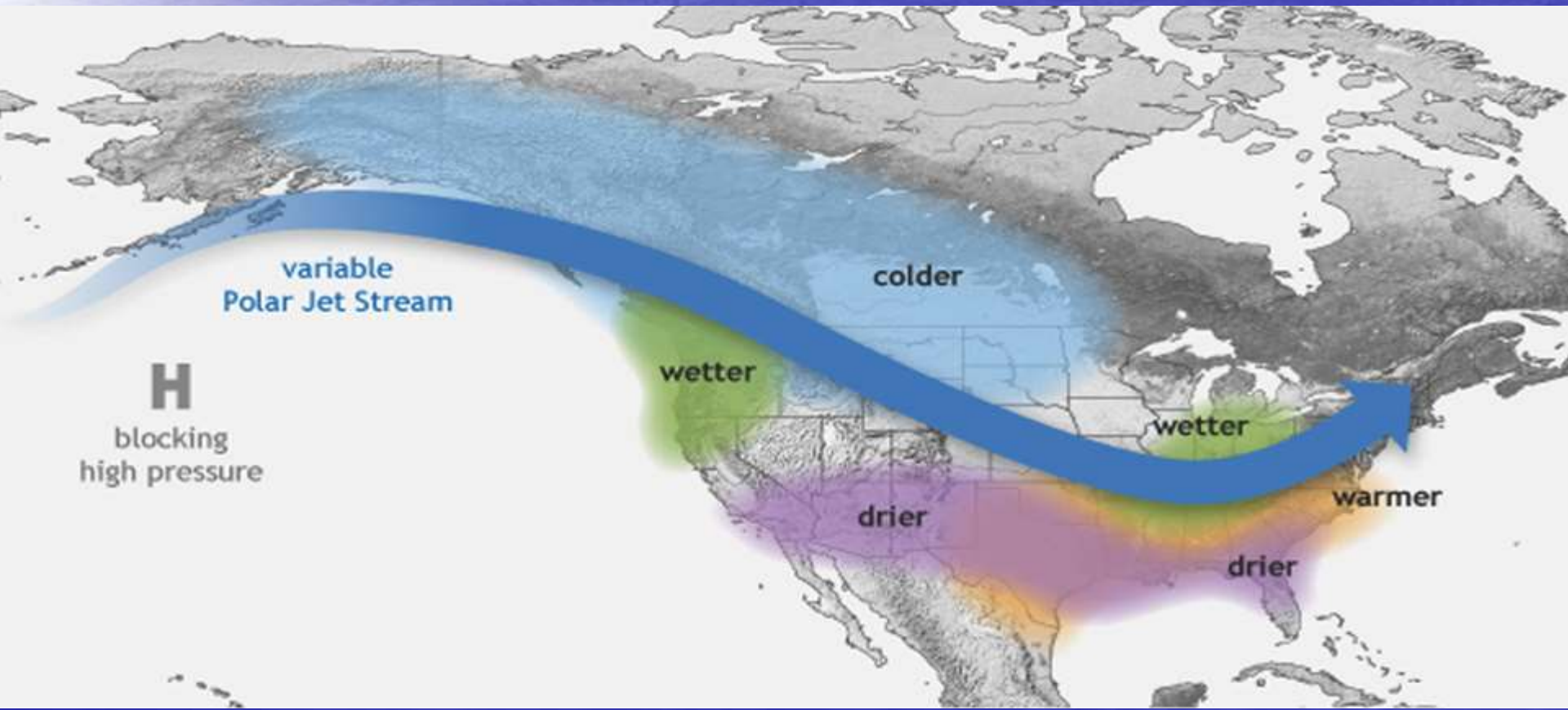
The rest is used in home, businesses, and industries, or has been set aside for **recreational** or **wildlife** use. **80**% of freshwater used in California each year goes to agriculture.

Domestically we use about 90 gallons of water per person per day, by drinking, washing, **watering**, flushing, and cleaning.



Industrially water is used primarily as a coolant for products or machinery. Recreationally some rivers and estuaries are set aside for activities like kayaking, rafting, and fishing as well as wetlands for animals.

Factors that affect our supply of water will be due to **climate change**. California sits in a unique location in the middle latitudes at a boundary where storms come in to the North and less in the South. California receives most of its annual precipitation in short bursts of storms in the winter and spring months.



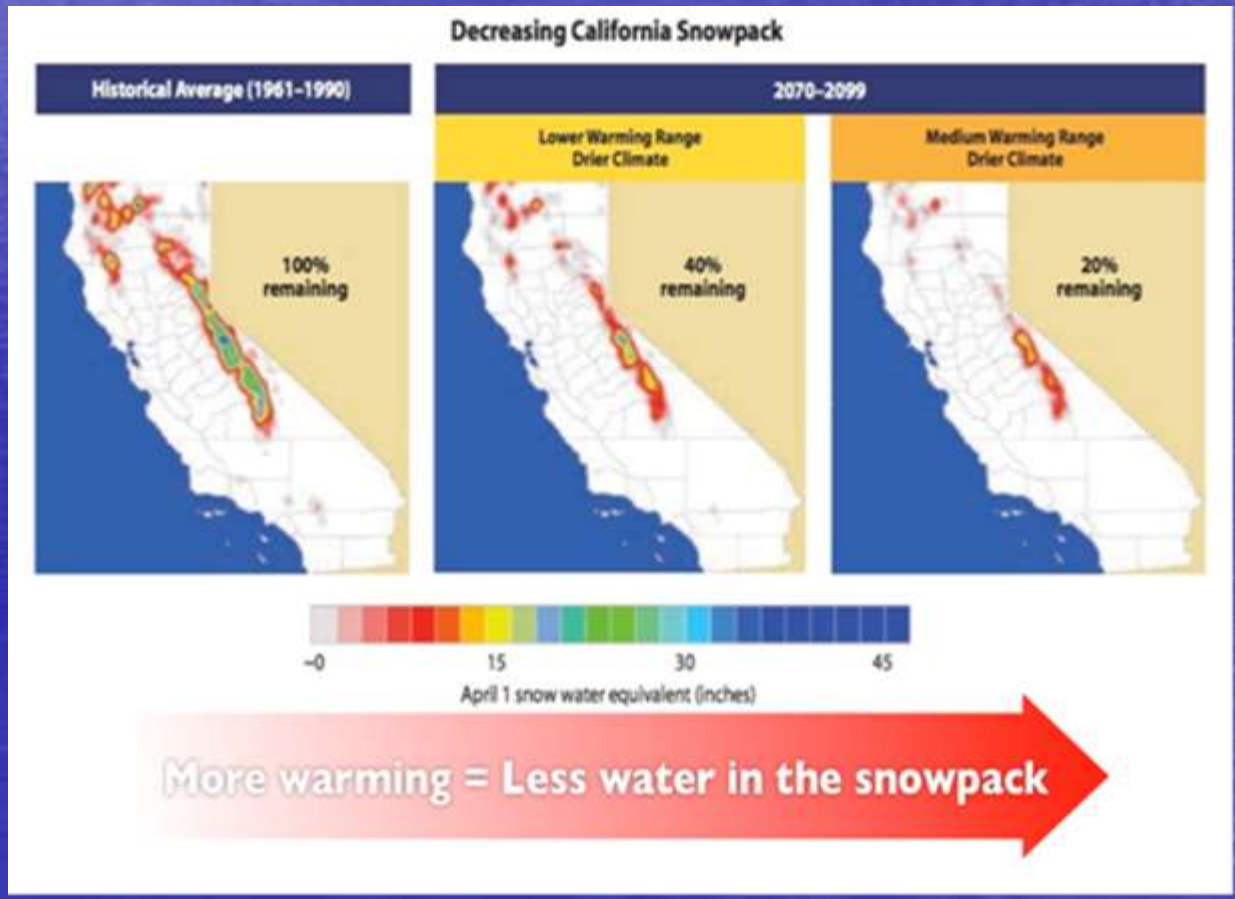
As temperatures climb that means less **snowpack**. Climate change also causes seasons to become more extreme. It is estimated that California will receive 10% less precipitation than historical averages.

When does California get most of its precipitation?

December-April

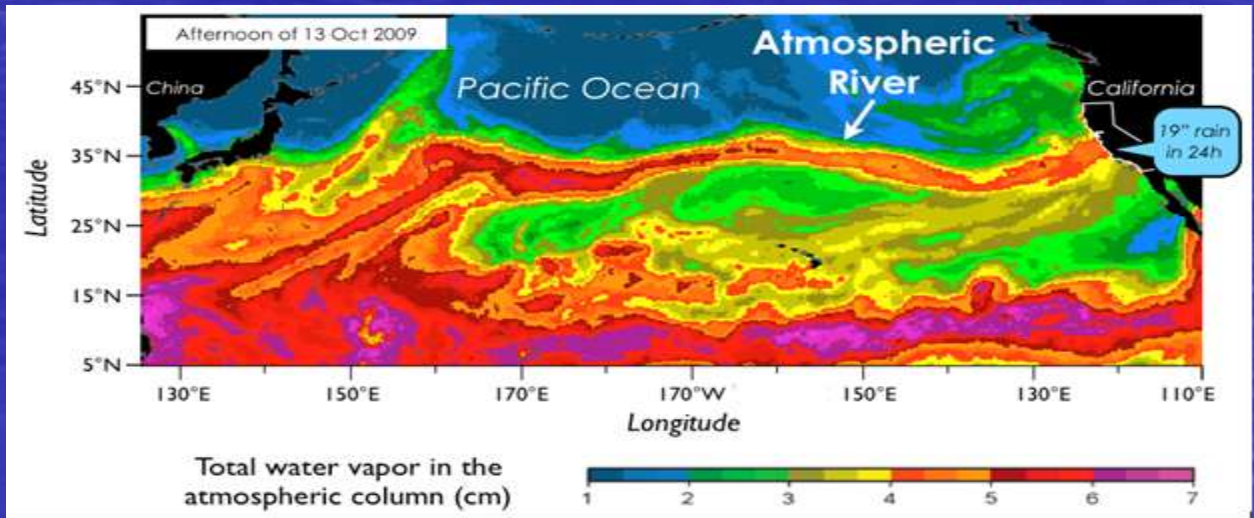
When does California use most of its water?

May-October



Much of the precipitation that California receives comes during atmospheric **river** events

1. Not all storms are atmospheric **river** events
2. Moisture is common in the tropics but not the middle latitudes where California is and AR's can be as much as 50% of our entire precipitation amount.
3. Unique conditions set up a conveyor belt of air with excessive amounts of **water vapor**.
4. Climate change will likely affect atmospheric rivers causing California to be **wetter** some years and **drier** in others



What Can We Do To Manage Our Water Especially in Times of Drought