



CALIFORNIA WATER PLAN UPDATE 2009 SCENARIO ANALYSIS TECHNICAL APPROACH SWAN MEETING JUNE 19, 2008

CLIMATE CHANGE

Description

Changes in regional meteorological conditions and global sea levels due to greenhouse gas accumulations in the atmosphere will impact water resources management.

Representation in WEAP system

- WEAP translates meteorological conditions into hydrologic conditions using catchment objects, defined by area land cover, soil type, and other parameters
- Time sequences of temperature, precipitation, relative humidity, and wind corresponding to global circulation model climate simulations are imposed on each catchment
- Rainfall runoff model imbedded in WEAP partitions precipitation (and applied water) into ET, runoff, groundwater percolation
- Effect of sea level rise upon Delta salinity discussed in water quality topic

Assessed Impacts: Planning Area study (Sacramento River and San Joaquin River HRs)

- Crop irrigation demand calculated based on ET requirements, irrigation schedules, and cropping patterns
- Temperature-dependent snow accumulation/melt routine estimates snow processes for each catchment
- River flows and groundwater percolation reflect precipitation patterns and snow accumulation and melt for each imposed weather sequence

Assessed Impacts: Hydrologic Region study (coarse evaluation of 10 HRs)

- Crop irrigation demand calculated based on ET requirements, irrigation schedules, and cropping patterns
- Back-of-envelope estimate of climate effects on supply availability

Sources of data

- Statistically-downscaled monthly temperature and precipitation projections corresponding to the CEC climate scenarios (AOGCMs and emissions scenarios)
- Relative humidity and wind speed data – Potentially available from Ed Maurer

Outstanding issues

- Matching catchment location to 1/8th deg. climate data grid; relative humidity and wind speed
- Climate scenarios – using 12 CEC scenarios, could expand to 112 available