

August 25, 2021

Delta Conveyance Project

Climate Change

Carrie Buckman
Environmental Program Manager
DWR

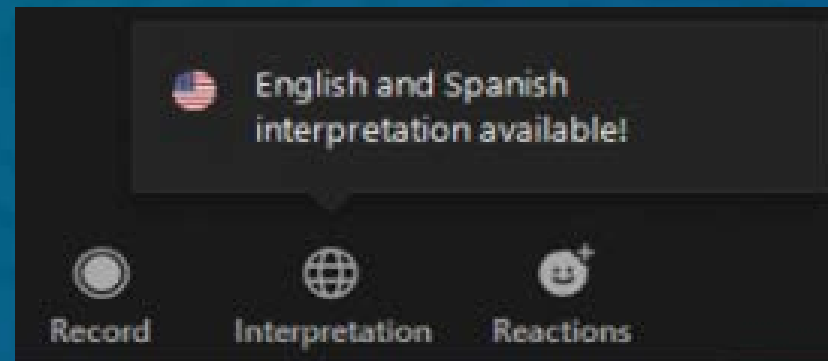
Andrew Schwarz
State Water Project Climate
Action Advisor
DWR

Maggie Messerschmidt
Climate Adaptation and
Resilience Expert
ICF

Juliana Birkhoff
Facilitator
Ag Innovations



Choose a Language Channel



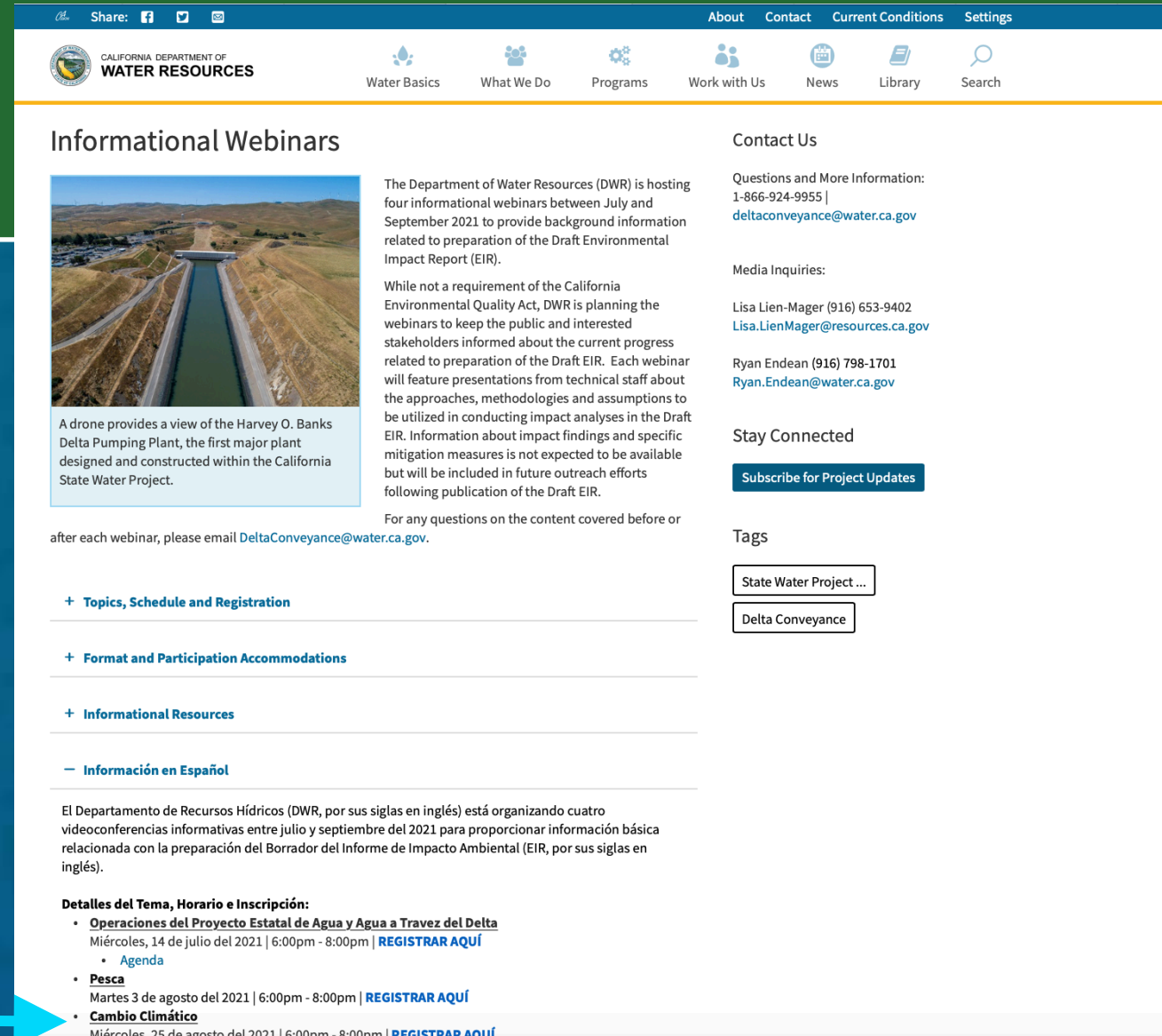
Spanish Resources

Call-in Information:

- Número de Teléfono: (602) 580-9659
- Código de Acceso: 8833787, seguido por el signo de tecla (#)

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- <https://water.ca.gov/Programs/State-Water-Project/Delta-Conveyance/DCP-Informational-Webinars>




The screenshot shows the California Department of Water Resources website. The header includes navigation links: About, Contact, Current Conditions, Settings, Water Basics, What We Do, Programs, Work with Us, News, Library, and Search. The main content area is titled "Informational Webinars" and features a video thumbnail of a canal. Below the video, there is a caption: "A drone provides a view of the Harvey O. Banks Delta Pumping Plant, the first major plant designed and constructed within the California State Water Project." To the right of the video, there is a text block explaining that the Department of Water Resources (DWR) is hosting four informational webinars between July and September 2021 to provide background information related to preparation of the Draft Environmental Impact Report (EIR). It also mentions that while not a requirement of the California Environmental Quality Act, DWR is planning the webinars to keep the public and interested stakeholders informed about the current progress related to preparation of the Draft EIR. Each webinar will feature presentations from technical staff about the approaches, methodologies and assumptions to be utilized in conducting impact analyses in the Draft EIR. Information about impact findings and specific mitigation measures is not expected to be available but will be included in future outreach efforts following publication of the Draft EIR. Below this text, there is a link to email DeltaConveyance@water.ca.gov for any questions on the content covered before or after each webinar. To the right of the main content, there is a "Contact Us" section with a "Questions and More Information" link (1-866-924-9955 | deltaconveyance@water.ca.gov) and a "Media Inquiries" link (Lisa Lien-Mager (916) 653-9402 | Lisa.LienMager@resources.ca.gov). Below this, there is a "Stay Connected" section with a "Subscribe for Project Updates" button. At the bottom, there is a "Tags" section with two tags: "State Water Project ..." and "Delta Conveyance".

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Informational Webinars



A drone provides a view of the Harvey O. Banks Delta Pumping Plant, the first major plant designed and constructed within the California State Water Project.

The Department of Water Resources (DWR) is hosting four informational webinars between July and September 2021 to provide background information related to preparation of the Draft Environmental Impact Report (EIR).

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- + Topics, Schedule and Registration
- + Format and Participation Accommodations
- + Informational Resources
- Información en Español

El Departamento de Recursos Hídricos (DWR, por sus siglas en inglés) está organizando cuatro videoconferencias informativas entre julio y septiembre del 2021 para proporcionar información básica relacionada con la preparación del Borrador del Informe de Impacto Ambiental (EIR, por sus siglas en inglés).

Detalles del Tema, Horario e Inscripción:

- **Operaciones del Proyecto Estatal de Agua y Agua a Travez del Delta**
Miércoles, 14 de julio del 2021 | 6:00pm - 8:00pm | [REGISTRAR AQUÍ](#)
 - [Agenda](#)
- **Pesca**
Martes 3 de agosto del 2021 | 6:00pm - 8:00pm | [REGISTRAR AQUÍ](#)
- **Cambio Climático**
Miércoles, 25 de agosto del 2021 | 6:00pm - 8:00pm | [REGISTRAR AQUÍ](#)

Contact Us

Questions and More Information:
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Media Inquiries:
Lisa Lien-Mager (916) 653-9402
Lisa.LienMager@resources.ca.gov

Ryan Endean (916) 798-1701
Ryan.Endean@water.ca.gov

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- <https://water.ca.gov/Programs/State-Water-Project/Delta-Conveyance/DCP-Informational-Webinars>
 - Topics, Schedule and Registration
 - Climate Change

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— Topics, Schedule and Registration

- **Operations of the State Water Project and Delta Conveyance**

Wednesday, July 14, 2021 | 6:00pm – 8:00pm

- [Agenda](#)
- [Agenda \(en Español\)](#)
- [Presentation](#)
- [Presentación](#)
- [Video](#)
- [Video \(en Español\)](#)

- **Fisheries**

Tuesday, August 3, 2021 | 6:00pm – 8:00pm

- [Agenda](#)
- [Agenda \(en Español\)](#)
- [Presentation](#)
- [Presentación](#)

- **Climate Change**

Wednesday, August 25, 2021 | 6:00pm – 8:00pm | [REGISTER HERE](#)

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Webinar Overview

Presentation

- Overview of climate change planning in California, including DWR's response
- Purpose of climate change analysis
- Evaluation methods and assumptions

Question/Answer session

- Via Zoom: Use Q&A feature in Zoom
- Via Phone: Press *9 and raise hand to ask question



How to Ask Written Questions in Zoom



To ask a question, click on the “**Q&A**” icon on the bottom of your screen and type your question into the box during the presentation portions of the webinar.



How to ask Verbal Questions in Zoom



To ask a verbal question, click on the “**Raise Hand**” icon on the bottom of your screen. When you are called on, unmute your mic and you will have two minutes to ask your question.





Delta Conveyance Project

Purpose

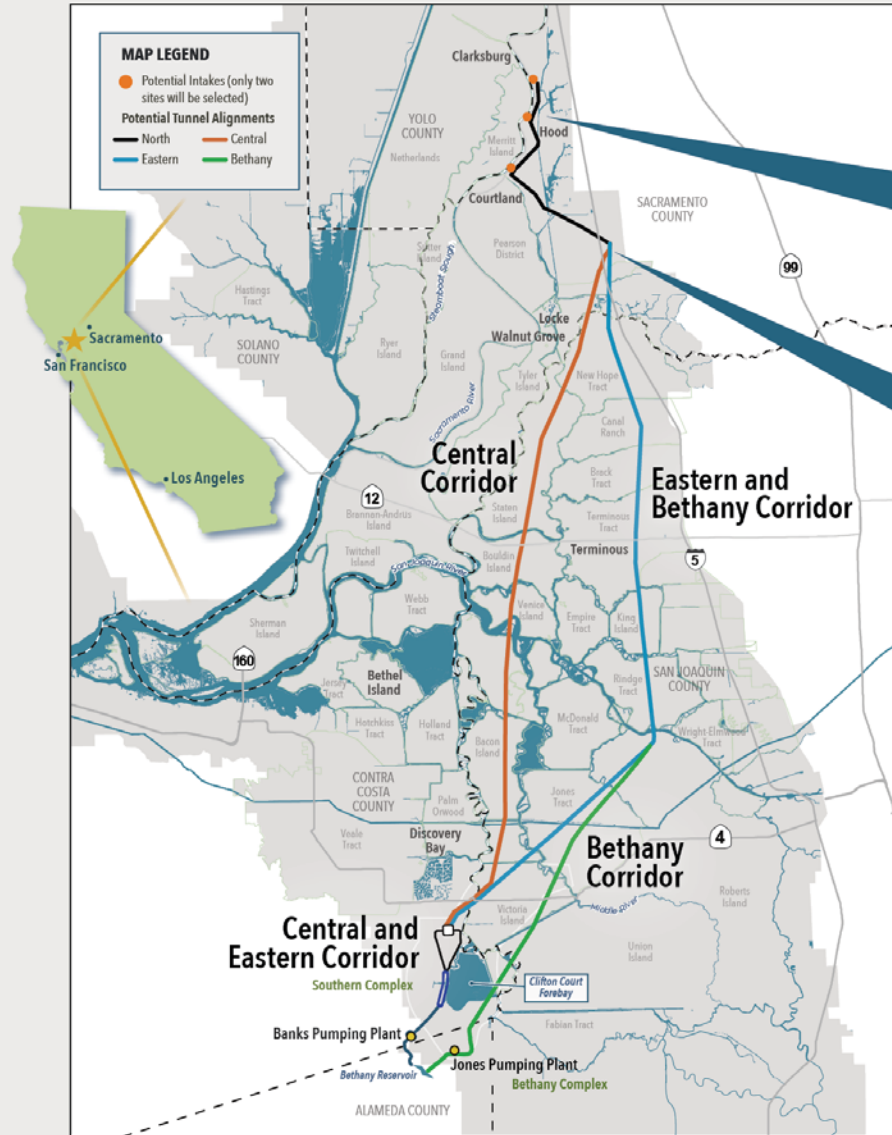
Modernize the aging State Water Project (SWP) infrastructure in the Delta to restore and protect the reliability of SWP water deliveries in a cost-effective manner, consistent with the State's Water Resilience Portfolio.

Objectives

- **Address** sea level rise and climate change
- **Minimize** water supply disruption due to seismic risk
- **Protect** water supply reliability
- **Provide** operational flexibility to improve aquatic conditions



PROJECT DETAILS



Proposed Facilities*

Two new intakes in the north Delta, each with 3,000 cubic feet per second (cfs) capacity, for the proposed project. Alternatives could include one, two, or three intakes.

One below ground tunnel, following an eastern, central, or Bethany corridor, designed to protect California's water supplies from sea level rise, earthquakes, subsidence and levee failure.

Operational Flexibility

 A new diversion facility would be operated together with existing South Delta pumping facilities

 Operations would increase DWR's ability to capture water during high flow events

**All proposed project details are subject to refinement. No final decisions will be made until the conclusion of the environmental review process.*

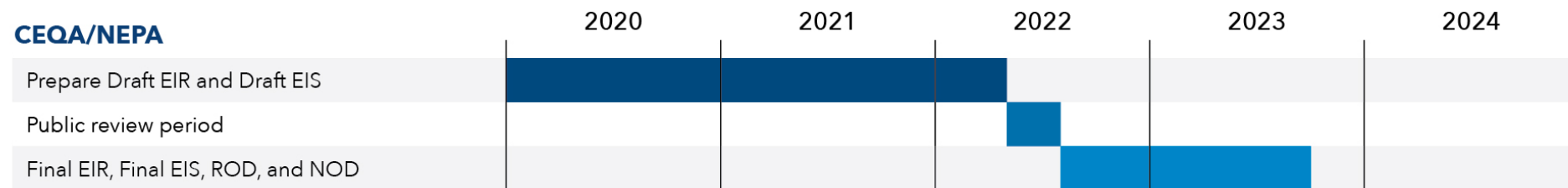




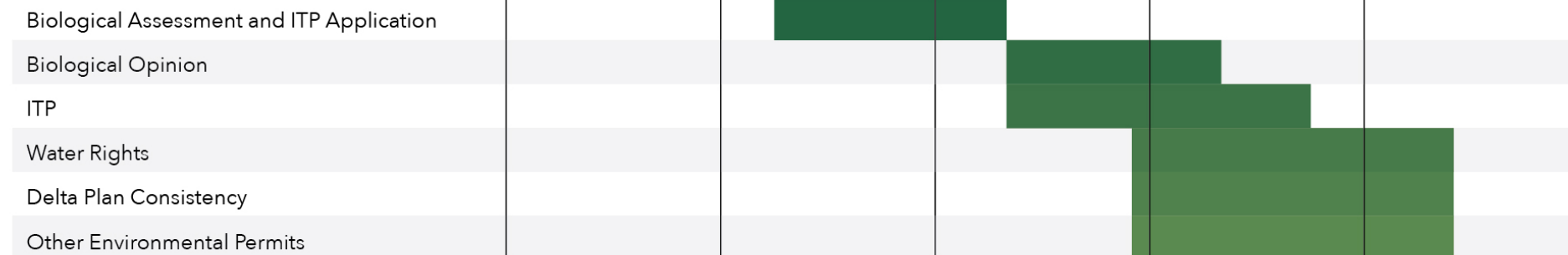
Current Project Schedule

Delta Conveyance Project Schedule

CEQA/NEPA



Other Environmental Processes



Overview of the CEQA Process





Objectives of the California Environmental Quality Act (CEQA)

- Disclose:** Potential significant environmental effects
- Identify:** Ways to avoid or reduce significant environmental impacts
- Prevent:** Environmental damage, if feasible, by requiring implementation of alternatives or mitigation measures
- Foster:** Interagency coordination and public participation
- Show:** That the agency is considering environmental implications of actions prior to making decisions





Environmental Impact Report Purpose

- Inform:** About a project's potential significant environmental impacts and ways to avoid, minimize, reduce, or compensate for them
- Demonstrate:** That environment is being considered prior to approving the project and that the agency has considered the environmental implications of its actions
- Ensure:** Prevention of environmental damage, if feasible, by requiring implementation of feasible alternatives or mitigation measures





Key Contents of an EIR

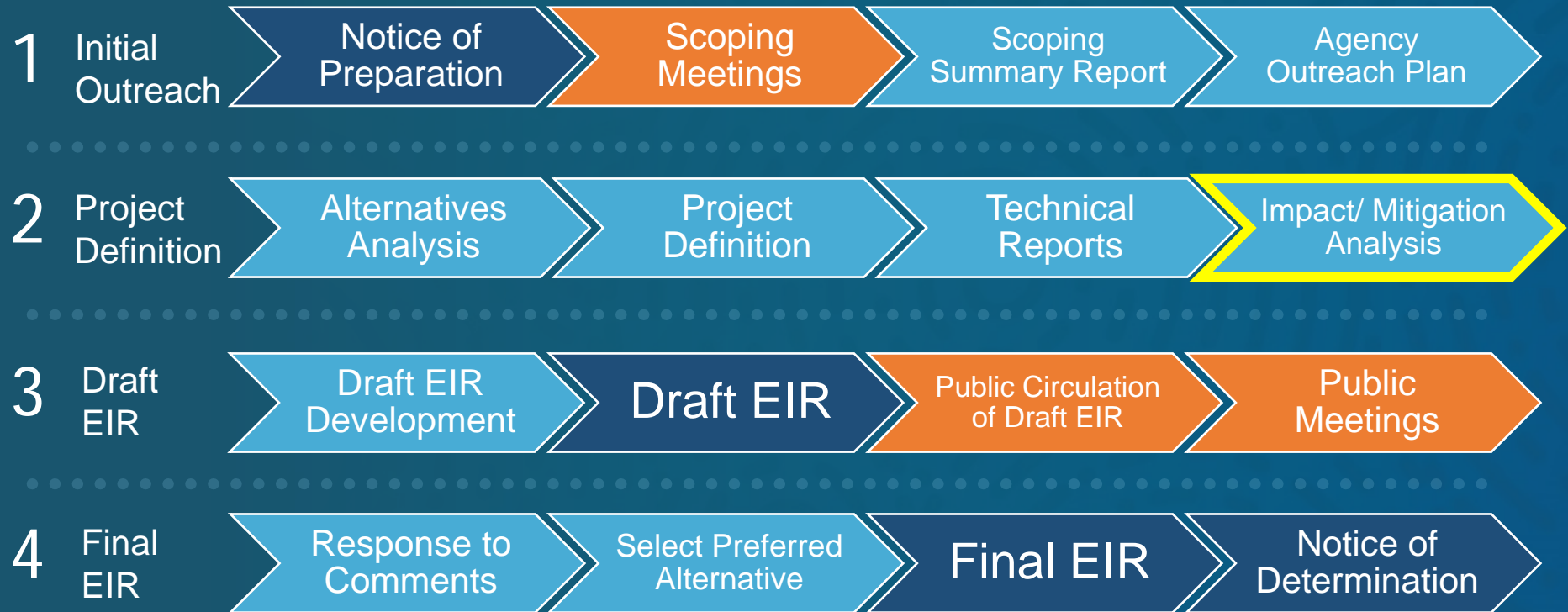
- Project description
- Environmental setting / baseline
- Discussion of significant environmental impacts
 - *Direct, indirect and cumulative*
- Mitigation measures
- Growth-inducing impacts
- Alternatives (reasonable range compared in meaningful detail)
- Organizations / persons consulted



Delta Conveyance Project CEQA Process

DWR will identify, analyze and disclose the potential significant adverse environmental impacts of the project, and assess feasible mitigation measures and alternatives to avoid or reduce such effects.

Stakeholder Engagement

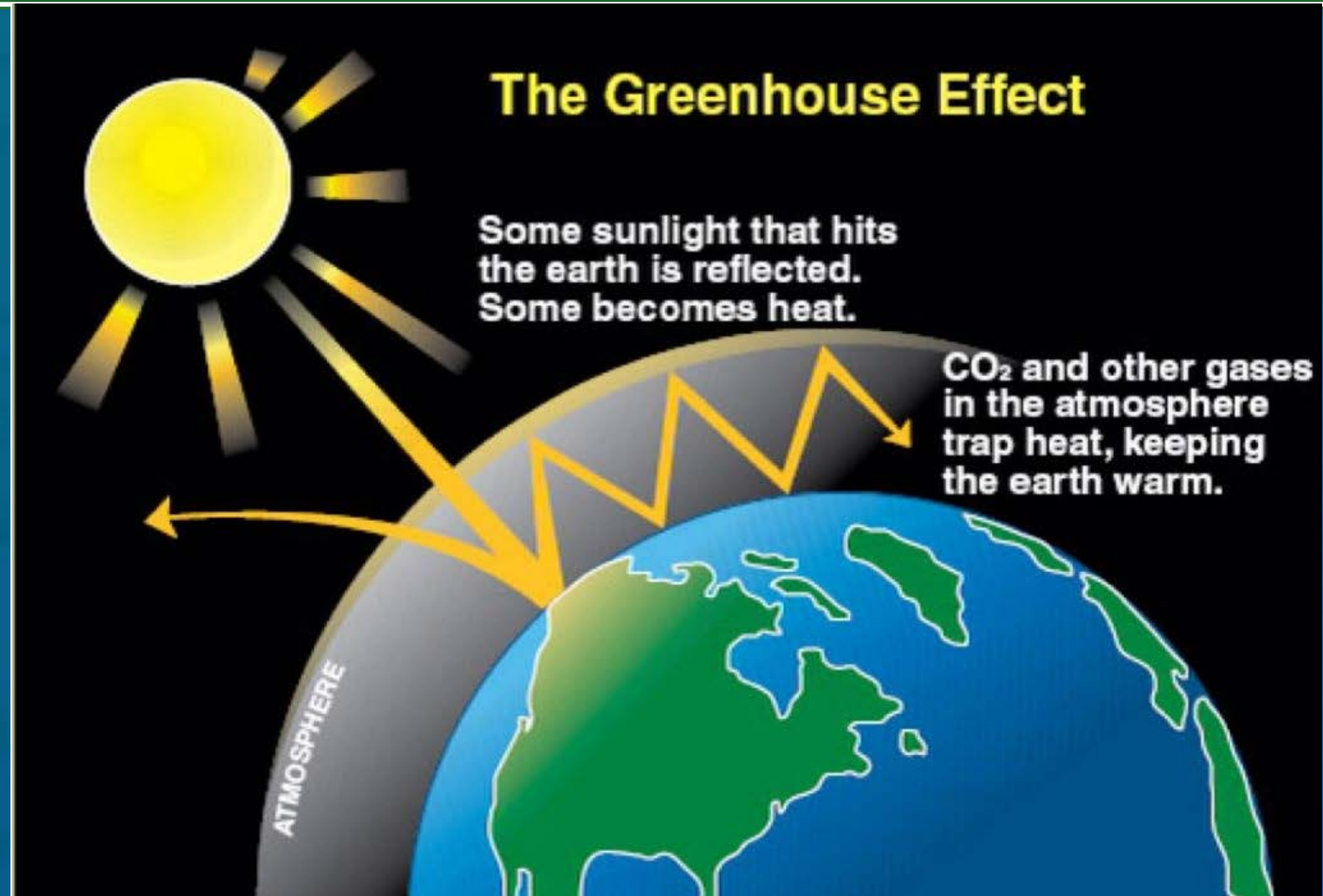


Climate Change Overview



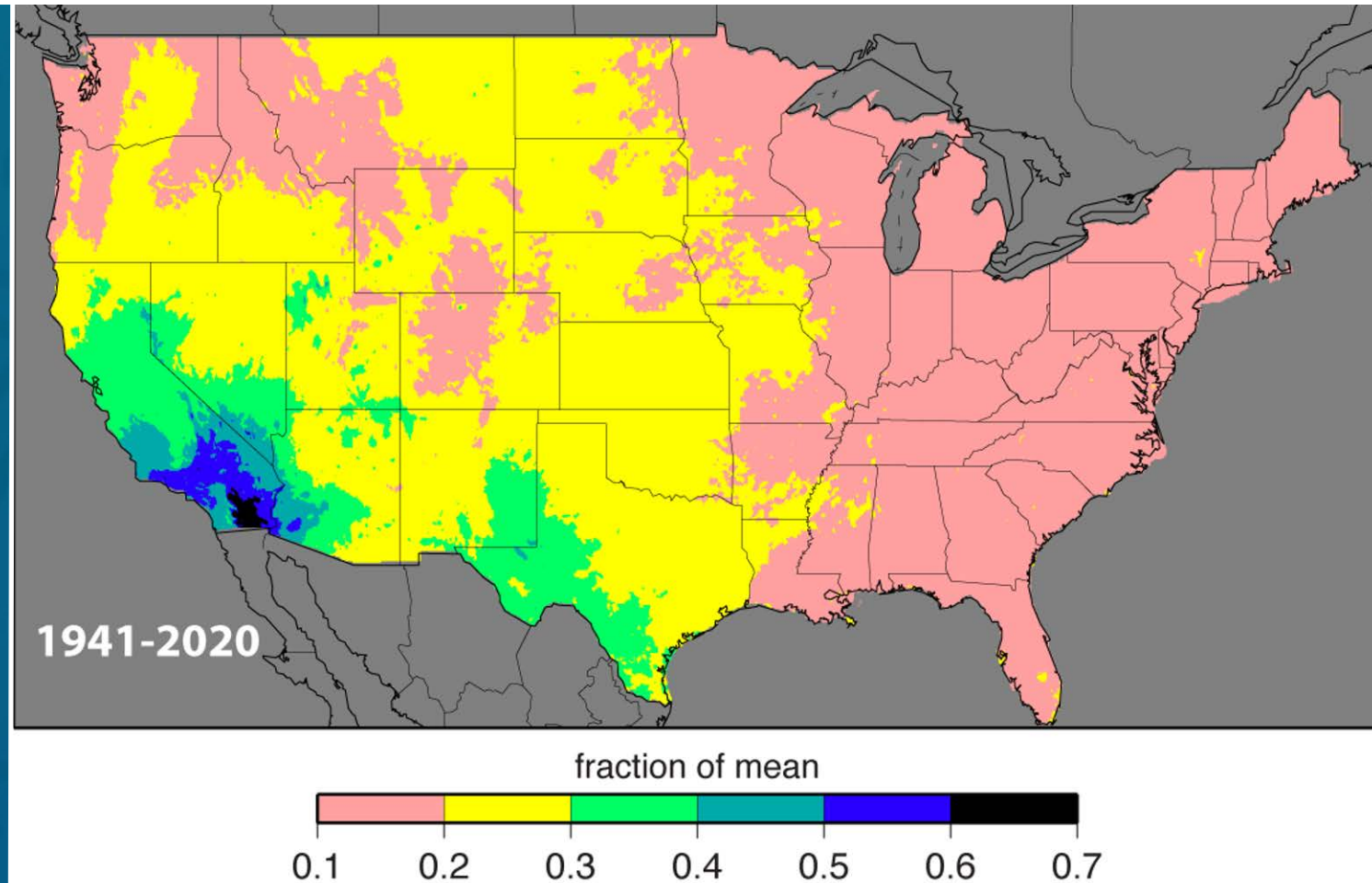
What is Climate Change?

Climate change is the result of warming of the Earth's temperature due to the accumulation of greenhouse gases in the atmosphere.



California's Climate is Uniquely Variable and Difficult to Predict

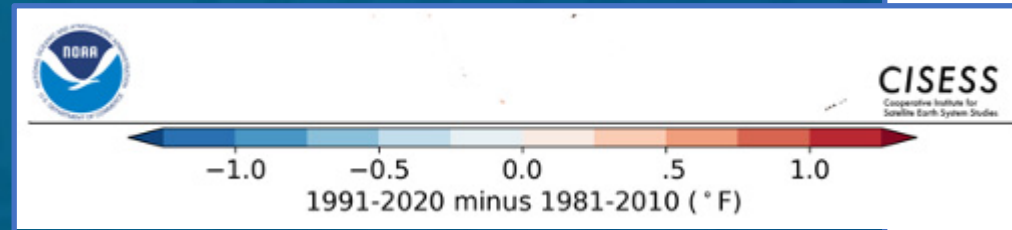
California and the Southwest have the highest year-to-year variability in precipitation



How Climate Change is Already Affecting California

California Climate Change Trends:

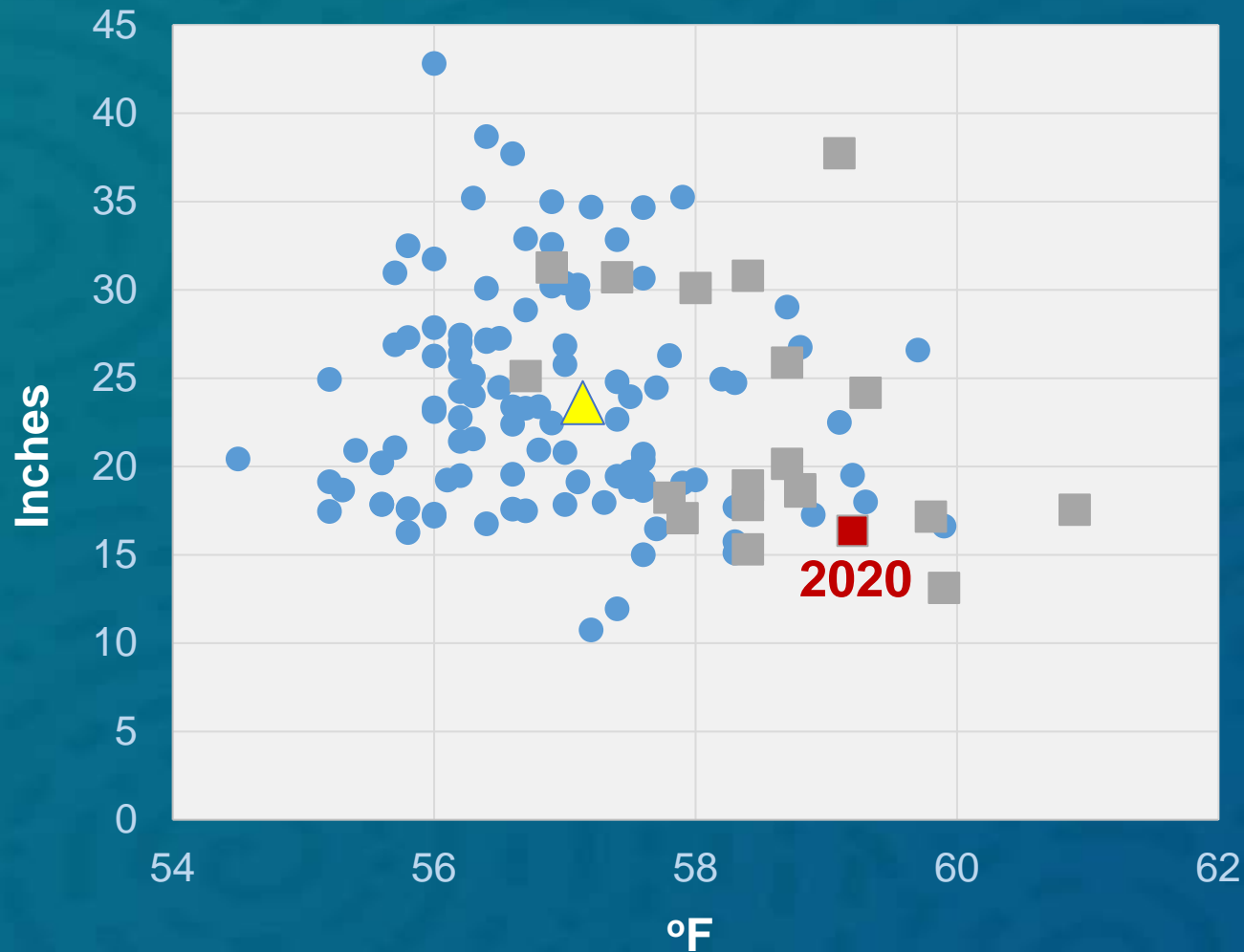
- Average temperatures across California are now 0.5-1.5 degrees F warmer than they were just 10-years ago
- Mean sea levels in California increased 6” in the last 40-years.
- Precipitation is becoming more variable and more extreme (both wet and dry)



Average Temperature change from 1981-2010 to 1991-2020



CA Annual Temperature and Precipitation



▲ POR average

● 20th Century

■ 21st Century

■ **2020**

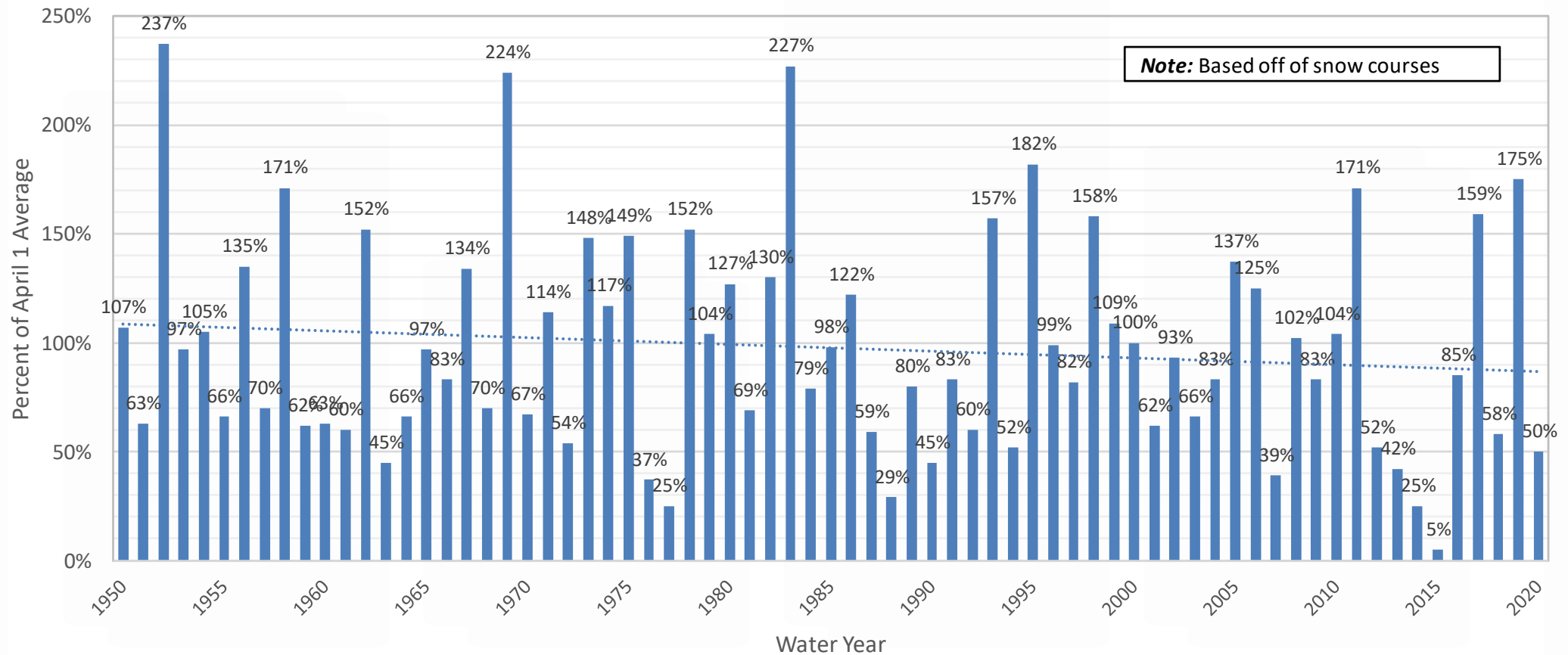
21st Century very warm,
with range of precipitation

Source: California Climate Tracker



CA Annual Temperature and Precipitation

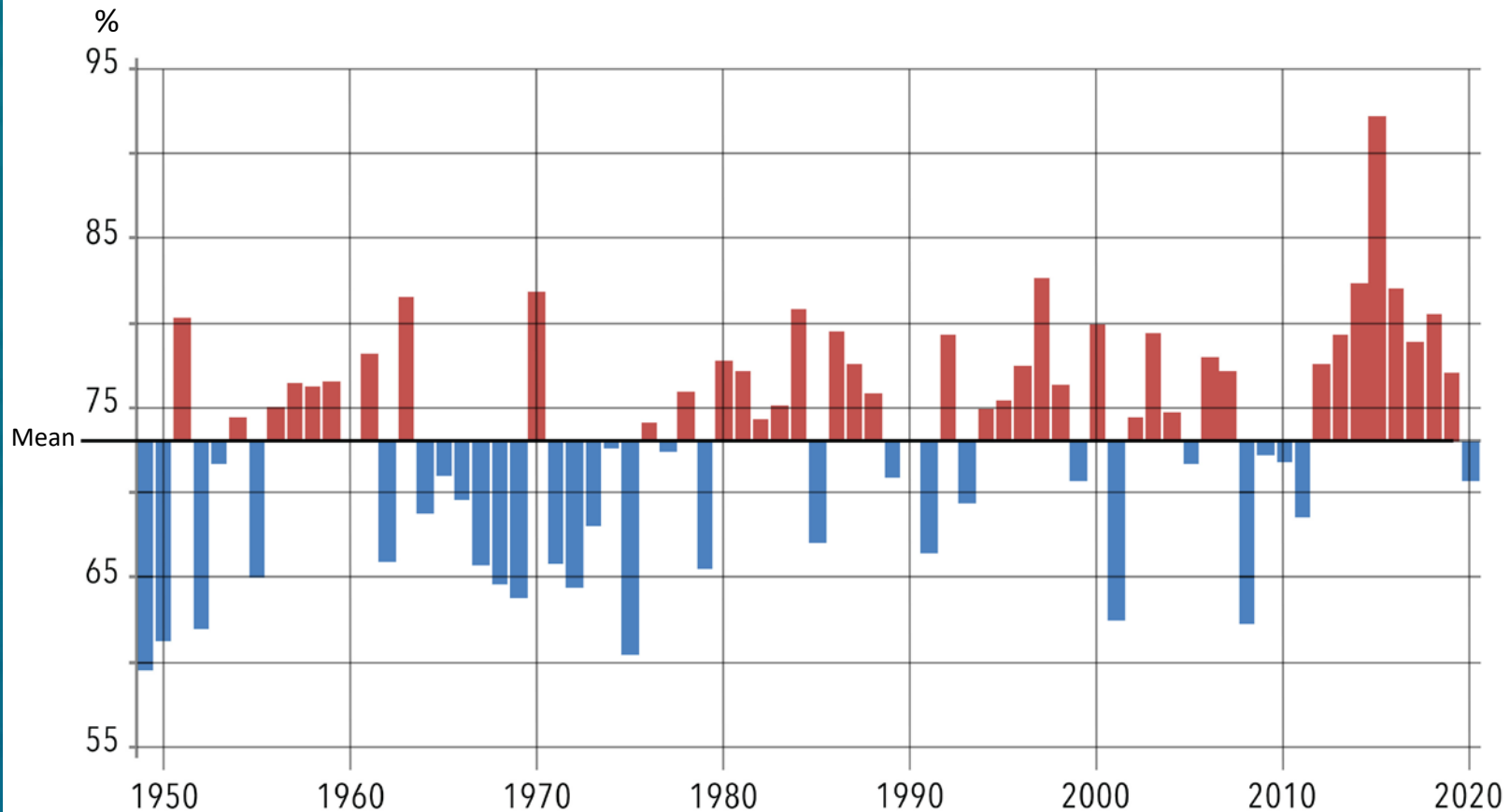
California Statewide April 1 Snow Water Equivalent



Source: California Cooperative Snow Survey Data



Proportion of Average Annual Precipitation That falls as Rain (Primary Water Supply Watersheds)



CA Primary Water Supply Watersheds

Source: California Climate Tracker

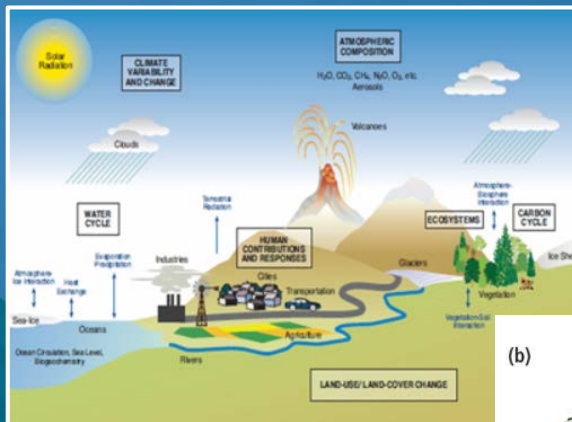




Source: [Wikimedia Commons](#)

Modeling Projections

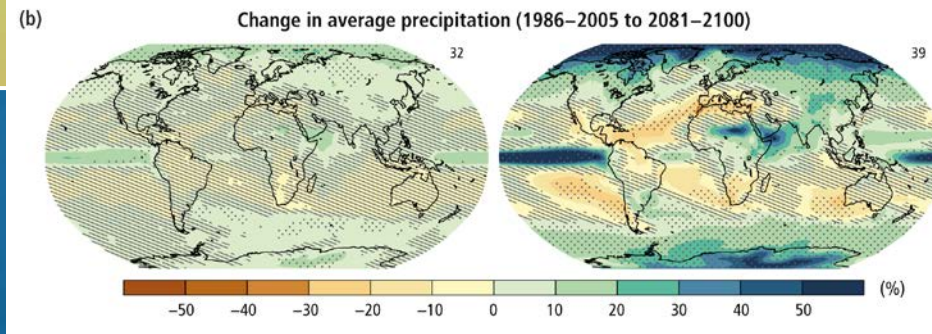
“GCM”: Global Climate Model or General Circulation Model



Source: [NOAA GFDL](#)

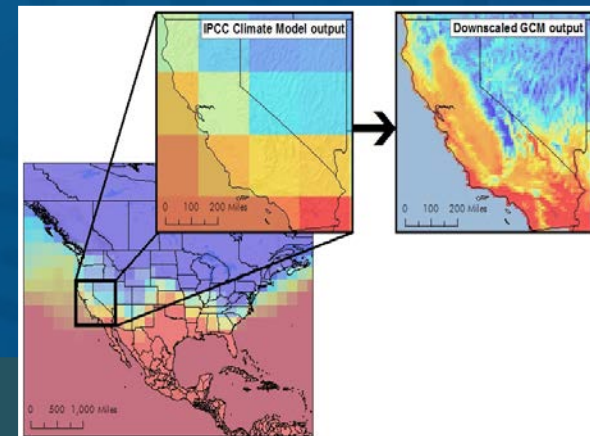
Complex ocean and atmospheric interactions represented by equations

Solves equations to show how climate may evolve in the future



Source: [IPCC AR5 Synthesis Report - Figure 2.2](#)

Regional features such as the Central Valley and Sierra Nevada are visible after downscaling

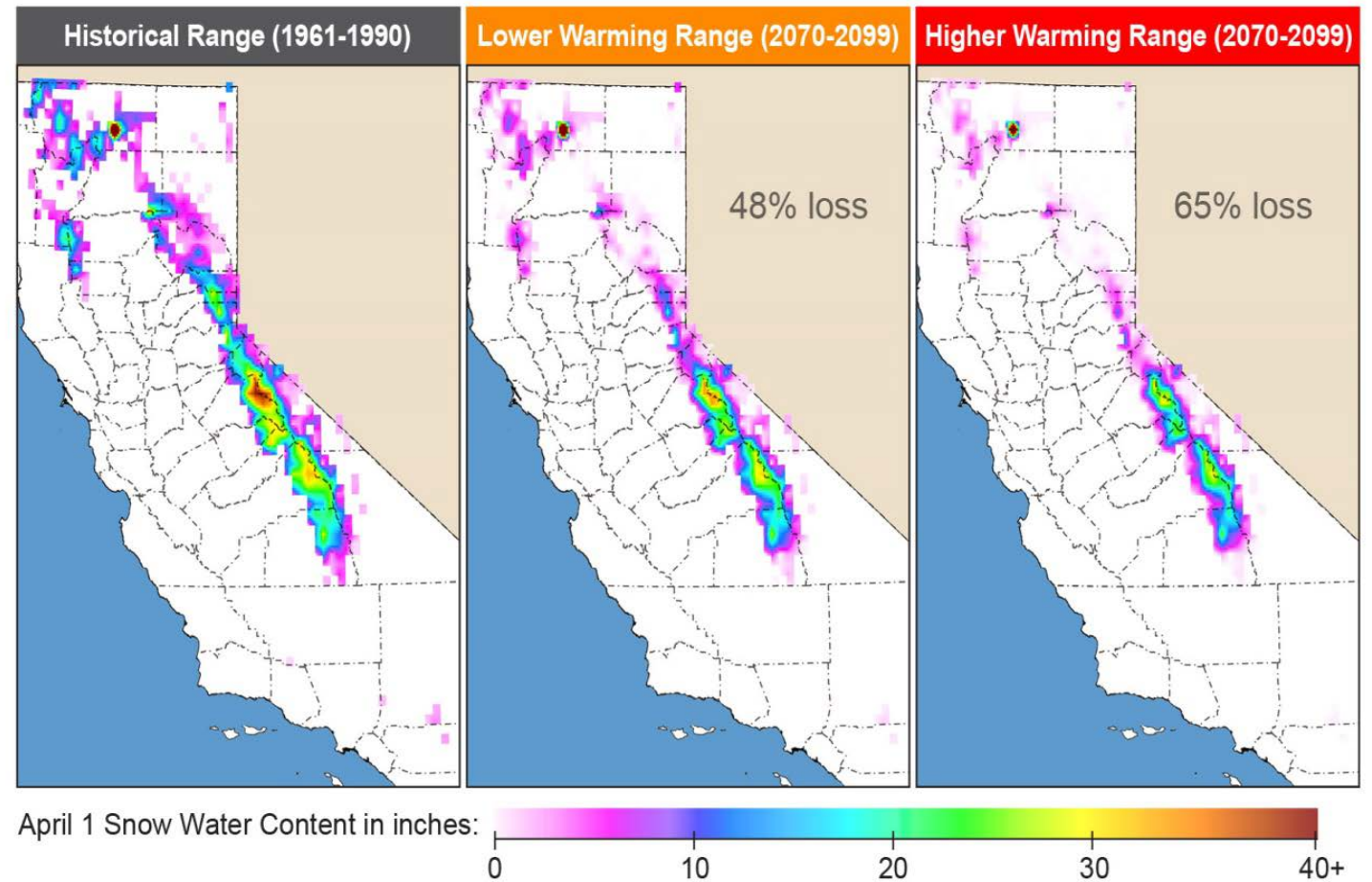


Projected Climate Changes

Snowpack and Water Supply

- 30-40% Reduction in Snow Water Equivalent across the Sierras by mid-century
- 65% Less snowpack by end of century
- Changed runoff patterns lead to less summer runoff
- 15-20% Lower soil moisture

Historical and projected California snowpack



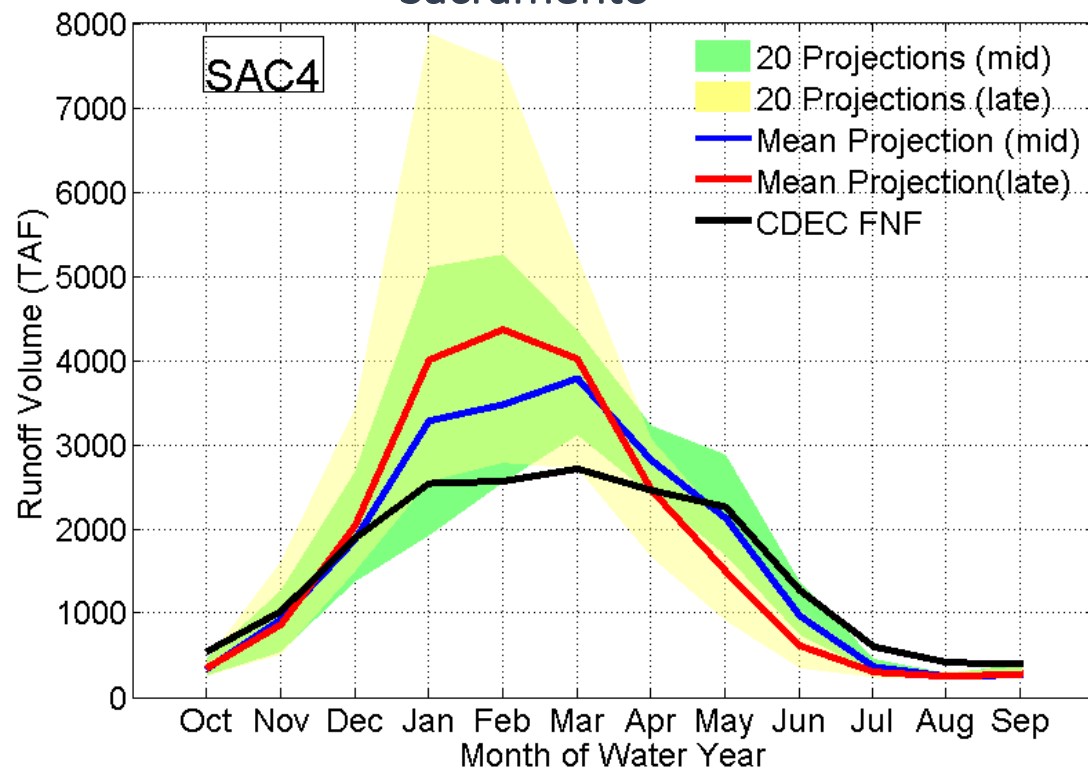
Source: *DWR California Climate Science and Data (2015) pg. 5*



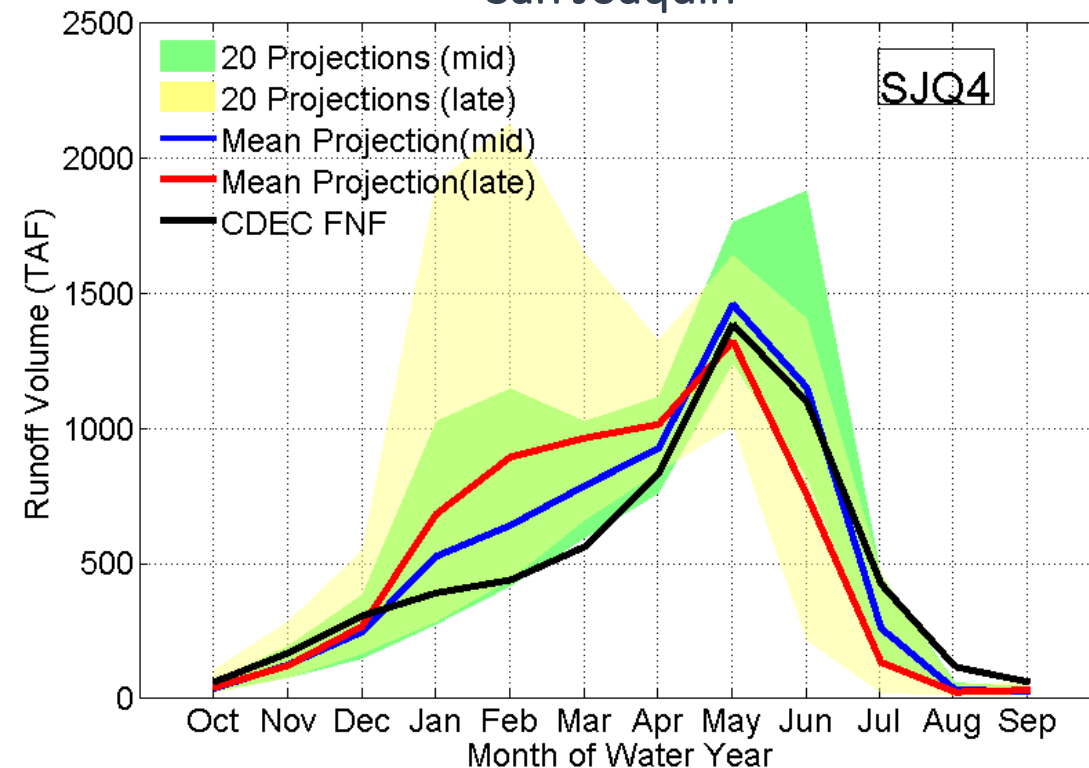
Projected Climate Changes

Streamflow

Sacramento



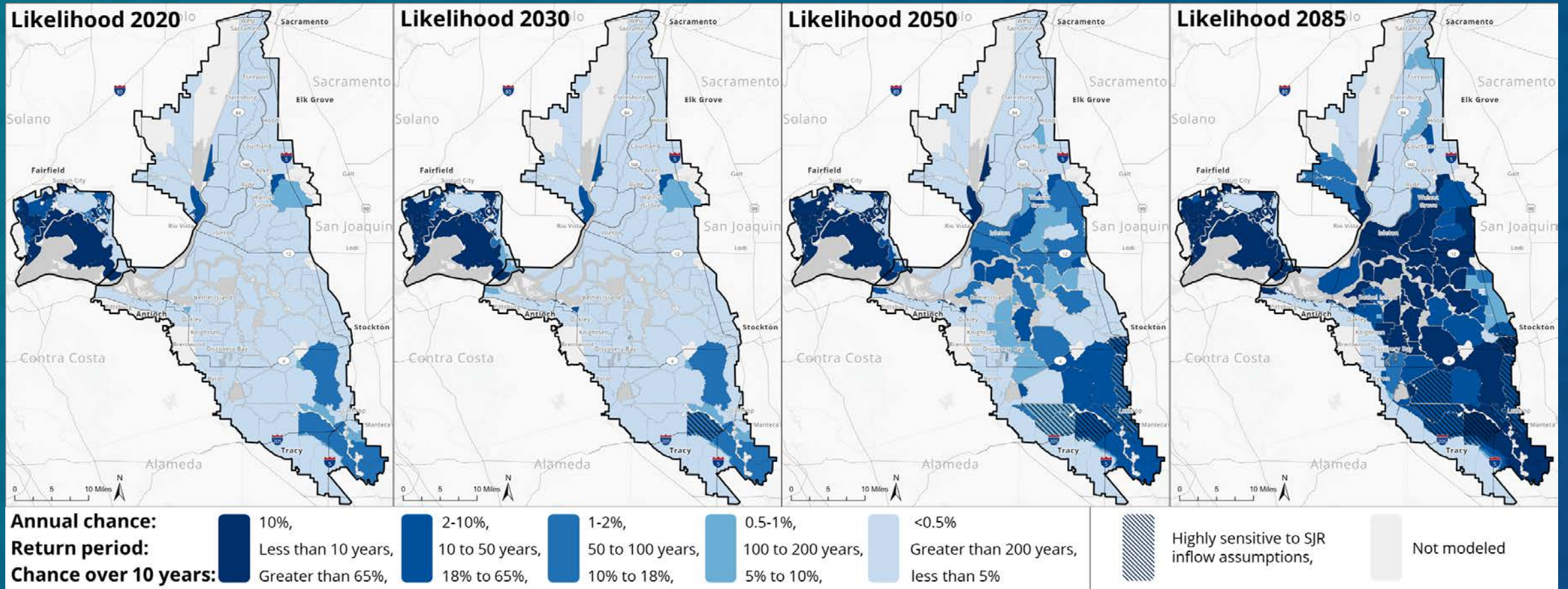
San Joaquin



Source: 4th California Climate Assessment; He et al. (2018)



Sea Level Rise and Flooding in the Delta



Response to Climate Change



The State's Response to Climate Change



- California's Climate Change Assessments
 - Outlines anticipated climate change impacts by 2100
- California Water Resilience Portfolio
 - More than 100 separate detailed actions to ensure California water systems work for our communities, our economy, and our environment.
 - Delta Conveyance Project and significant infrastructure upgrades
- State Adaptation Strategy
- Sustainable Groundwater Management Act
 - Manage groundwater basins sustainably



DWR Response to Climate Change

DWR's Climate Action Plan –

Phase I:

Greenhouse Gas Emissions Reduction Plan

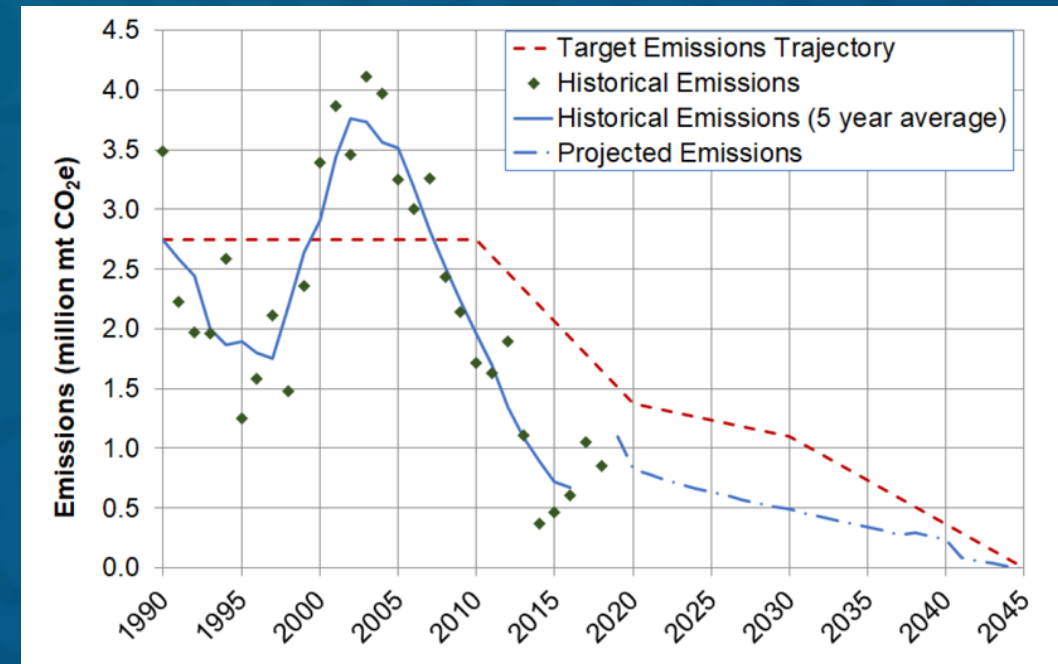
By 2030, reduce GHG emissions to at least 60 percent below the 1990 level.

By 2045, supply 100 percent of electricity load with zero-carbon resources and achieve carbon neutrality.

Phase II:

Consistent climate change analysis across all DWR programs

Establishes a screening and approach process for project managers to incorporate climate change impact analysis into DWR activities, including strategic planning documents, investment decisions, risk assessments, and infrastructure development.



DWR Response to Climate Change (*cont'd*)

DWR's Climate Action Plan –

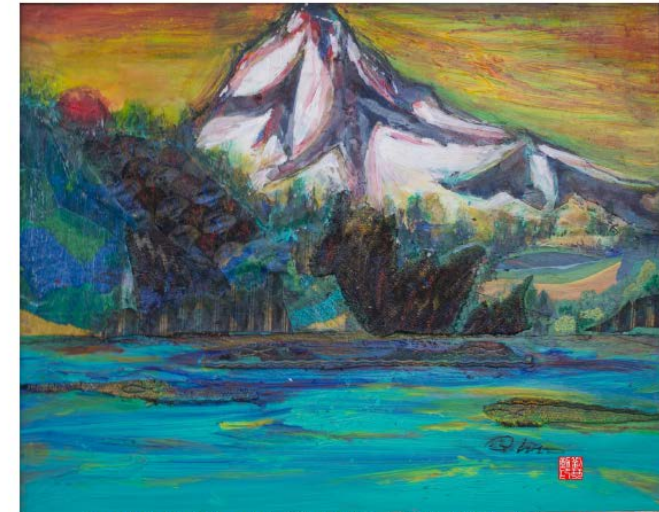
Phase III: Vulnerability Assessment and Adaptation Plan

- Wildfire
- Extreme Heat
- Sea Level Rise
- Long-term Persistent Hydrologic Changes
- Short-Term Extreme Hydrologic Changes
- Habitat and Ecosystem Services Impacts



Decision Scaling Evaluation of Climate Change Driven Hydrologic Risk to the State Water Project Final Report

A Collaborative Study of the Hydrosystems Research Group, University of
Massachusetts, Amherst and the California Department of Water Resources



"Snow White Mountains and Blue Watershed," Dr. Qingin Liu, DWR Climate Change Program, 2017

May 2019



Other DWR Response to Climate Change



- Operational and Infrastructure Improvements
- Watershed Studies
- Moving to Action
- Sustainable Groundwater Management Act Implementation
- Integrated Regional Water Management Planning





Water management flexibility is a key objective of DWR in order to adapt to climate change and the uncertainty that it brings.

Storing and moving water when it is available to meet water needs during dry periods has always been a key function of the SWP.



Questions



Delta Conveyance Project – Designed with Climate Change In Mind



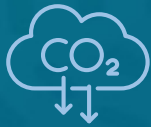
- Conservative design assumptions to ensure project is durable
- Considered hydrologic changes with climate change at 2085
 - Ocean Protection Council's 2100, H++ scenario for sea level rise, 10.2 feet at Golden Gate
 - Design elevations based on 200-year flood risk at 2085



How will Climate Change be Addressed in the EIR



Draft EIR addresses climate change:



- Analysis of air quality and greenhouse gas emissions looks at how the project might contribute to climate



- Hydrologic modeling considers future conditions with climate change

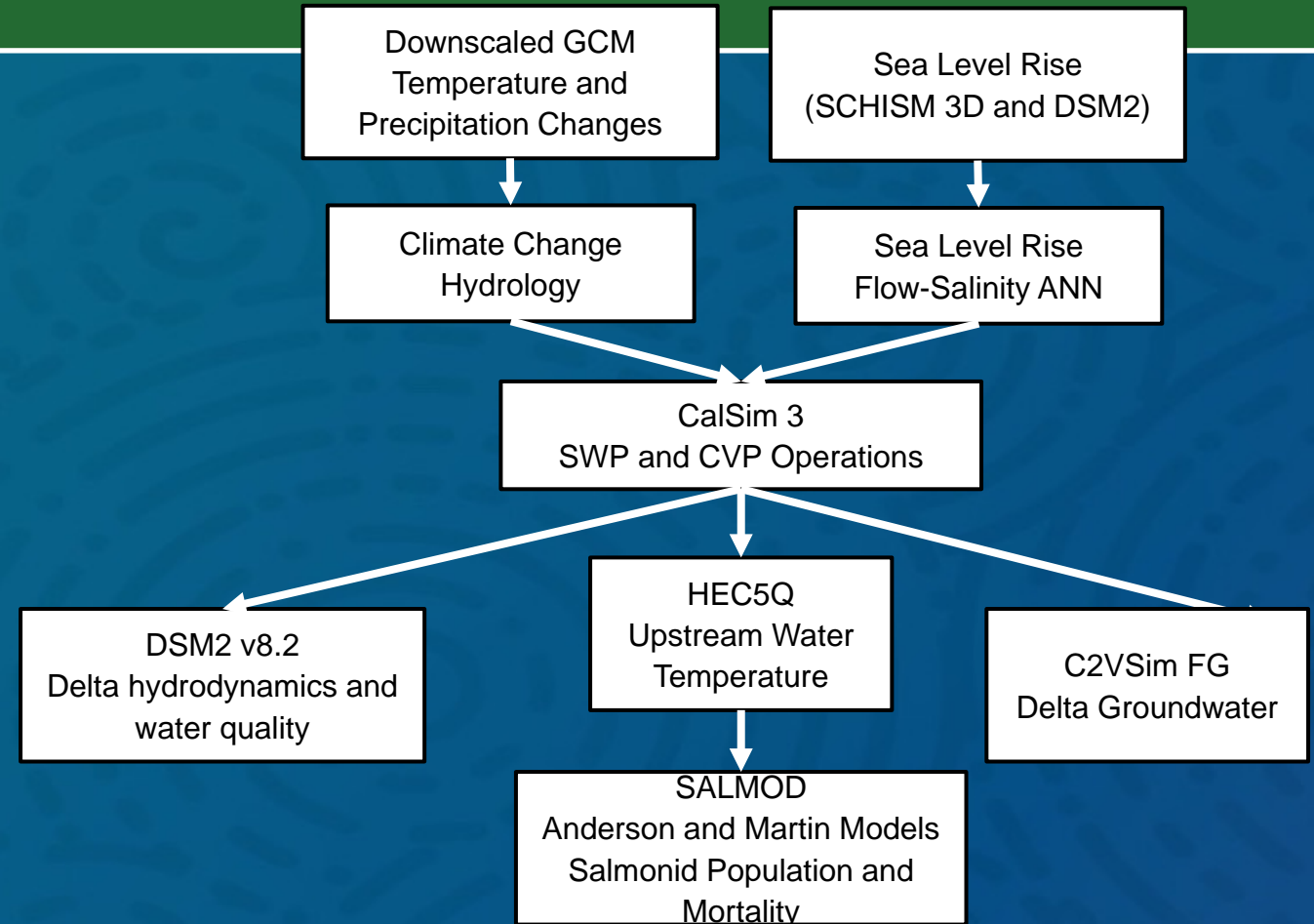


- How the project might contribute to climate resiliency



Climate Change Hydrologic Analysis Under Consideration

- No Project Alternative Analysis
2040 analysis of No Project incorporated across all resources
- Incorporation of specific climate change indicators (sea level rise, hydrological variables) into project designs
- Incorporation of climate change indicators into chapter on climate change

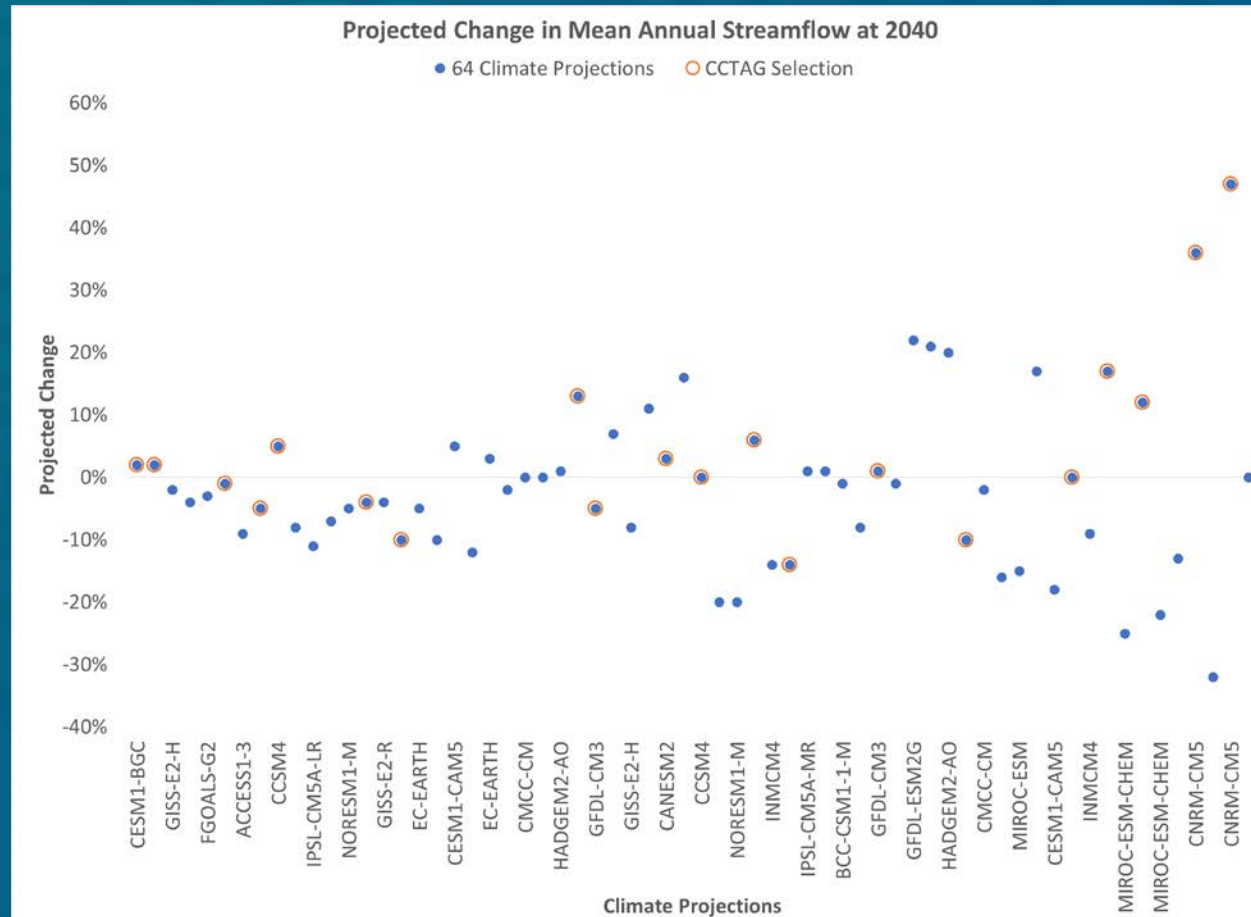


EIR Climate Change Modeling Parameters Under Consideration

- Time Horizon: 2040
- Primary models:
 - **Ten Climate Model Intercomparison Project 5 (CMIP5) global climate models and two greenhouse gas concentration scenarios (RCP 4.5 and RCP 8.5)** were used to develop 20 climate model projections
 - Projections were then downscaled to a 2040 (2026–2055) central tendency climate change scenario based **on temperature and precipitation projections** from the 20 model member ensemble
- Sea Level Rise: Ocean Protection Council's 2018 guidance for the H++ scenario (1.8 feet at 2040), an extreme (conservative) modeling scenario resulting from loss of the West Antarctic ice sheet
- Focuses on operations of the SWP and CVP
- Incorporated into the analysis of the future No Project Alternative in resource chapters (e.g., Water Quality)



Climate Change Modeling Assumptions Under Consideration



Climate Change Assessment

Purpose of Climate Change Assessment:

Address 3 fundamental questions relating to climate change:

- How could climate change impact the study area?
- How could impacts to resources in the study area be affected by climate change?
- How could the project affect the resiliency of the study area or California water resources?

Applied DWR Phase II Climate Change Analysis
Guidance (September 2018)

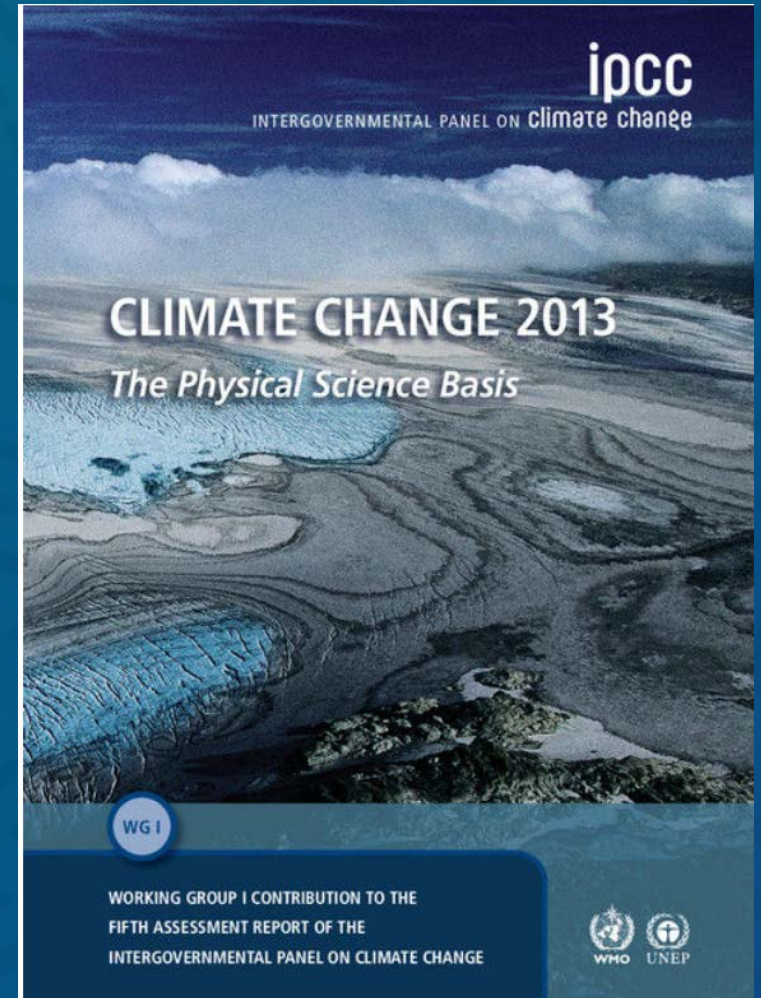


Best Available Science: Global Climate Trends

Intergovernmental Panel on Climate Change

Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change

- Comprehensive assessment of the basis of climate change science since the Fourth Assessment Report



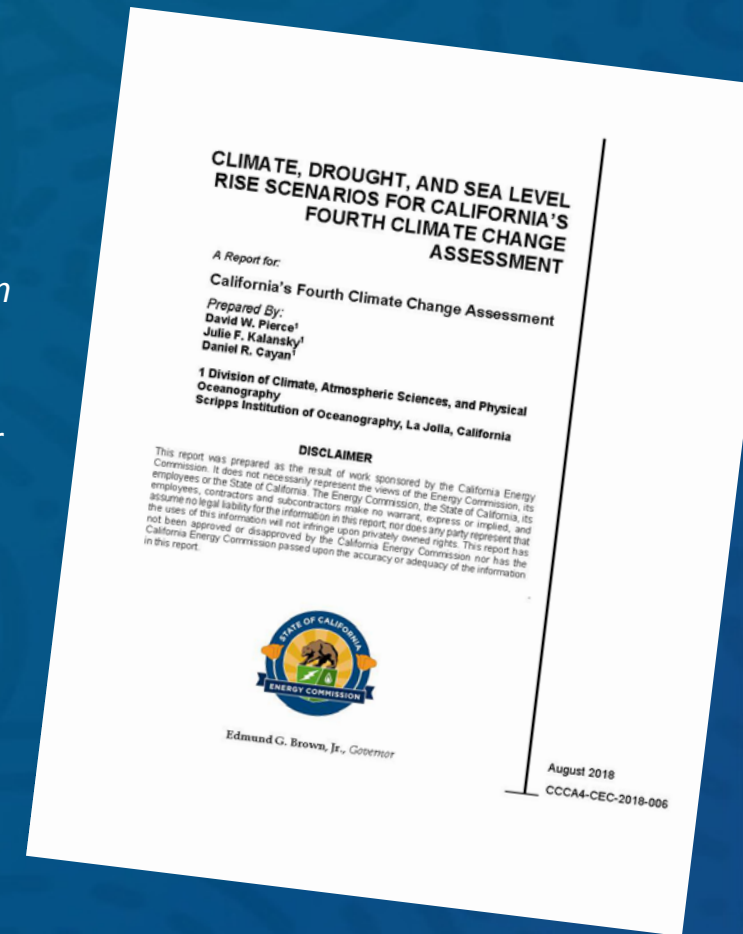
Best Available Science: Trends and Impacts for California and Proposed Project Study Area

California 4th Assessment

- Statewide Summary Report
 - High-level synthesis of the 4th Assessment
- DWR 2018 Studies for 4th Assessment
 - *Schwarz et al.: Climate Change Risk Faced by the California Central Valley Water Resource System*
 - Draws from historical record to assess risks to the California Central Valley System
 - *Wang et al.: Mean and Extreme Climate Change Impacts on the State Water Project*
 - Quantifies climate risks to State Water Project and Central Valley Project using water planning model, CalSim 3.0

Others

- *He et al. 2019 Potential Changes in Runoff of California's Major Water Supply Watersheds in the 21st Century*
- *Pierce, D.W., J.F. Kalansky, and D.R. Cayan. 2018. Climate, Drought, and Sea Level Rise Scenarios for California's Fourth Climate Change Assessment*



Climate Trends & Project Objective

Climate Trends in the Study Area

- Frequency and duration of drought increasing
- Water temperatures increasing
- Sea levels rising and sea water intrusion increasing
- Early Spring runoff increasing
- Snowpack decreasing

DCP Project Objective

Address sea level rise and climate change



Question 1:

How could climate change impact the study area?

- Will review recent trends and climate change projections at mid-century and end-of-century
- Will review expected climate impacts in the study area



Question 2:

How will the project's impacts to resources in the study area be affected by climate change?

- Will review NPA conclusions at 2040 for all other resources evaluated in the EIR (Terrestrial, Recreation, Noise) to assess reasonably foreseeable changes would be on existing conditions (which includes climate change)



Question 3:

How will the project affect the resiliency of the study area or its resources to climate change?

- Will review other resource chapters to assess how the region might be resilient to effects of climate changes with the project.



Questions



QUESTIONS



Via Zoom: Use Raise Hand feature



Via Phone: Press ***9** to **raise hand** and
***6** to **unmute**



QUESTIONS

00:02:00



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Upcoming Webinars

Environmental Justice:

Thursday, September 16, 2021 • 6:00pm – 8:00pm



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