### Moving science to action for the planet and all who live here.

# Design Thinking



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### Design is solving problems



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## Design Thinking process

creative thinking teamwork student responsibility



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## Design Thinking communication

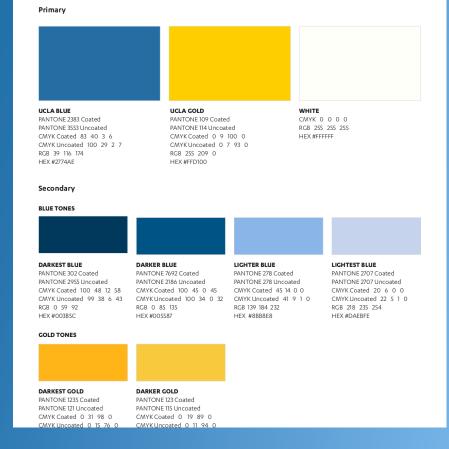
accessibility story telling aesthetics



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### **Color Palette**

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### **Color Contrast**

#### Brand Color Combination Charts

BRAND COLORS TO BRAND COLORS





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Design Thinking tools

Speaking Presentations Print Web

*Code Maps and dataviz Infographics Project Management* 



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# Speaking



#### SEPTEMBER 14 @ KLEVERDOG

Talk Web Design Acc

Web Design Accessibility, Performance and Aesthetics

### Guest

Scott Gruber, designer I developer

#### Schedule

Mix and mingle (pizza provided) @ 7:00pm Recorded talk @ 7:30pm Unrecorded Q&A @ 7:45pm More mixing and mingling @ 8:15pm onward

The free monthly FWD:labs Salon is for makers, do-ers, and all aspiring to become masters of industry.

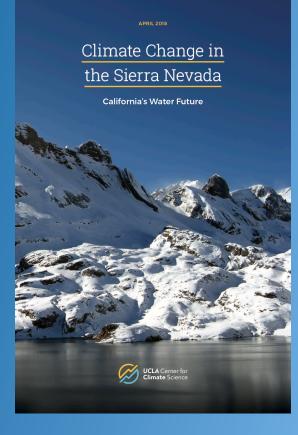
**FWD**:labs





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# Print





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### Print

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Contents 2 3 1 \_ How is California's Where will Why study climate changing? Sierra snow? warming happen? 2-3 6-9 10-15 5 6 4 \_ \_ \_ How will the How will the water How much could mitigation help? snowpack change? cycle change? 16-19 20-25 26-29 7 8 9

 
 What's different in extreme years?
 When will we feel the effects?
 What can California do?

 30-33
 34-37
 38-41

 
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 12

 What went into this research?
 What's next for the Center?
 References and Acknowledgements

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CLIMATE CHANGE IN THE SIERRA NEVADA

## Print

UCLA CENTER FOR CLIMATE SCIENC

Sierra snow is a critical California water resource. Our innovative techniques project future snowpack under climate change in a comprehensive and physically realistic way.



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### Web Tools

In this project, Dr. Alex Hall and our team at the UCLA Center for Climate Science undertook a comprehensive investigation of future climate in California's Sierra Nevada. The team used an innovative method they developed to produce fine-scale climate change projections. Unlike past studies, these projections take into account key physical processes that affect the rate of snow loss under warming. Using these projections, our team has answered key questions about the fate of the Sierra Nevada snowpack, a critical natural resource that not only supports an iconic ecosystem but also provides freshwater to millions of Californians.

Read the final project report | See our findings in graphic form

#### Context

Sierra Nevada snowpack is an important water source for California. It acts as a natural reservoir that holds water in frozen form until it gradually melts over spring and summer, flowing into manmade reservoirs and conveyance systems. Past studies have shown that in the future, global warming is expected to shrink the Sierra snowpack. If California is to adapt to these changes, we need to know the specifics; How much warmer will it get? Just how much snow will we lose overall? How much earlier does snow melt and run off? Do soils dry out faster after snow has melted? Are all elevations and all watersheds affected to the same degree? If we act to reduce greenhouse gas emissions, can we prevent these changes?

The scientific challenge

IOES CONTRIBUTORS

Alex Hall Neil Berg Daniel Walton Xingying Huang Katharine Davis Reich

RELATED ARTICLE



New report on climate change in the Sierra Nevada shows need for human adaptation





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RESEARCH PROJECT

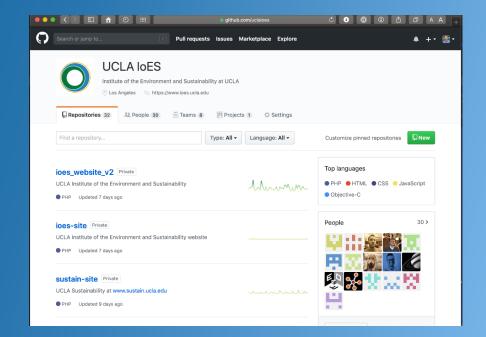
Nevada climate, water

Q

#### 



## Sharing Code





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### Infographics

#### How is California's climate changing?

The Sierra Nevada is one of California's most beloved natural treasures and mountain snowpack is a key water resource for much of the state. As climate change continues to warm the atmosphere, what will become of the frozen reservoir we depend on? To investigate, UCLA's Center for Climate Science created high-resolution projections of future climate in the Sierra. Here is a snapshot of our findings.

> The Sierra Nevada region covers only a quarter of the state's land area yet provides 60% OF CALIFORNIA'S FRESH WATER

Carried across the state, this water serves 23.000.000 PEOPLE in communities in the mountains, valleys, and as far as coastal cities of San Francisco. Los Angeles, and San Diego.

levels of greenhouse gas emissions our "Business as Usual" scenario shows by the end of the 21st century we can expect

our "Mitigation" scenario shows by the end of the 21st century we can expect:



64%

drop in average

snowpack volume



rise in average springtime Sierra

temperature





The Sierra Nevada elevations most vulnerable to climate change are 5,000-8,000 FEET

This is where snow albedo feedback is occurring - a cycle of amplified warming and snowmelt due to loss of reflectivity. Our project is unique in taking this effect into account



Find more on this project: www.ioes.ucla.edu/project/climate-change-sierra-nevada



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OUCLA IOES WCLA Center for Climate Science

During the 2011-2015 drought,

uman-caused warming

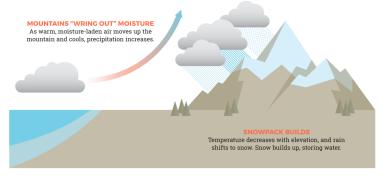
educed Sierra Nevada

snowpack levels by 25%.

## Infographics

#### How the Snowpack Accumulates

In winter, moisture-laden air from the Pacific moves eastward. When it rises over the mountains, it cools rapidly and releases precipitation. Above the freezing line, precipitation falls as snow, and the greatest snowfall occurs at the highest elevations.



www.ioes.ucla.edu/project/climate-change-sierra-nevada ©2018 UCLA Center for Climate Science



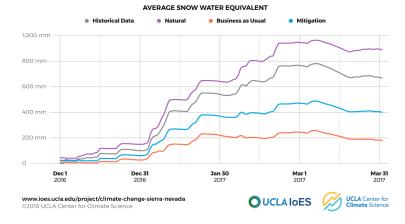


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## Infographics

#### Impact of Climate Change on Wet Year Snowpack

This graph shows average Sierra snowpack during 2016–2017 as it actually occurred (gray line), as it would have occurred without climate change (purple line), and as it would occur at 2081–2100 under Business as Usual (red line) and Mitigation (blue line).





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### Project Management

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### **Critique and Feedback**

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What did I enjoy about this design and why?

What concerns me about this design and why?

What does this design remind me of and why?



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Critique and Feedback

Dispassionate Respect Lacking Authority Justify Impressions and Concerns



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## We know the problems—it's time for solutions.



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# Thank You

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