

# Water Resources

Smart Management through Machine Learning



# Presenting

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# Agenda



# **Climate & Water in the Southwest**





## Today in Water

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### Exclusive: Experts say the term 'drought' may be insufficient to capture what is happening in the West



By [Ella Nilsen](#), CNN

Published 7:00 AM EST, Wed February 16, 2022

### Empty canals, dead cotton fields: Arizona farmers are getting slammed by water cuts in the West

PUBLISHED SUN, APR 3 2022 8:00 AM EDT



Emma Newburger  
@EMMA\_NEWBURGER

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### Drought threatens Rio Grande levels, again



by [Danielle Prokop](#)

March 1, 2022



BY EMILY HOEVEN  
MARCH 16, 2022

### Southern Nevada water supply faces Colorado River restrictions

Creative strategies needed to address long-term shortages, say three University of Nevada, Reno professors

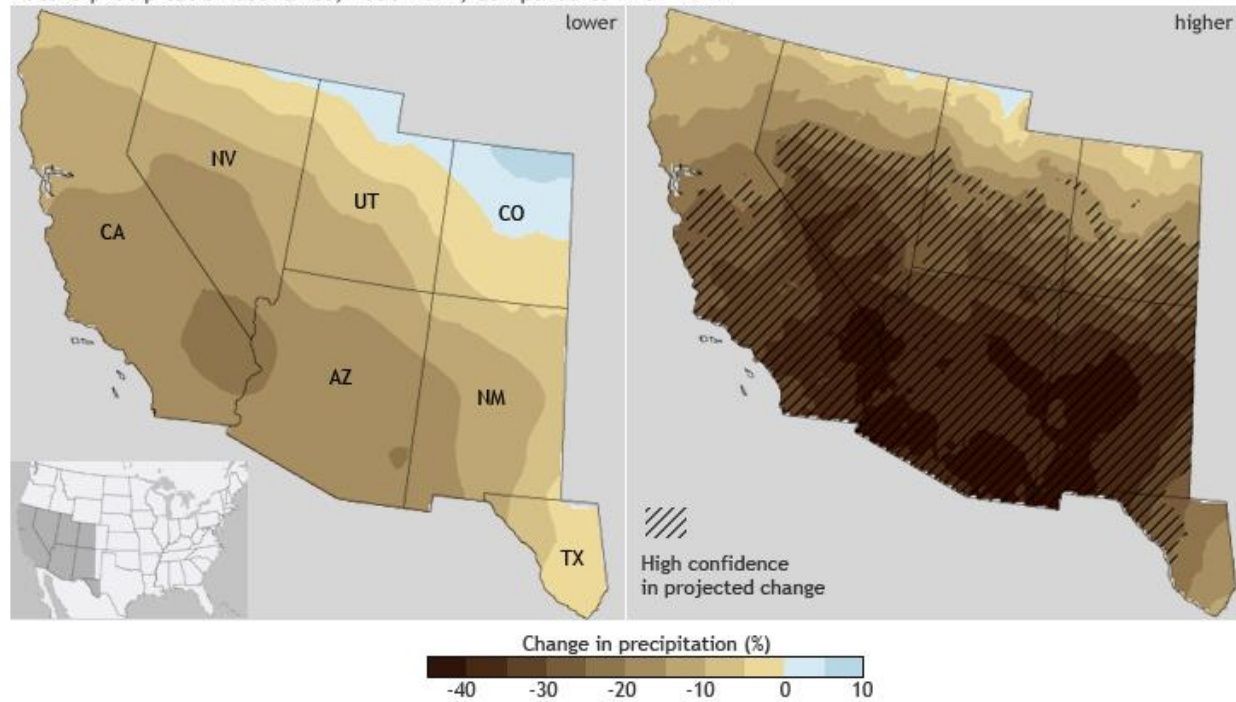
March 16, 2022

[Mike Wolterbeek](#)



Climate and Water

Future precipitation scenarios, 2080-2099, compared to 1961-1979



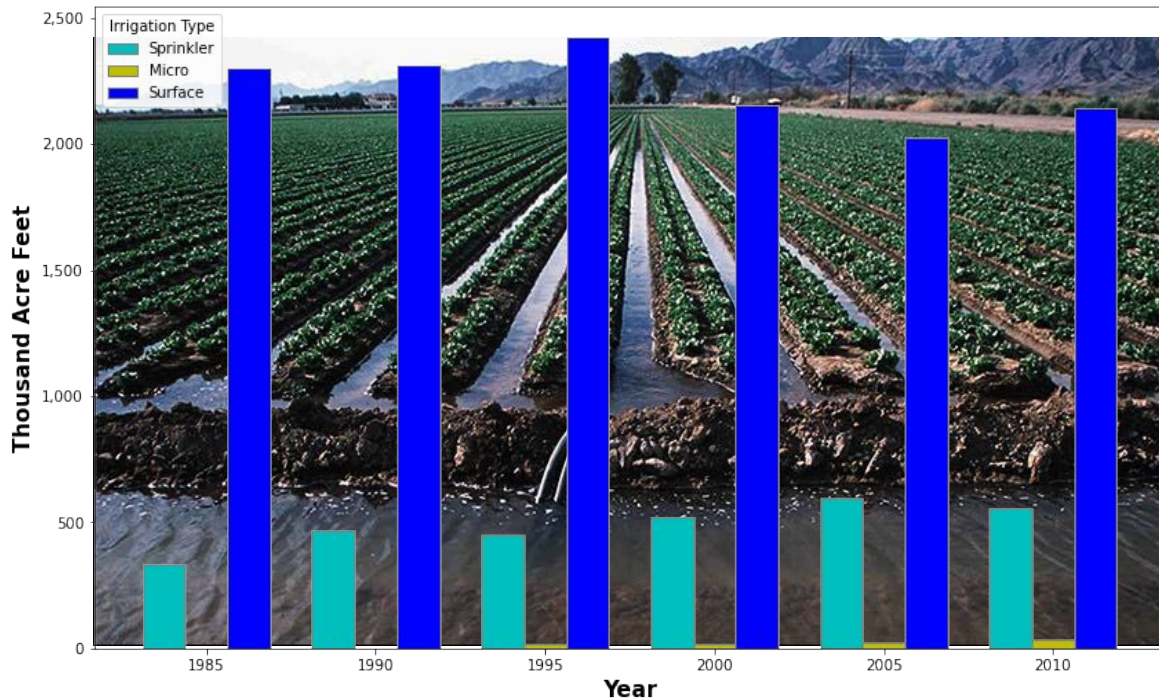
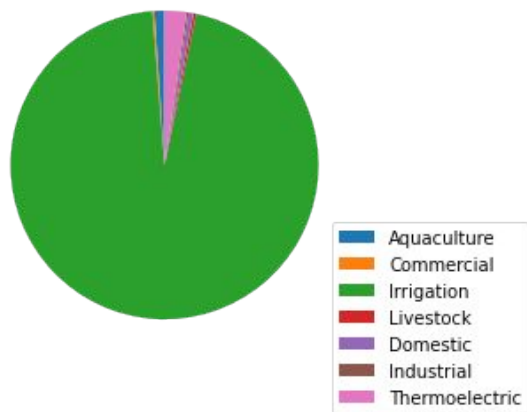
# **The Water Resource Problem**





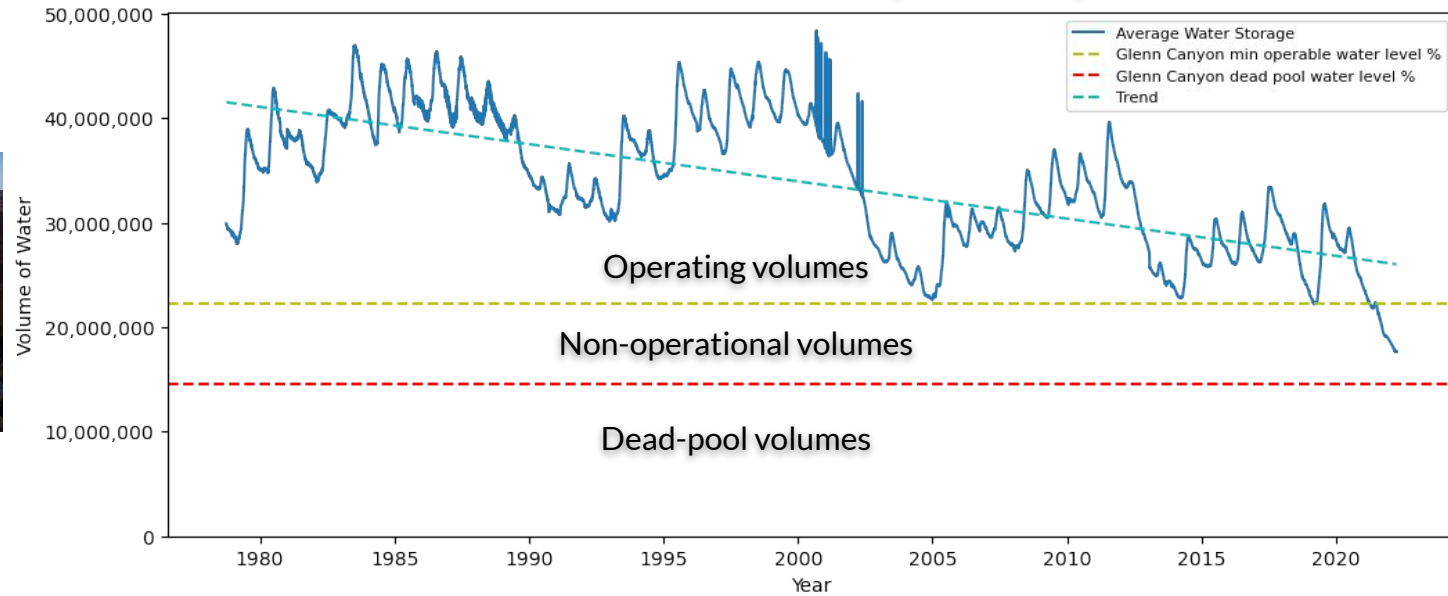
# Where does the water go?

Water Usage by Industry





## Total Water in CRB between 1976 & present with predictions



Glenn Canyon Dam



# Data Collection

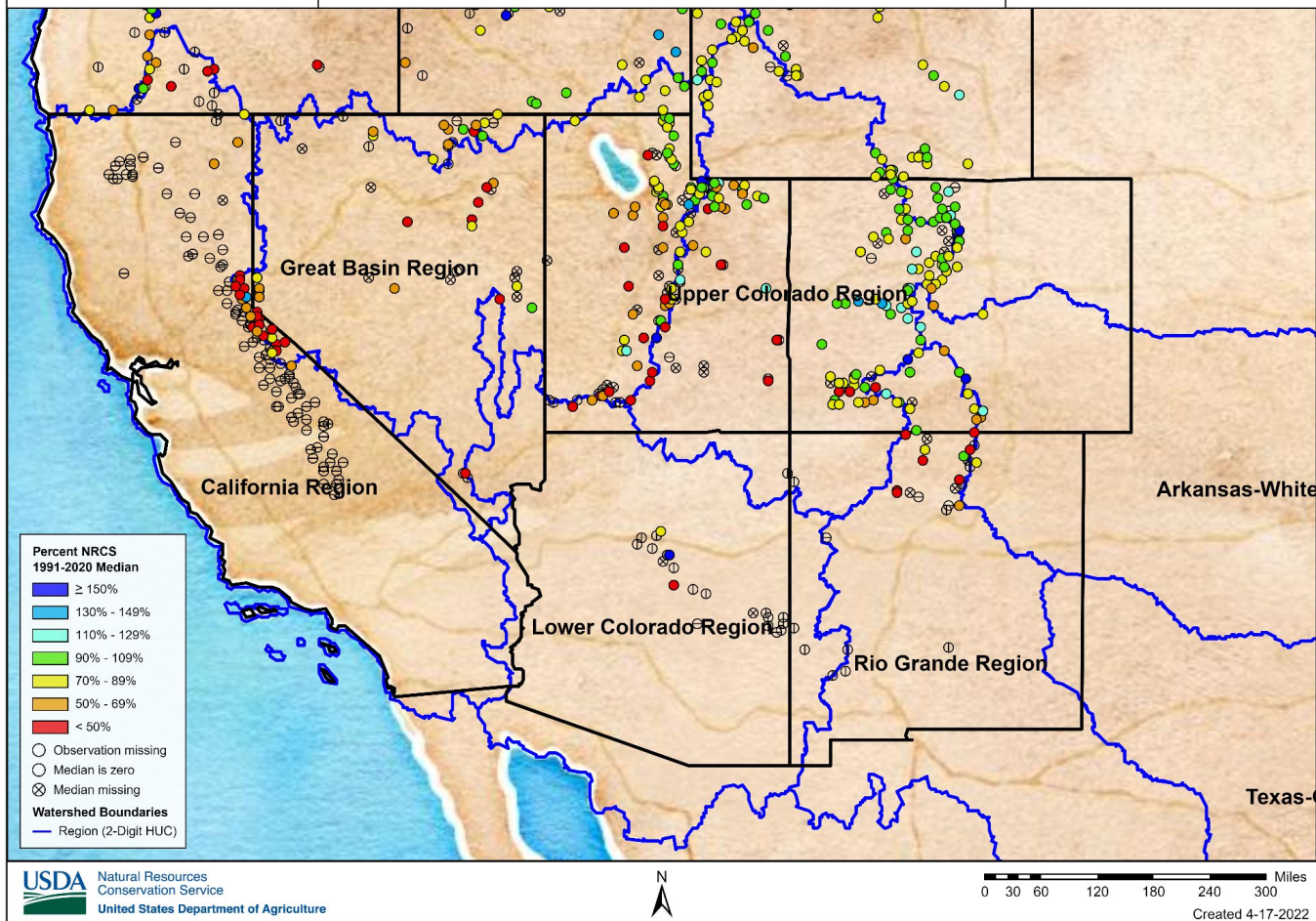


Snow Water Equivalent

## Snotel Stations

Percent NRCS 1991-2020 Median

April 16, 2022, end of day



Data Collection



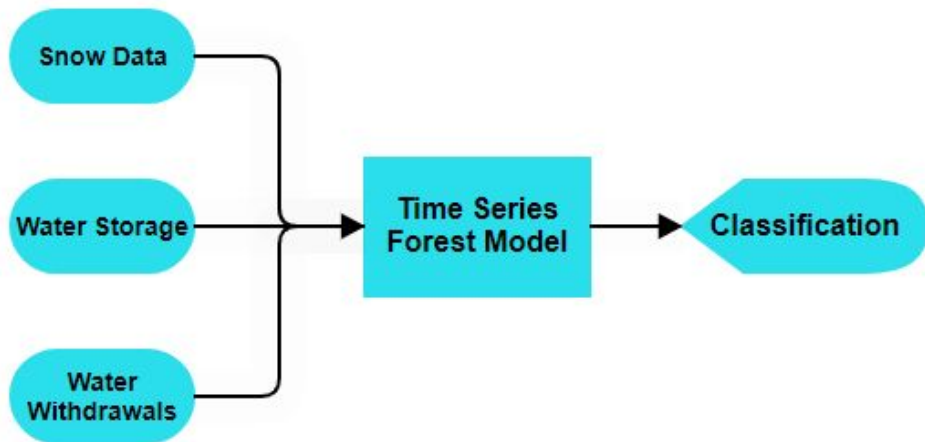
# Machine Learning

Using predictive models to drive regulatory policy



# Machine Learning

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Accuracy: 97.2%

Identifies between:

- Operational water depth
- Non-operational water depth
- Dead-pool water depth



# Future Considerations

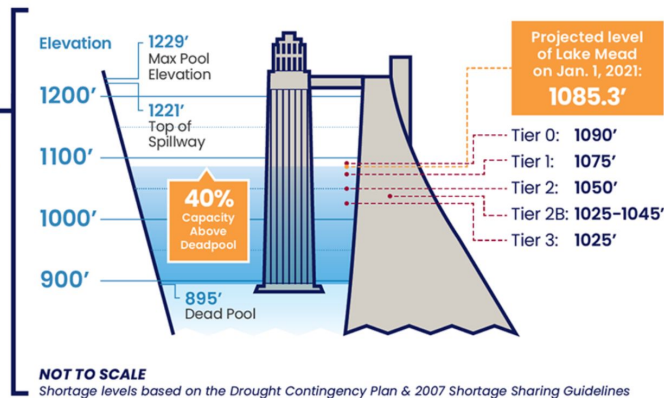




# Future Considerations



## 24-Month Study – Lake Mead August 2020



### Specificity and Customization

- Grouping by downstream reservoir
- Applying model to new basins
- Prepare model classification based recommendations for management



**Thank you.**

