The Future of Water Management

The two maps show deviations from average precipitation and snowpack, illustrating the pattern of drought.
Life beyond the 100th meridian
Our state’s water system was designed a generation ago for a state half its current size.
“It’s a different world...we have to act differently”
-Governor Brown
California’s water industry isn’t wired to adapt to climate change. With 1,000’s of local water agencies, digital integration is necessary so California can adapt to an uncertain future.
What is the California Data Collaborative?

● Launched Jan 2016 by water agencies for water agencies.

● Goal: Leverage modern data science to ensure water reliability

● Powered by ARGO, a 501(c)3 public data infrastructure non-profit
SCUBA

Strategic California Urban water Analytics
“We not only have the opportunity to collaborate on tools and research we develop together, we have the chance to partner with talented and innovative stakeholders from around the world to assist us in using data to make better water management decisions.”
— Elizabeth Lovsted, Director of Water Supply Planning, EMWD

Physical infrastructure to tap into new water resources

Digital infrastructure optimizing existing water resources
Supporting water managers into an uncertain future

Efficiency Explorer v1.2

Scenario Builder

Supplier

Moulton Niguel Water District

Residential Efficiency Goal: 29453.42 AF
Residential Use: 19005.21 AF
Efficiency: 10448.21 AF within goal in this scenario | -35%
Data Quality: Useful first approximation
Multiple benefits: modeling water rates
$20 million

Amount ARGO’s platform saved Moulton Niguel Water District by improved water demand forecasting
Case Study: Snowpack
Climate change

Future

- Early Winter
- Late Winter/Early Spring
- Summer

Chart showing the relationship between precipitation, runoff, demand, and months from October to September.
Real time estimation of snow over the Sierra Nevada
Gonzalo Cortés - UCLA
Snow simulations (from model) are conditioned on observed data from satellites. Result are historical spatial estimates of SWE for 1984-2017 (Landsat era), constrained by observed data.
Historical Sierra Nevada reanalysis + real-time model implementation:

Real-time water resource availability

Real time California-wide assessment of all different types of storage.
Case Study: Stormwater
Climate change

Future

- Early Winter
- Late Winter/Early Spring
- Summer

Graph showing variations of precipitation, runoff, and demand over the months.
Multiple benefits: mapping urban drool
Case Study: Lawns!
Climate change

Future

- Early Winter
- Late Winter/Early Spring
- Summer

Graph showing the relationship between precipitation, runoff, demand, and seasons:
- Precipitation peaks in late winter/early spring and falls in summer.
- Runoff follows the pattern of precipitation.
- Demand peaks in summer and is influenced by precipitation and runoff.

Months:
- Oct
- Nov
- Dec
- Jan
- Feb
- Mar
- Apr
- May
- Jun
- Jul
- Aug
- Sep
Survey

- Using Google Street View, virtually walk every street in the study area, creating a record for any front yard where a lawn is not the primary landscape type.

- Also record data for front yards with lawns when the secondary landscape type is drought-tolerant.

- Geocode each record, generating a latitude and longitude for each address.
Parcel level landscape area data across CA
Market transformation is a generational process that requires ongoing measurement.
Find out how much you could save with California native plants.
Thanks! Reach out @patwater
Business model: quasi-governmental nonprofit managing California’s water usage data like a utility

bit.ly/manage_data_like_water