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# Improving Climate Models Can Help Ensure Better National Security Response to Drought and Extreme Weather.

Chase Dean Harward
*Utah State University*

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Chase Dean Harward | *Utah State University*

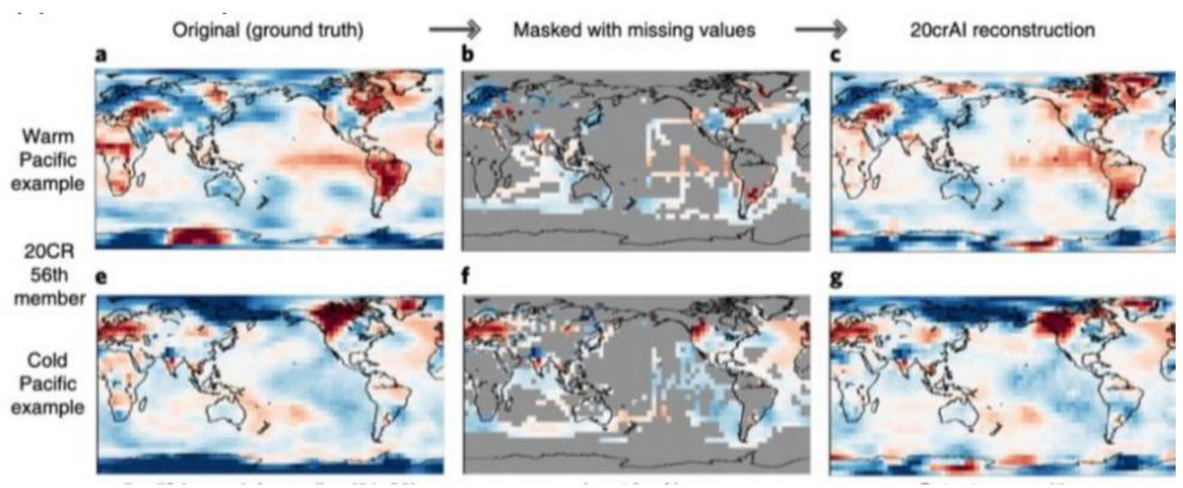
*Dr. Jeannie Johnson* | *Utah State University*

UtahStateUniversity®

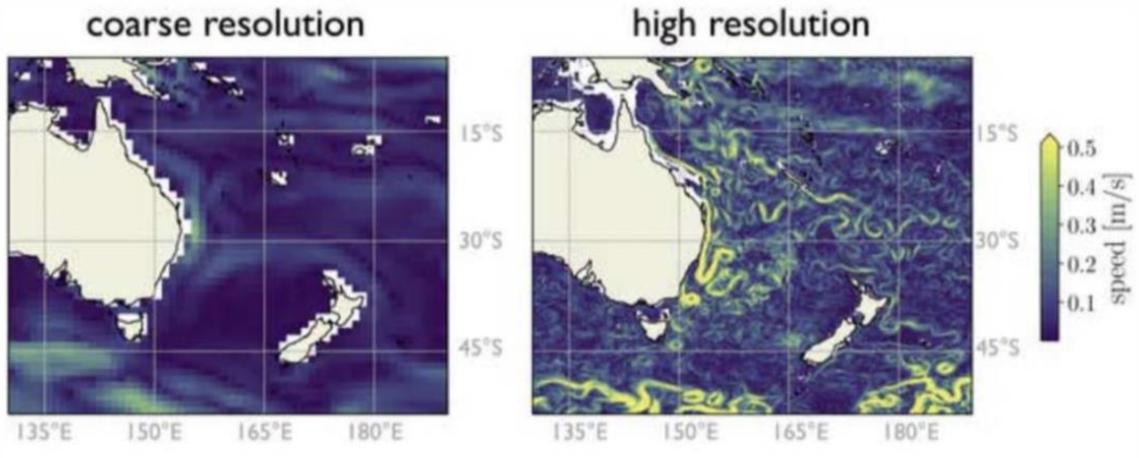
## Using AI to predict the future

- Machine learning is form of artificial intelligence that looks for patterns in existing datasets to **predict future data.**
- It has a useful application for **climate modeling**, which is still limited in forecasting and suffers from a lot of missing data.
- ODNI, DOD, and DHS use climate models for **national security** assessments.
- Using machine learning to improve climate models will help policymakers **better prepare for and mitigate risk** of climate-related droughts, extreme weather events, and mass migration.

## Machine learning reconstructs missing climate data




## Comparison of current model vs. actual weather system



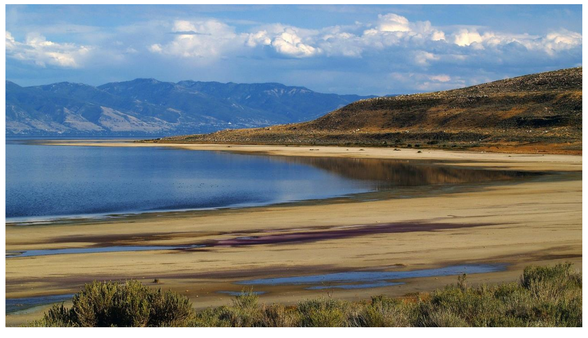

## Most valuable machine learning benefits

- **Improved accuracy of regional climate models**
  Current models provide estimations that lack granularity at a regional level.
- **Recreates observational climate data gaps**
  Missing historical climate data and collection limitations leave data gaps.
- **Highly accurate seasonal weather predictions**
- **Outperforms currently available computational models**

## Climate modeling can help policy makers adapt to change

Integration of machine learning-based climate models provides policymakers with improved and actionable estimates for multiple indicators of interest as both state and federal officials put together plans to help Utah and the United States adapt to and mitigate the inevitable change in regional and global climate.

- Number of **climate-induced mass migrants** likely to immigrate to the United States.
- Severity of **drought or heatwaves.**
- Severity of extreme weather events such as **high winds and intense storms.**
- Next step is for policymakers to work with US modeling centers and incorporate machine learning into their climate models.



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