

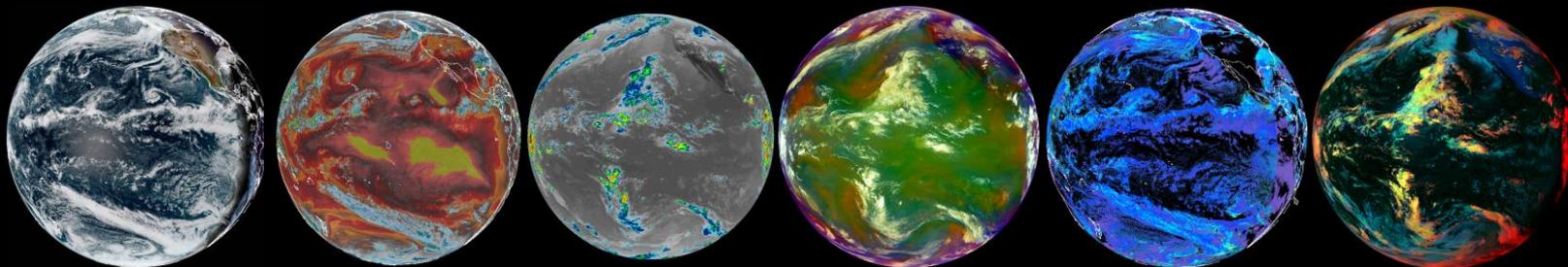


Solar Intelligence Services

Day-Ahead Solar
Forecasting Prize



U.S. DEPARTMENT OF ENERGY



Nimbus AI GOES-17 multispectral profile

Nimbus AI Team



Geoff Galgon, PhD
CEO & COO



Peter Sadowski, PhD
Chief Analytics Officer

Assistant Professor
UH Computer Science



UNIVERSITY
of HAWAII
MĀNOA

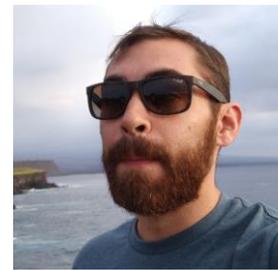


Giuseppe Torri, PhD
Chief Science Officer

Assistant Professor
UH Atmospheric Science



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of HAWAII
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Kyle Hart
Systems Lead

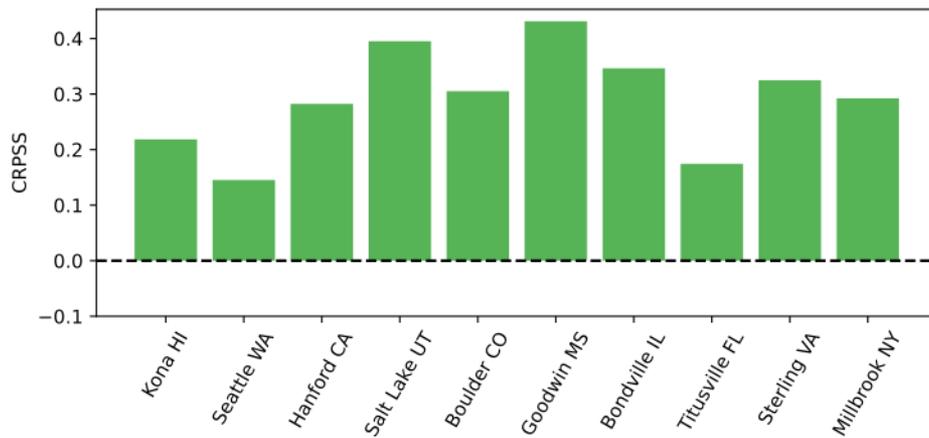
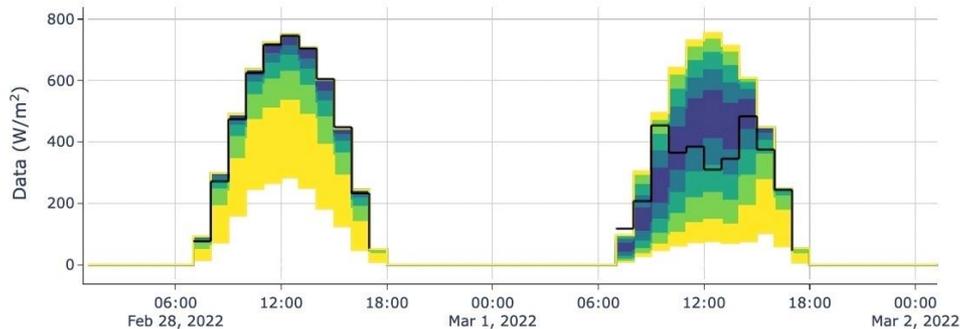
UH Staff Scientist

Solar Forecasting Prize Modeling Team

Forecasting Prize: Performance



- Model approach **much better** than baseline:
 - Only competitor to beat baseline at all sites.
 - Lessons learned throughout the competition led to increased final model performance.





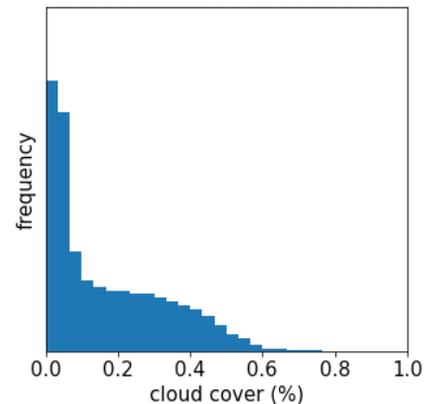
Forecasting Prize: Lessons Learned

Probabilistic Forecasting

- Use CRPS or other **proper scoring** to discourage hedging
- Model densities should reflect spatiotemporal **structured uncertainty**.
- Real dispersion characteristics **are not captured** by NWP ensembles.



Estimated Cloud Cover: wet season



NWP (GFS) Variables

- GFS **input variable selection** is important.

Geography & Clear-Sky Model Inputs

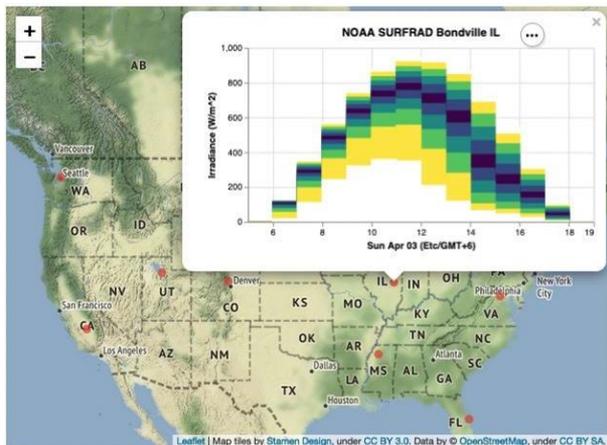
- Clear-sky models under/over-estimate irradiance by as much as 10%.



Future Plans: Forecasts Commercialization

Probabilistic day-ahead forecasting across the Americas and Pacific

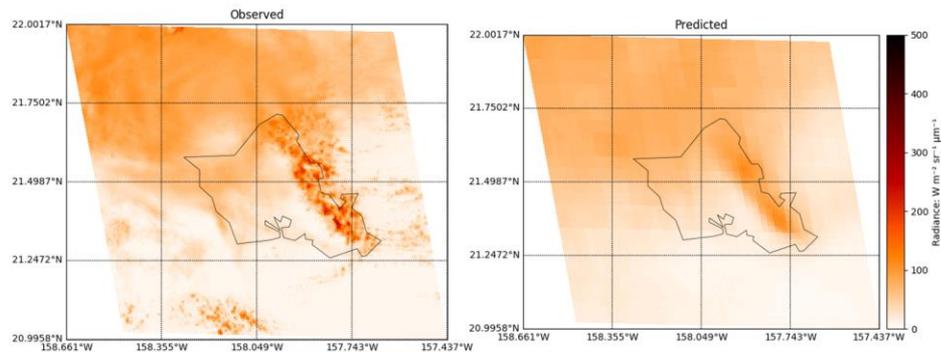
- API-based probabilistic forecasting for contiguous US in Q3 2022. Electricity market participant focused.



Solar Forecasting Day-Ahead Dashboard:
Forecasting Prize Sites

Nowcasting services

- ML-based nowcasting: 10–60+ minute time horizon.



Observed vs. Nimbus AI 60-min nowcasts: Island of O'ahu

Thank you

Contact: geoff@nimbus.solar

