Monica G. Bobra

Principal Data Scientist

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Summary

I lead teams to develop novel predictive models that improve safety, sustainability, and decision-making. I develop equitable and feasible data science policy. I provide expertise by publishing papers, giving talks, briefing legislators, organizing conferences, developing new communities, mentoring students, and serving on committees and boards.

Education

University of New Hampshire, Durham NH
M.S. Physics
JANUARY 2010

Boston University, Boston MA
B.A. Astronomy
B.S. Communication
MAY 2004

Skills

Python scientific software stack

Machine learning model development together with interpretability tools

Statistical modeling

Cloud computing

Data visualization

Policy analysis

Clear and simple storytelling

Awards

Robert H. Goddard Exceptional Achievement for Science Award (2024)

NASA Group Achievement Award — SunPy Development Team (2024)

American Astronomical Society Solar Physics Division Popular Media Award (2021)

NASA Group Achievement Award — Solar Dynamics Observatory Team (2017)

Robert H. Goddard Exceptional Achievement for Science Award (2016)

NASA Space Grant Fellowship (2008 - 2009)

NASA Group Achievement Award — Hinode Team (2007)

Experience

State of California, Office of Data and Innovation / Principal Data Scientist
MAY 2023 - PRESENT, SACRAMENTO & SAN FRANCISCO BAY AREA, CA

Serving as the data science methodology expert for the State of California as appointed by Governor Newsom

Leading data science teams with partner departments across the state to develop predictive models that improve safety, sustainability, and decision-making; for example, working with the California Air Resources Board to automatically detect landfills with methane emissions that exceed regulatory limits

Effectively translating academic research to improvements in operations across the state; for example, working with the Stanford Doerr School of Sustainability and the California Department of Water Resources to deploy novel instruments to measure changes in groundwater storage

Stanford University / Research Scientist
APRIL 2010 - JULY 2021, STANFORD CA

Published several first-author studies and presented talks about using petabyte-scale, multi-spectral image data taken by NASA observatories, together with novel machine learning algorithms, to predict space weather and its impact on society

Led two teams to predict space weather using machine learning methods as acting PI of NSF and NASA grants ($1.8M total award)

Wrote federal science policy as a member of the National Academy of Sciences Heliophysics Mid-Decadal Committee (2020)

Led the development of open source software as Vice-Chair of the Board for SunPy, a founding member of the Python in Heliophysics community, and an editor for the Journal of Open Source Software

Led a culture of open scholarship at Stanford Data Science as a founding member of the Center for Open and REproducible Science

Served as a member of the science team for a NASA Heliophysics flagship mission, the Solar Dynamics Observatory

Harvard-Smithsonian Center for Astrophysics / Astrophysicist
OCTOBER 2005 - AUGUST 2007, CAMBRIDGE MA

Developed and published a numerical model of the solar magnetic field that accurately replicates observational data

Served as a member of the science team for two NASA missions, Hinode and the Transition Region and Coronal Explorer