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Summary

Physical oceanographer with expertise in coastal ocean modeling, geoinformatics, cloud computing and collaboration with large computational datasets. Interested in collaborating with small organizations and research groups to deploy and use flexible, scalable open-source platforms for high-performance computing and data analysis/visualization.

Professional Experience

Founder, Open Science Computing, LLC
(Nov 2023 - Present)

- NCSTATE: Working with Professor Ruoying He's Modeling Group in Asheville, NC to install a flexible, horizontally-scaling cloud-based Nebari infrastructure on their AWS account. Trained researchers and helped develop specific workflows using the Pangeo Stack (Dask, Xarray, Holoviz) along with cloud-optimized data approaches (using fsspec, kerchunk and rechunker).

- NATO: Worked with researchers in the Climate and Security Programme in La Spezia Italy to install the Nebari infrastructure on their Azure account. Trained researcher, helped deveop pipelines to create cloud-optimized data and helped create specific workflows for specific metrics (e.g. predicted number of future hot days (>36C) in the Med).

Research Oceanographer, US Geological Survey
(Nov 1989 - Dec 2000), (Jun 2004 - Oct 2023)

- Conducted cutting-edge research in coastal ocean dynamics, water quality, and ecosystem health, focusing on the integration of field observations, numerical models, and data analytics.
- Developed and applied advanced computational methods for simulating ocean circulation, wave propagation, and contaminant transport in coastal environments.
- Collaborated with federal, state, and local agencies, as well as academic institutions and private organizations, to address pressing environmental concerns, such as beach erosion, harmful algal blooms, and marine pollution.

- Coordinated interdisciplinary projects involving experts from diverse fields, including engineering, biology, chemistry, and computer science.
- Communicated scientific findings and technical results to various audiences through peer-reviewed publications, conference presentations, and public outreach programs.

Research Scientist, NATO Undersea Research Centre (Jan 2001- May 2004)

- Participated in international research initiatives aimed at better understanding the ability to predict diver visibility in coastal regions with significant sediment transport.
- Helped develop approaches for management of data and sharing of tools in the context of several large collaborative modeling and field programs in the Adriatic Sea.

Education

- Ph.D., Physical Oceanography, Woods Hole Oceanographic Institution / Massachusetts Institute of Technology Joint Program (1989)
- M.S., Physical Oceanography, Massachusetts Institute of Technology (1987)
- B.S., Atmospheric and Oceanic Science, University of Michigan School of Engineering (1983)

Publications   2021

Using Environmental Data on the Cloud With Open-Source Tools
Y Rao, RP Signell, Z Flamig, P Martin, J Dissen
AGU Fall Meeting 2021

Cloud-performant reading of NetCDF4/HDF5/Grib2 using the Zarr library   2021
L Sterzinger, M Durant, R Signell, C Gentemann, K Paul, J Kent
AGU Fall Meeting Abstracts 2021, U51B-19

Science storms the cloud   15   2021
CL Gentemann, C Holdgraf, R Abernathey, D Crichton, J Colliander, ...
AGU Advances 2 (2), e2020AV000354

Cloud-native repositories for big scientific data   42   2021
RP Abernathey, T Augspurger, A Banihirwe, CC Blackmon-Luca, ...
Computing in Science & Engineering 23 (2), 26-35

Pangeo: A Community Platform for Big-Data Geoscience 2020
RP Signell, R Abernathey, L Clement, A Marzocchi
Ocean Sciences Meeting 2020

The Pangeo Platform: a community-driven open-source big data environment 2020
J Hamman, S Henderson, A Arendt, A Tan, D Fatland, A Pawloski, ...
Earth and Space Science Open Archive ESSOAr

Bringing Unstructured Grid Support to the THREDDS Stack 2019
SC Arms, K Wilcox, RP Signell
AGU Fall Meeting Abstracts 2019, IN31B-0798

Spatial distribution of water level impacting back-barrier bays 3 2019
AL Aretxabaleta, NK Ganju, Z Defne, RP Signell
Natural Hazards and Earth System Sciences 19 (8), 1823-1838

From the oceans to the cloud: Opportunities and challenges for data, models, computation and workflows 24 2019
TC Vance, M Wengren, E Burger, D Hernandez, T Kearns, ...
Frontiers in Marine Science 6, 211

Analysis and visualization of coastal ocean model data in the cloud 9 2019
RP Signell, D Pothina
Journal of Marine Science and Engineering 7 (4), 110

Spatial distribution of water level impact to back-barrier bays 2018
AL Aretxabaleta, NK Ganju, Z Defne, RP Signell
Natural Hazards and Earth System Sciences Discussions, 1-30

Ocean Modeling Simulation, Analysis and Visualization in the Cloud 2018
RP Signell
AGU Fall Meeting Abstracts 2018, IN54A-06

Selected Papers from the 13th Estuarine and Coastal Modeling Conference 2018
HJ Bokuniewicz, RP Signell
MDPI

Selected Papers from the 14th Estuarine and Coastal Modeling Conference 2018
RP Signell

MDPI

[Community for Data Integration fiscal year 2017 funded project report](#)   2018
L Hsu, KE Allstadt, TM Bell, EE Boydston, RA Erickson, AL Everette,
...
Open-File Report

[Reducing Time to Science: Unidata and JupyterHub Technology Using the Jetstream Cloud](#)   2017
J Chastang, RP Signell, JL Fischer
AGU Fall Meeting Abstracts 2017, IN23A-0083

[Advancing coastal ocean modelling, analysis, and prediction for the US Integrated Ocean Observing System](#)   18   2017
J Wilkin, L Rosenfeld, A Allen, R Baltes, A Baptista, R He, P Hogan, ...
Journal of Operational Oceanography 10 (2), 115-126

[Observations and a linear model of water level in an interconnected inlet-bay system](#)   23   2017
AL Aretxabaleta, NK Ganju, B Butman, RP Signell
Journal of Geophysical Research: Oceans 122 (4), 2760-2780

[NetCDF Climate and Forecast (CF) Metadata Conventions. 2011](#)
B Eaton, J Gregory, B Drach, K Taylor, S Hankin, J Caron, R Signell, ...
Online at http://cfconventions. org/cf-conventions/v1 6