

Tutorial: National Data Platform Education Hub

Melissa Floca and Pedro Ramonetti
January 28, 2025

Agenda

2:30 - 2:40 PM: Intro to NDP and Data Challenge, Melissa

2:40 - 2:45 PM: NDP and Documentation Overview, Pedro

2:45 - 3:25 PM: Learners Portal Interactive Demo, Pedro

3:25 - 3:40 PM: Educators Portal Overview, Pedro

3:40 - 3:45 PM: How to Collaborate, Melissa

3:45 - 4:00 PM: Discussion



NATIONAL DATA PLATFORM

Bridging the Data Gaps for AI

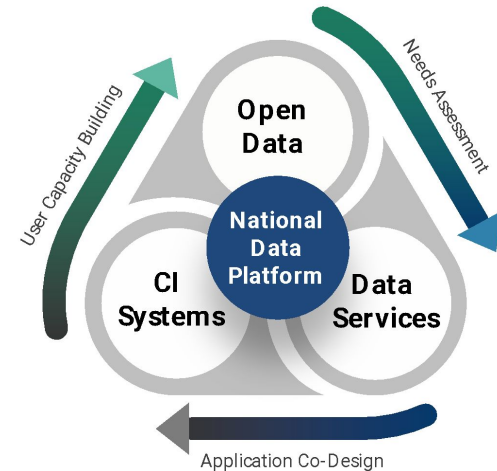
National Data Platform - NDP

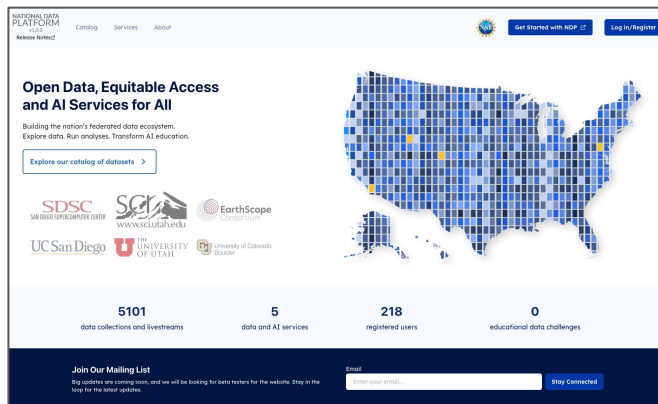
A **broad, federated** and **extensible** data ecosystem to promote collaboration, innovation and equitable use of data on top of existing and future national cyberinfrastructure (CI) capabilities.

FOCUS AREAS:

<https://www.nationaldatapatform.org/>

- Data-enabled and AI-integrated research and education **workflows**
 - Facilitates data registration, discovery and usage through a **centralized hub**
 - Enhances distributed CI capabilities through **distributed points of presence**
 - Cultivates resources for **classroom education** and **data challenges**
 - Assists research and learning through **personalized workspaces**
- **Applications** in climate and AI with data from NSF facilities, NAIRR, NASA, USGS, NOAA and USDA along with diverse scientific data repositories
- **Partnerships** to foster scientific discovery, decision-making, policy formation and societal impact





Centralized portal for discovery, access and use workspaces for research and education

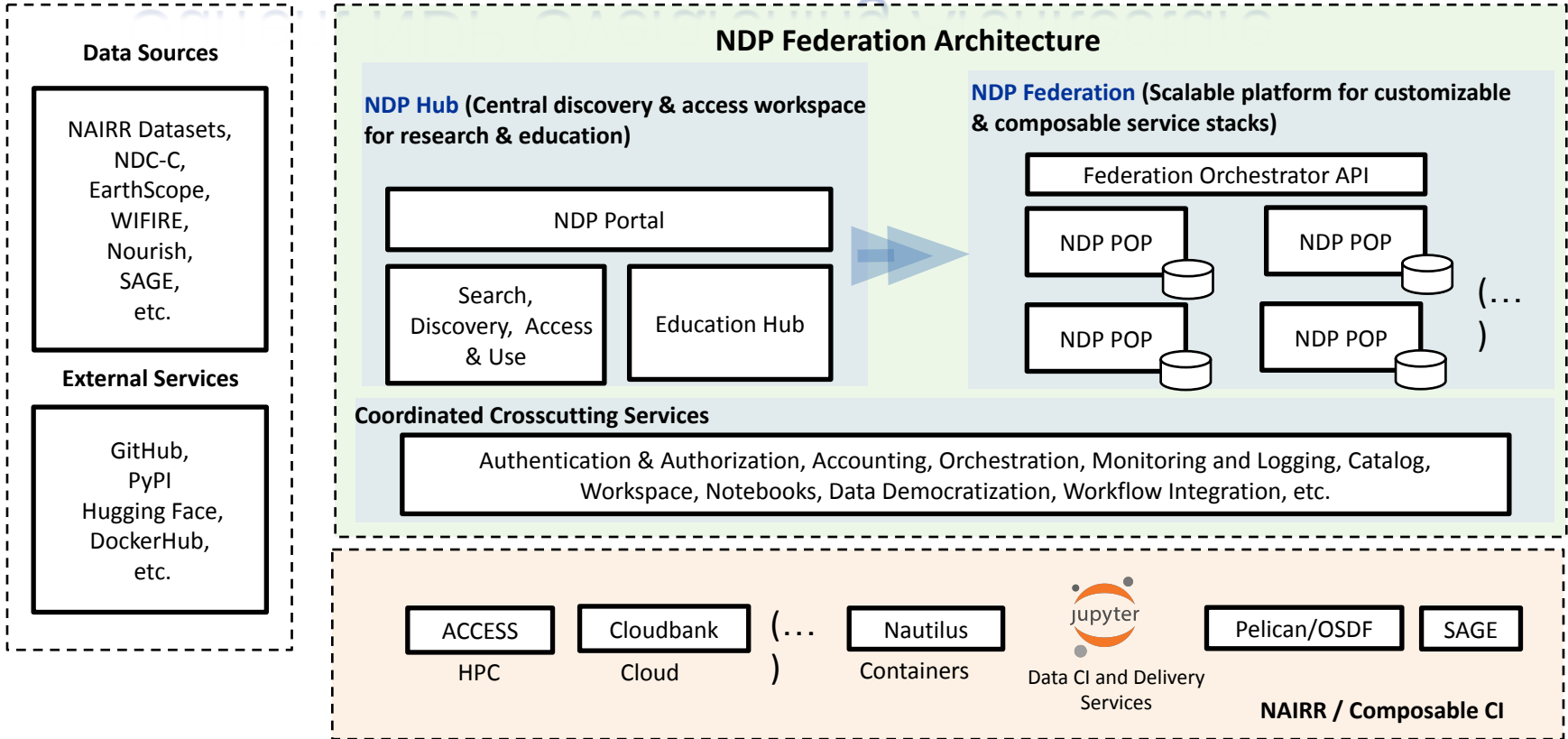


A scalable platform for using, developing and deploying services and application workflows at distributed points of presence



<http://www.nationaldatapatform.org>

Current NDP Overarching Architecture



Education Hub

- We offer Educators a simple and user-friendly format to set up classrooms and data challenges that mirrors the experience of researchers on NDP
- Educators create modules to provide relevant data and source code to students
- Participants can join as teams and collaborate seamlessly using JupyterHub.
 - Each group of students/team receives their own copy of the modules, enabling them to customize workflows by adding additional data and repositories as needed
 - To support their efforts, each participant is allocated 10GB of persistent storage, and each group is provided with an additional 10GB of shared storage.

DATA CHALLENGE



FIRE-READY FORESTS

Next Generation Science for Wildfire Resilience

Hosted by the Prowess Center on the National Data Platform in partnership with the Wildfire Commons
More information at <https://prowesscenter.org/>



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WILDFIRE
SCIENCE & TECHNOLOGY
COMMONS

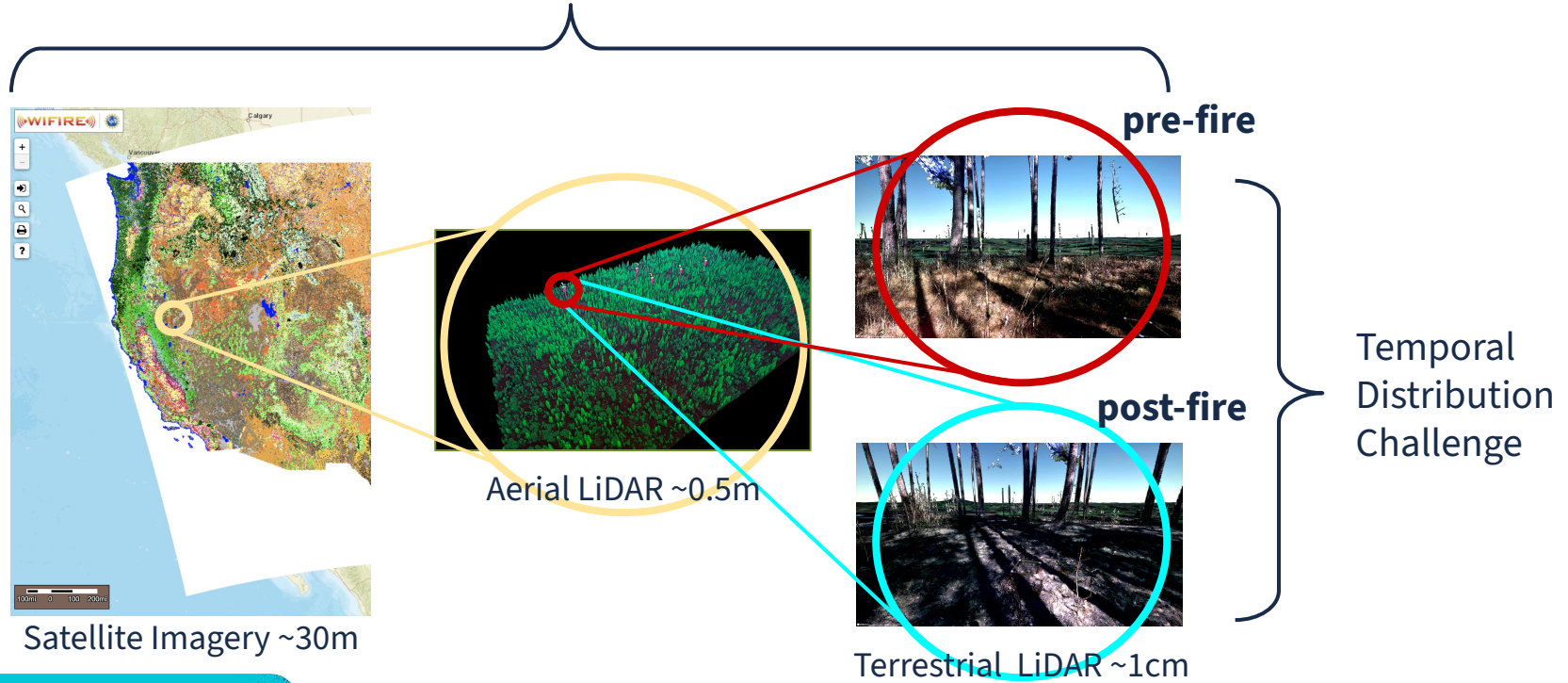
PROWESS

UC San Diego

Los Alamos
NATIONAL LABORATORY

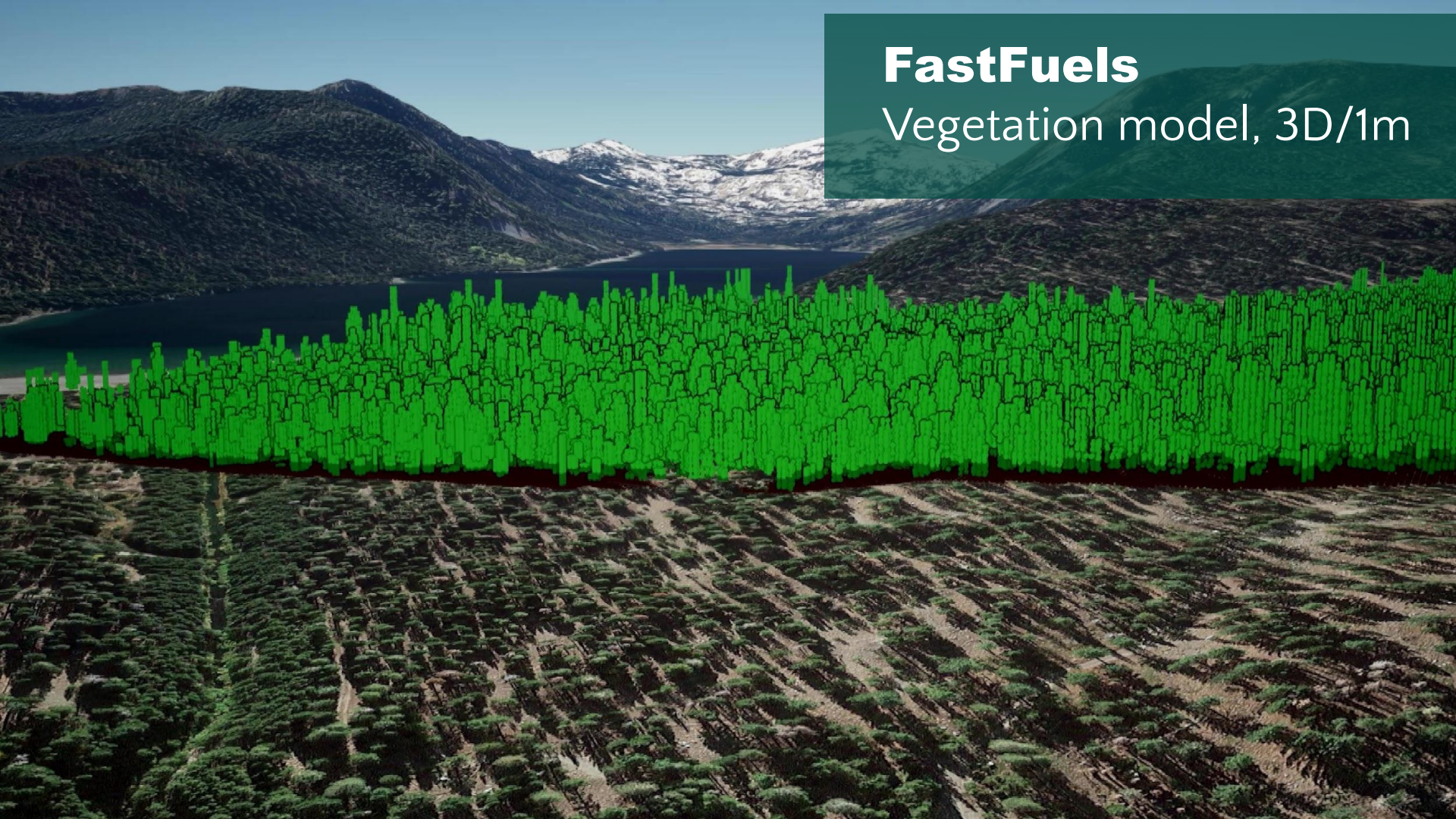
Spatiotemporal Data Challenges

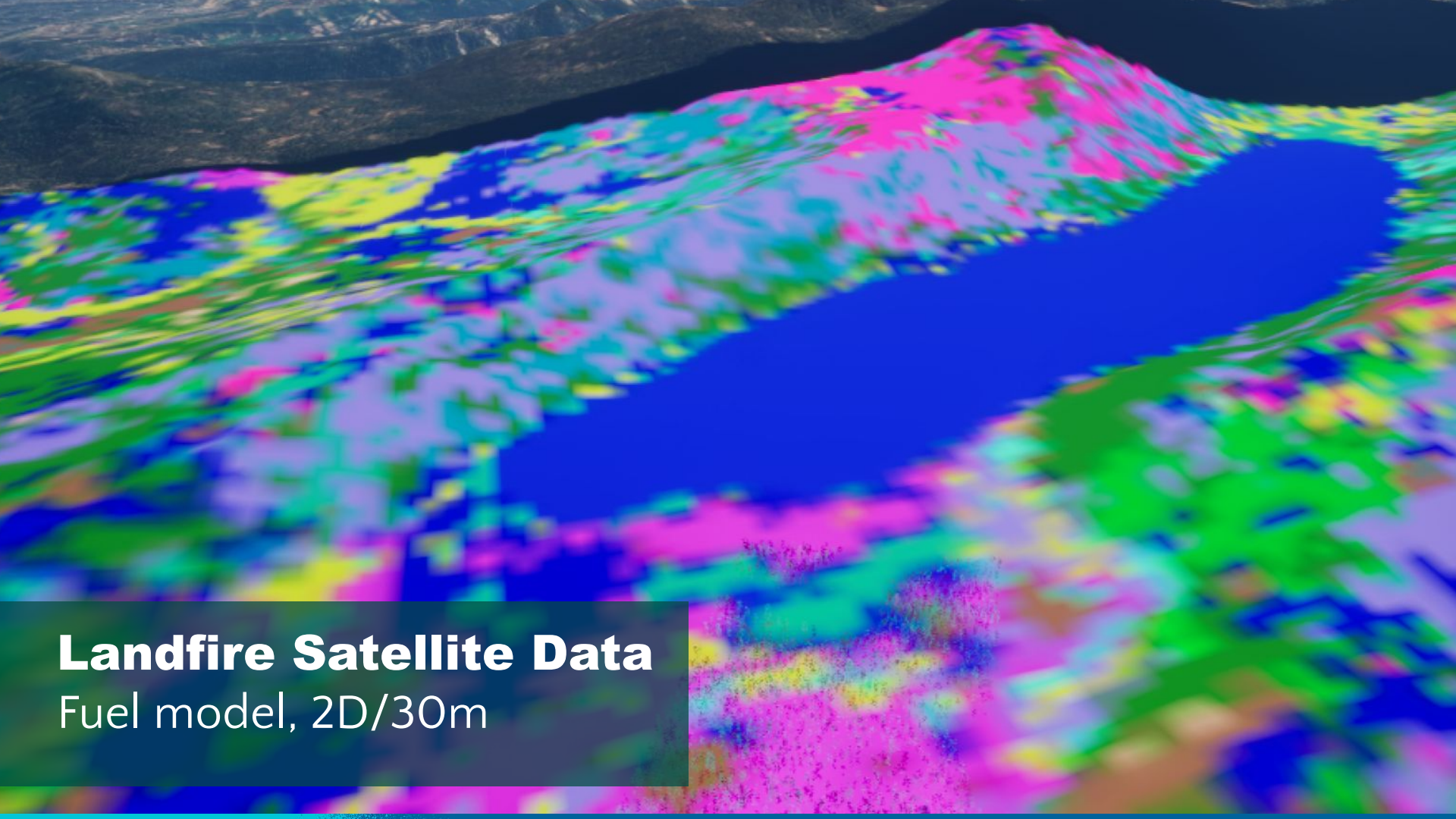
Multiscale Spatial Challenge



FastFuels

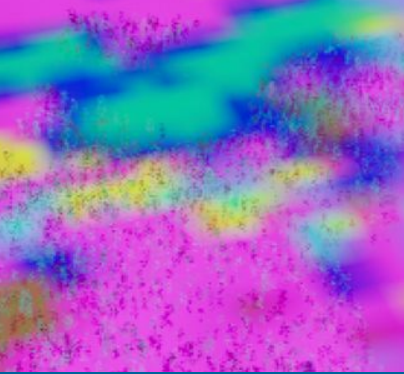
Vegetation model, 3D/1m





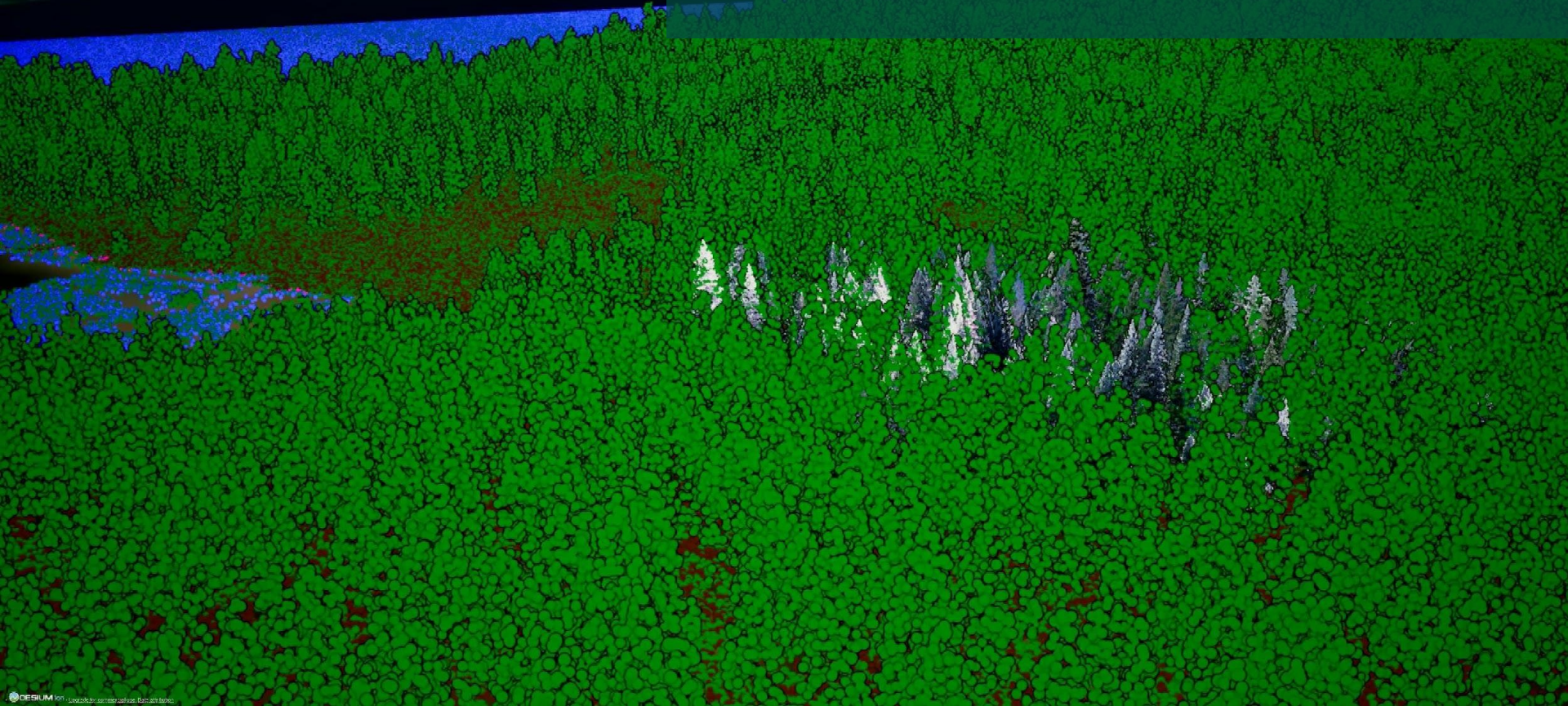
Landfire Satellite Data

Fuel model, 2D/30m



USGS 3DEP and IntELiMon

Terrestrial & Aerial Lidar, 3D/1cm-.5m



NDP Team Here Today

- Katie O'Laughlin
- Pratyush Karmakar
- Siddharth Trivedi
- Alex Tuna
- Jenny Lee
- John Porten

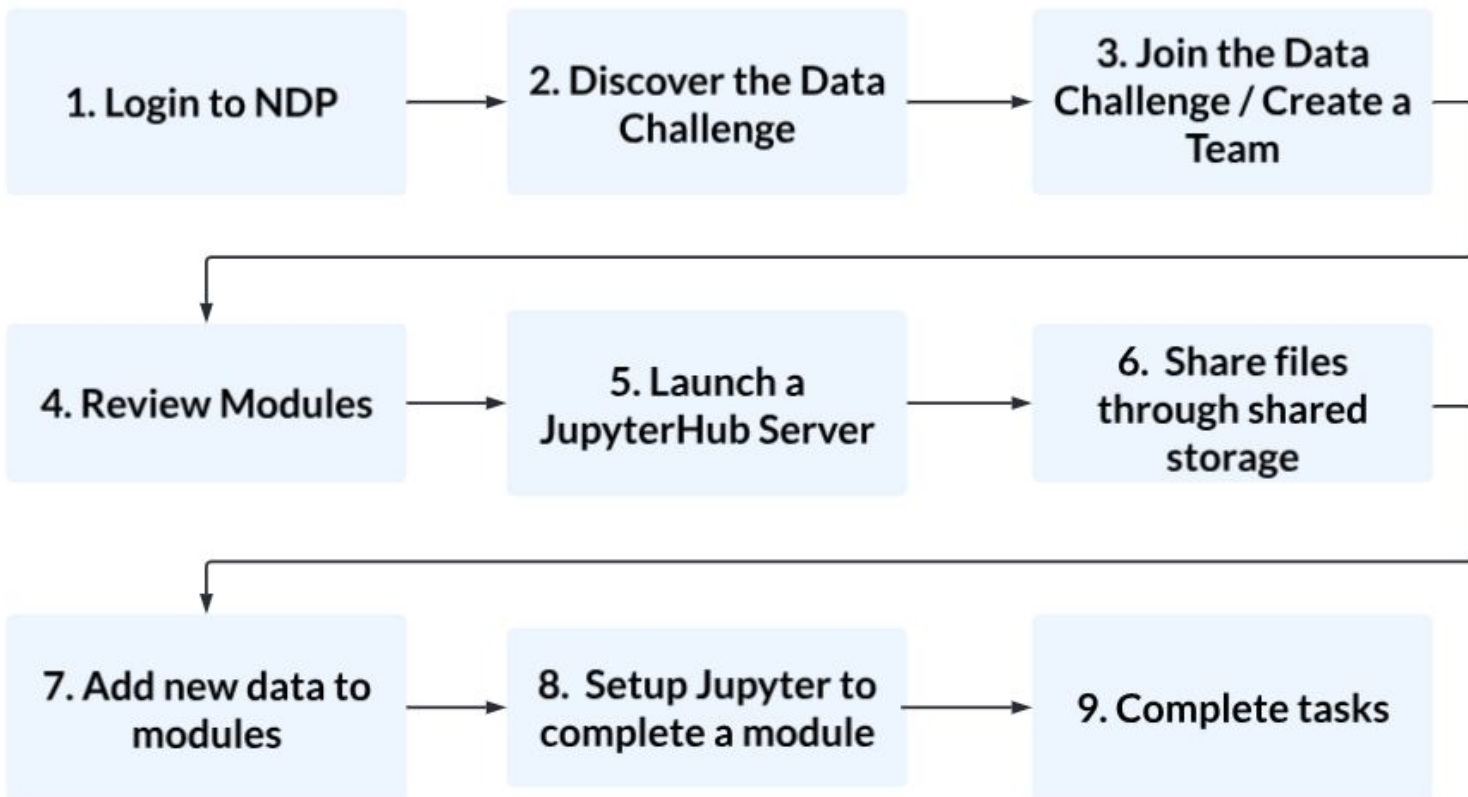
Learner's Journey



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Bridging the Data Gaps for AI

In this demo - Learner's journey



Educator's Journey



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Bridging the Data Gaps for AI

In this demo - Professor view



How to Collaborate

- Participate in first data challenge in February to provide feedback and learn about current best practices and capabilities
- Work with NDP team to create class projects or data challenges to use with your own students as part of our Council of Educators
- Email mfloca@ucsd.edu and pramonettivega@ucsd.edu for more information



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Discussion



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