
ECCO
HACK
WEEK
2024

WELCOME! SO… WHAT ARE WE DOING HERE?

A hackweek is a participant-driven workshop that blends data science education, community building, and project work over a short period of time. They are highly immersive and allow participants to work directly with mentors to co-shape projects and educational outcomes. Hackweeks can help individuals and teams engage more effectively in open and reproducible science.

Adapted from the UW eScience Institute “What is aHackweek?”

WHY AN ECCO HACKWEEK?

Over more than 20 years, an active community of scientists and engineers have contributed to ECCO in various ways: contributing to the ocean model, advancing the state estimation methodologies, and developing tools and educational materials to make ECCO products and technologies more useful for climate research.

Knowledge and expertise about ECCO is distributed across the community, which can make it challenging for scientists to see how ECCO can support their research.

Our goal is to support you in learning about ECCO; no matter where you're starting from. We're here to make the process easier and more engaging, so you can build on your knowledge, both this week and beyond.

PLAN FOR TODAY

- Logistics and other important information
- Week Overview
- Introductions
- ECCO Resources and Tools
- Hackweek Cloud Computer Resources
- Project Pitches
- Project Team Organization
- Accessing ECCO data products
- Open Project Time

8:00 - 9:00 am	**Hackweek Kickoff**	Welcome, Logistics, and Introductions
9:00 - 10:00 am	**ECCO Resources and Tools**	Overview ECCO V4 datasets, Python & Julia tools and EMU. **Tutorial Lead(s)** Ian Fenty, Ichiro Fukumori, and Gael Forget
10:00 - 10:30 am	**Coffee Break**	
10:30 - 11:15 am	**Hackweek Cloud Compute Resources**	Getting connected to our shared computational resources. OSS JupyterHub, P-Cluster, and efs_ecco. **Tutorial Lead(s)** Andrew Delman, Ou Wang
11:15 - 12:30 pm	**Lunch**	
12:30 - 1:30 pm	**Project Pitches**	Open forum for individuals to pitch project ideas
1:30 - 2:30 pm	**Project Team organization**	Open time to organize into project teams
2:30 - 3:00 pm	**Coffee Break**	
3:00 - 3:30 pm	**Accessing ECCO data products**	Different methods for accessing ECCO data products in and out of the cloud
3:30 - 4:45 pm	**Open Project Time**	Team-led project work
4:45 - 5:00 pm	**Daily Wrap / Updates**	Summary of Day, Announcements
5:30 - 7:30 pm	**Social Activity -- Local Pub**	Kings Row Gastropub in Old Town Pasadena

INTERNET ACCESS

WiFi: **Caltech Visitor**

Username: **ECCO**

Password: **Hackweek2024**

- You may also join Caltech wifi via eduroam if provided by your institution.
- You may need to login using Google chrome to avoid “OCSP”
- you may need to disable browser extensions that prevent the authorization screen from appearing

Keck
INSTITUTE FOR SPACE STUDIES

- Established at Caltech in 2008 with a grant from the W. M. Keck Foundation.
- KISS is a "think and do tank," whose primary purpose is to catalyze new space mission concepts and technology by bringing together scientists and engineers.
- KISS supports NASA by making this space available for workshops, meetings, summer schools, and now, Hackweeks!

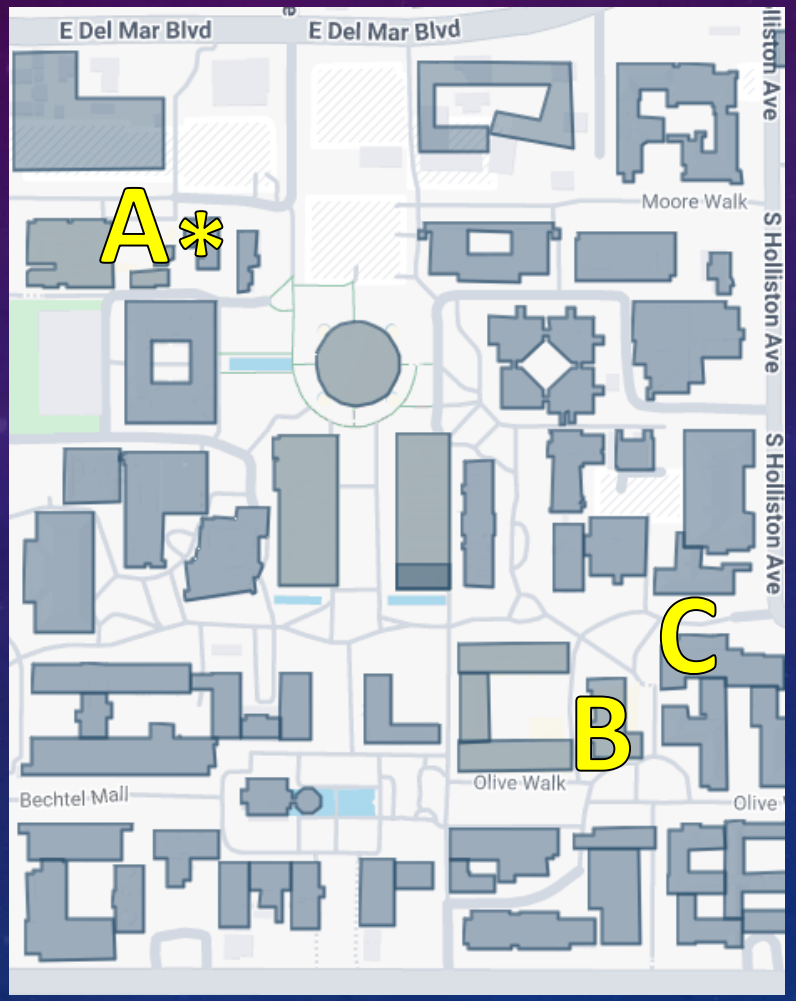
- **Sit anywhere, including back benches**
- **We can adjust the lights & blinds as needed**
- **OK to use the patios to the west and east**
- **Bathrooms in hall**
- **We can use kitchenette to wash cups, plates, etc.**
- **We can use whiteboards, paper easles**
- **>> No moving U-tables, chairs OK. <<**
- **>> No plates or cups on outside wood tables <<**
- **>> End of day cleanup, use trash bins in the hall <<**
- **>> No storing food in refrigerator <<**
- **Director's office at the end of the hall, do not disturb**
- **Building across the patio is only for EHW staff**

Logistics and other important information

FOOD, ETC

W. M. Keck Center

The Café at Broad



Hameetman Center

The Lee F. Browne Dining Hall and the Caltech Convenience Store

Logistics and other important information

7 a.m. to 7:30 p.m. Monday through Friday

WEEK OVERVIEW

MONDAY

Week Kick-off

Sci/Tech Talks

Lunch

Project Organization

Project Time

Daily Wrap

TUES-THURS

Daily Kick-off

Projects' report

Sci/Tech Talks

Lunch

Project Time

Daily Wrap

FRIDAY

Daily Kick-off

Sci/Tech Talks

Project Time

Lunch

Final Presentations

Personal Time

Final Wrap

Starting at 8 am, closing out at 5 pm

*** Coffee and Light Refreshments served at 10 am and 2:30 pm every day*

See Hackweek Website for Schedule Updates

SPECIAL EVENTS

MONDAY

“no earlier than” 9:06 am

EUROPA CLIPPER LAUNCH

5:30 pm

Social at Kings Row Gastropub Patio

Old Town Pasadena

TUESDAY

8:15 am

Welcome from NASA Ocean Physics Program Manager, Nadya Vinogradova-Shiffer (remote)

WEDNESDAY

5:30 pm

Social “No-Host” Thai Dinner at Saladang Garden

Old Town Pasadena

Veg or Non-Veg?

*** No-Host dinner is $35*

What’s your name?

Where are you from?

How long have you worked with ECCO?

What do you want to learn this week?

What could you teach someone about ECCO?

Let's get to know each other

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5 REASONS TO COLLABORATE WITH OTHERS DURING THE EHW

- Access to Diverse Expertise
- Focused problem-based learning
- Co-Learning & Teaching
- Professional Networking and Collaboration Opportunities
- Accelerated Project Development

SOME ELEMENTS TO CONSIDER IN YOUR PROJECT

- **Data Exploration**
  - Gain familiarity with ECCO fields via exploratory analysis with visualization of key ocean parameters
- **Tool Use and Development**
  - Use and/or extend existing model or analysis codes; add new capabilities to the model or analysis libraries
- **Case Study**
  - Investigate a specific event or anomaly (sea level, ocean bottom pressure, T, S) at a point or region in space and time.
  - Try to replicate a published study using ECCO & ECCO tools
- **Comparison with Observations**
  - How well does ECCO compare with the available observations? At what time scales? What can explain discrepancies?
- **Collaborative Documentation**
  - Work together to document your project and share your materials for the community, putting ”open science” ideas to practice
- **Step out of your comfort zone**
  - Take this opportunity try something different. Did you learn something that you can use later? Do you have a better sense of how ECCO can help your future research?

PROJECT PITCHES

- 5-minutes maximum per project
- High-level overview
- Why you think it’s cool
- What tools/resources will you use
  - How much do you already know about them
  - How much will be new learning opportunity
- What specific knowledge or skills do you want to have at the end?
- How will the community benefit from your project?

EUROPA CLIPPER LAUNCH

- https://science.nasa.gov/mission/europa-clipper/watch-online
- https://www.youtube.com/watch?v=lQToTWKwtuw