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OceanHackWeek (OHW) - A Collaborative Model For Expanding Data Science Proficiency In Oceanography

Presentation #8675
ODP03 Ocean Data Science Posters (OD05+OD12)
Ocean Sciences Meeting 2022

OceanHackWeek events

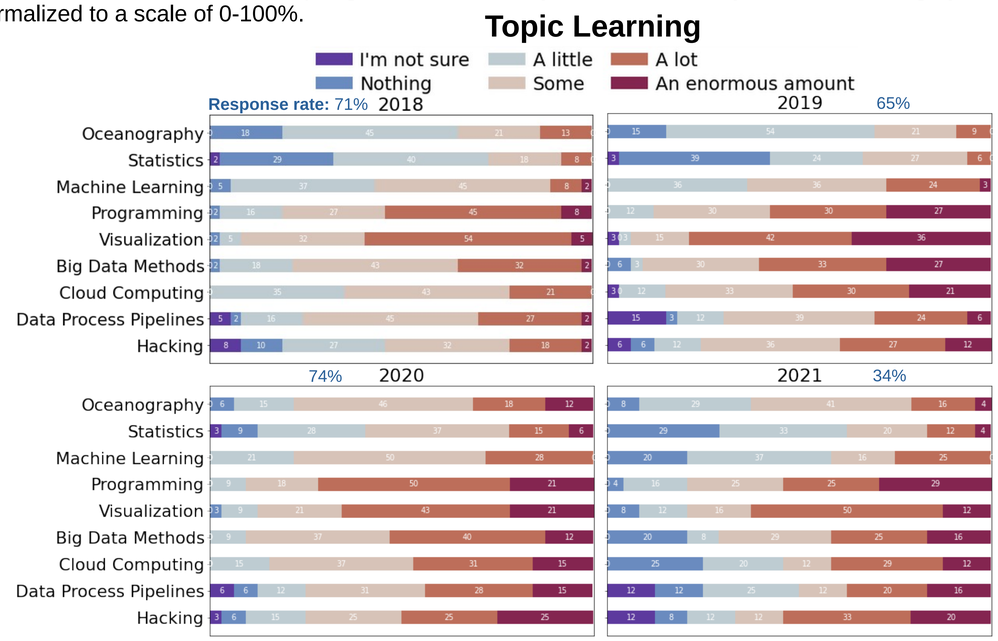
OceanHackWeek (OHW) is an intensive, interactive workshop focused on educating ocean scientists with **modern data science skills** and building an **inclusive and cohesive user community**. It's based on the maturing "hackweek" model (Duncombe 2018; Huppenkothen et al 2018). As described previously by Gum et al (2020), its key elements can be grouped into *Participant Selection*, *Curriculum Planning*, *Project Facilitation*, and *Cyberinfrastructure support*.

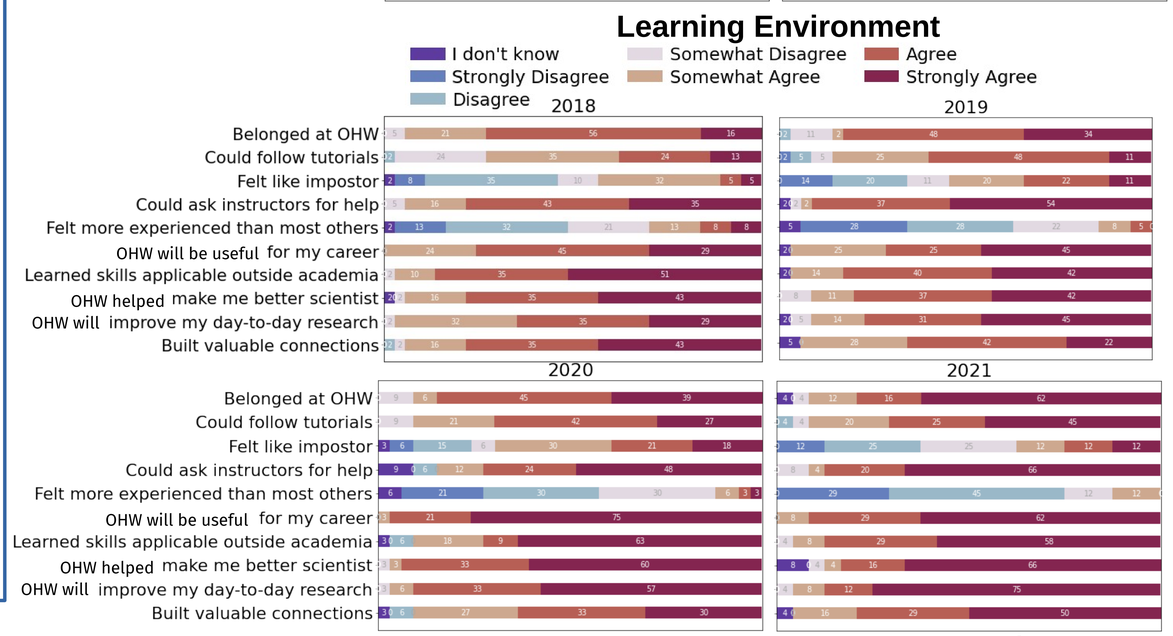
After 2 annual in-person events at the University of Washington (2018 & 2019), new partnerships and COVID19 resulted in a multi-institution, distributed leadership and virtual and hybrid events in 2020 & 2021, respectively. This evolution was accompanied by greater participant diversity in gender, ethnicity/race and international location of home institution. We also embraced biological oceanography, including support for the R language in addition to Python.

	2018	2019	2020	2021
Modality	In person	In person	Virtual	Hybrid
Participants	52	54	46	70
%Gender minority	31	37	64	58
%Ethnic/racial minority	14	26	36	45
%International	8	20	52	55
Programming languages	Python	Python	Python+ R	Python+ R
Tutorials	13	8	10	7
Projects	11	11	8	11

Exit Surveys: Participant learning, experience

- Participants have provided consistently positive feedback and enthusiastic testimonials.
- The median score of the survey response to the question "Would you recommend OHW to others (1-10)" was 9 in 2018-19 and 10 in 2020-21.
- Preference for and likelihood to participate virtually compared to in-person (not shown) was high in 2020 but decreased in 2021, possibly reflecting virtual fatigue. Responses to similar questions about hybrid participation in 2021 were strongly positive.
- Below we show results from compiling outcomes from 4 years of Exit Surveys, with each category normalized to a scale of 0-100%.





Topic Learning

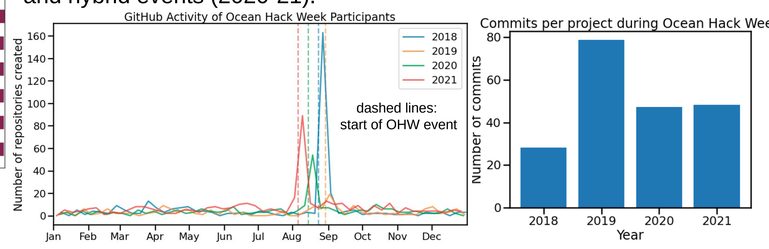
- 2019-21 cohorts expressed greater topic learning than in 2018 largely across the board, with a decrease in 2021 that may be due to a shorter, 4-day week with fewer tutorials and dispersed attention between R and Python.
- "Learning about Hacking" was specially valued in 2020-21. However, "hacking alone" was more common in 2020-21 (not shown).
- The addition of R led to more diverse and inclusive project teams without a clear negative impact on perceptions of amount learned.

Learning Environment

- "Sense of belonging" was stronger after 2018, especially in 2020-21.
- "Feeling like an impostor" was largest in 2020, the only fully virtual event.
- Strong confidence in the immediate and future value of OHW participation to one's work and career greatly increased in 2020-21.

Tracking impact via GitHub Activity

OHW participation involves substantial collaborative interactions via GitHub. A preliminary assessment (using the `pygithub` package) of impact on participant GitHub usage after the event each year (based on creation of new repositories) is inconclusive. GitHub activity during OHW events as measured by total number of commits was highest during the last in-person event (2019) and consistently mid-range during the virtual and hybrid events (2020-21).



OHW future, including OHW 2022

For 2022 we are planning a hybrid event that supports coordinated small to mid-size in-person "satellite" events centered around shared virtual tutorials and projects. We will gather and formalize our lessons learned over these 4 years, clarify governance, and further analyze demographic, exit survey and GitHub activity results. We hope to engage with efforts such as the Univ. of Washington "Hackweek-as-a-Service" initiative and follow-ups to the recent "Hack-the-Hackathon" workshop.

References

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Gum, J., Lee, W-J., Tan, A., Staneva, V., Fernandes, F., Mayorga, E., Crone, T., Abernathey, R. (2020) Building Oceanhackweek: a week of data science, hacking, collaboration and more. Abstract ED24C-3618, Ocean Sciences Meeting 2020, 16-21 Feb, San Diego, CA

Huppenkothen D, Arendt A, Hogg DW, Ram K, VanderPlas JT, Rokem A (2018) Hack weeks as a model for data science education and collaboration. Proceedings of the National Academy of Sciences, 115(36):8872–8877. doi:10.1073/pnas.1717196115

To learn more:
https://oceanhackweek.github.io

To help organize OHW22:

Ocean Carbon & Biogeochemistry