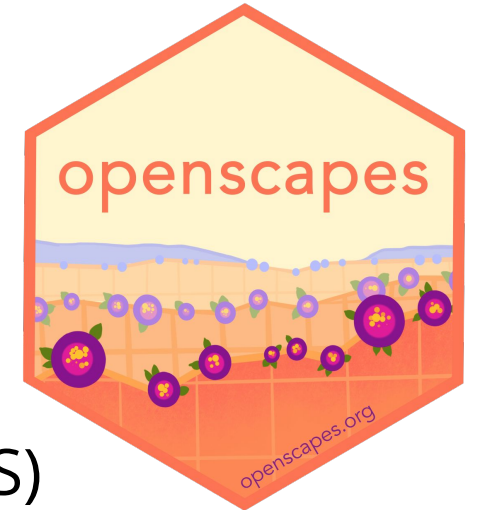


Building communities of practice around environmental open data science



moz://a

Julia Stewart Lowndes, PhD

Mozilla Fellow & Marine Data Scientist

National Center for Ecological Analysis and Synthesis (NCEAS)

University of California at Santa Barbara

lowndes@nceas.ucsb.edu; @juliesquid



slides: openscapes.org/media

Art by @allison_horst

Hi, I'm a marine ecologist



Humboldt squid! Photo by Greg Auger



OpenSci



THE
CARPENTRIES

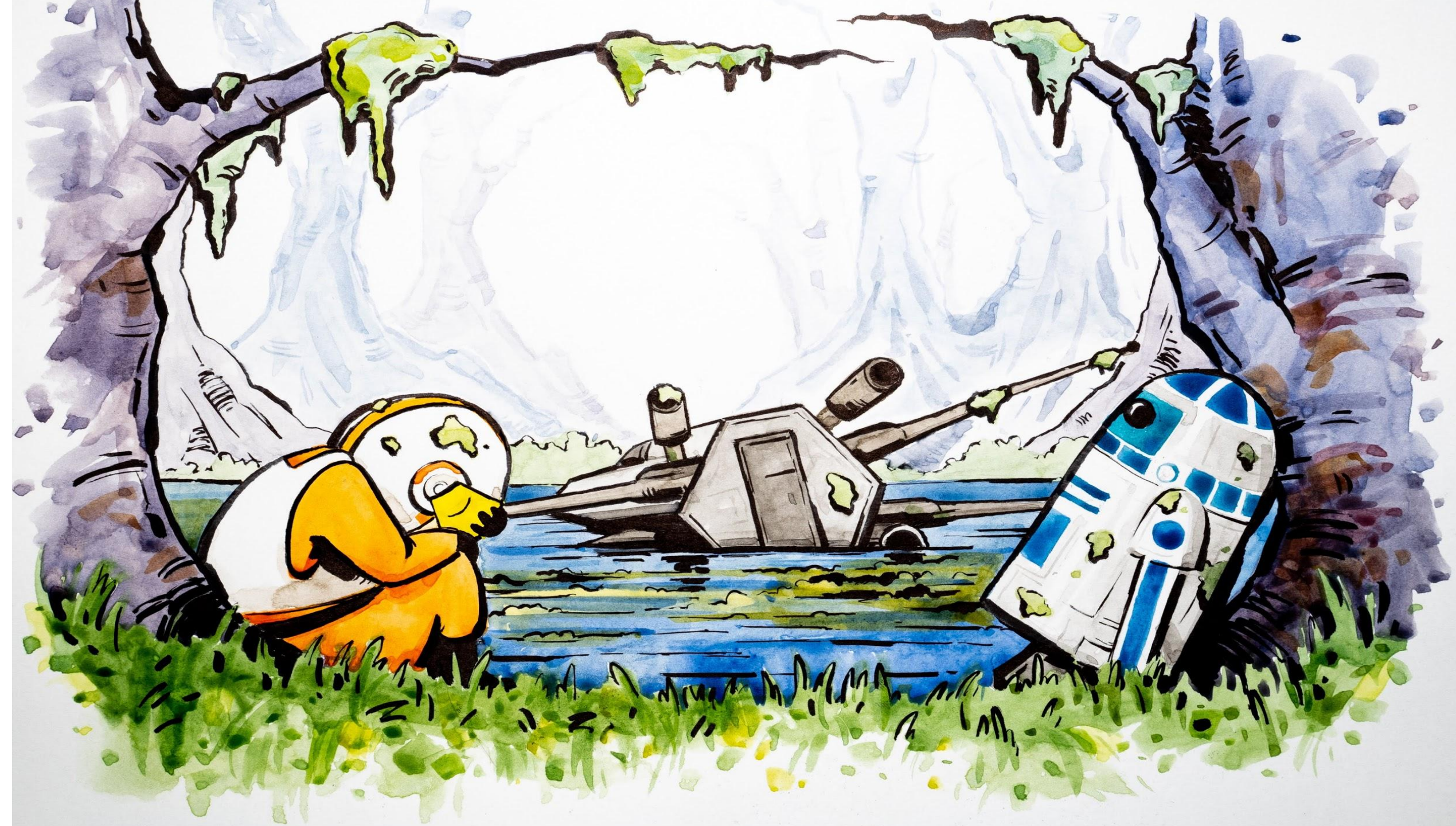


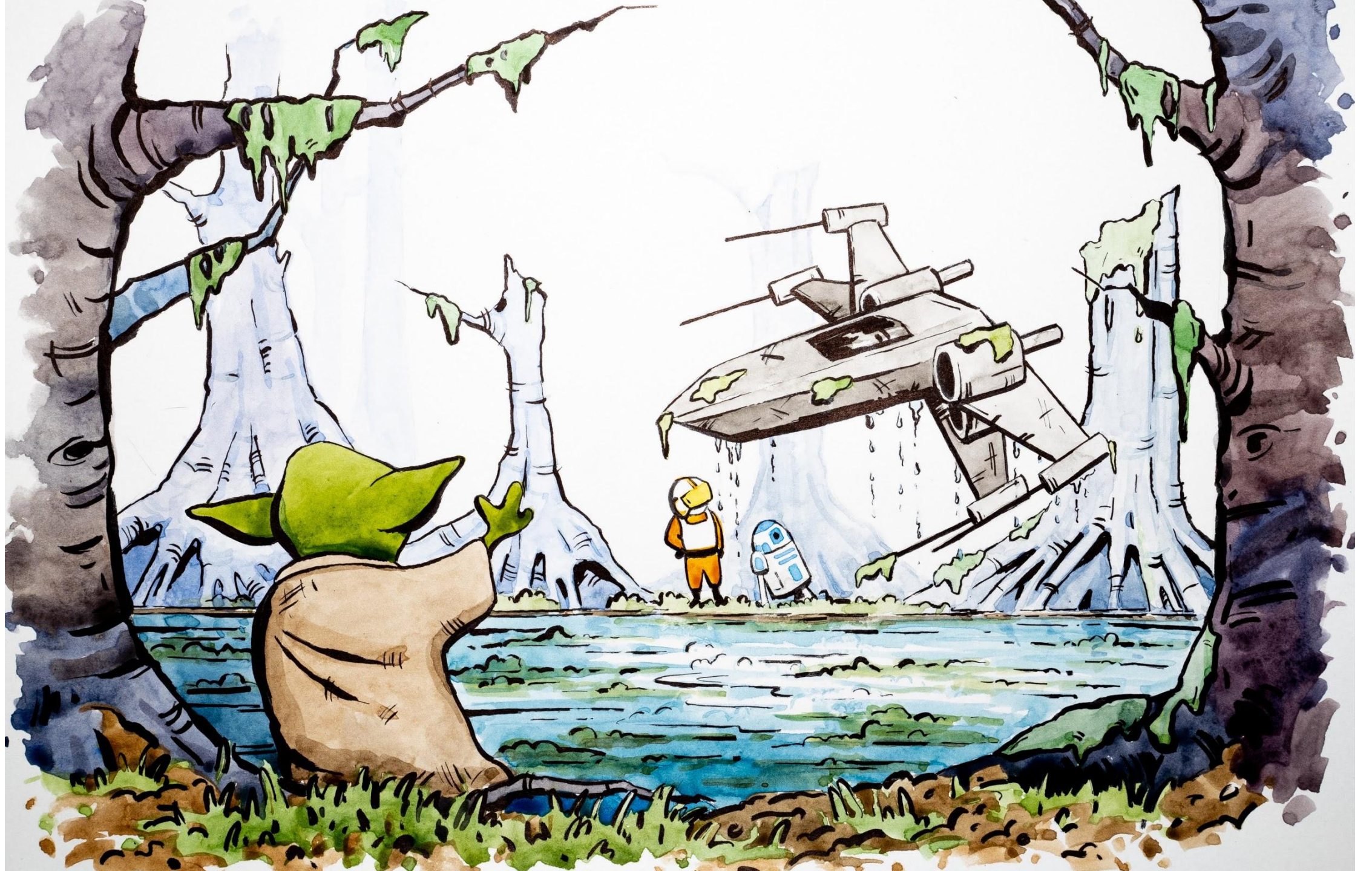
Ladies



#rstats

and open data science has
been game-changing for my
science and my life







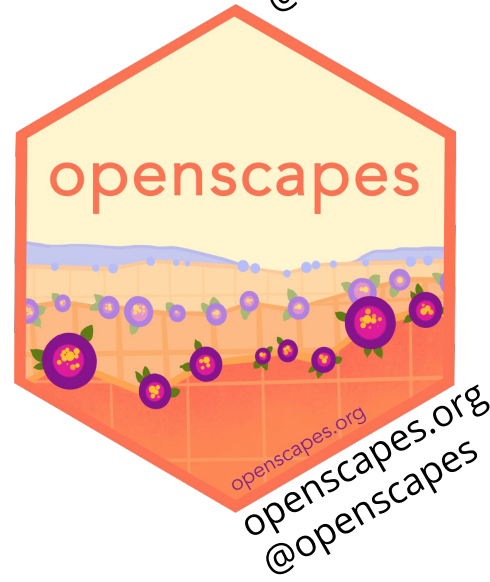
Our path to better science in less time using open data science tools

Julia S. Stewart Lowndes^{1*}, Benjamin D. Best², Courtney Scarborough¹, Jamie C. Afflerbach¹,
Melanie R. Frazier¹, Casey C. O'Hara¹, Ning Jiang¹ and Benjamin S. Halpern^{1,3,4}

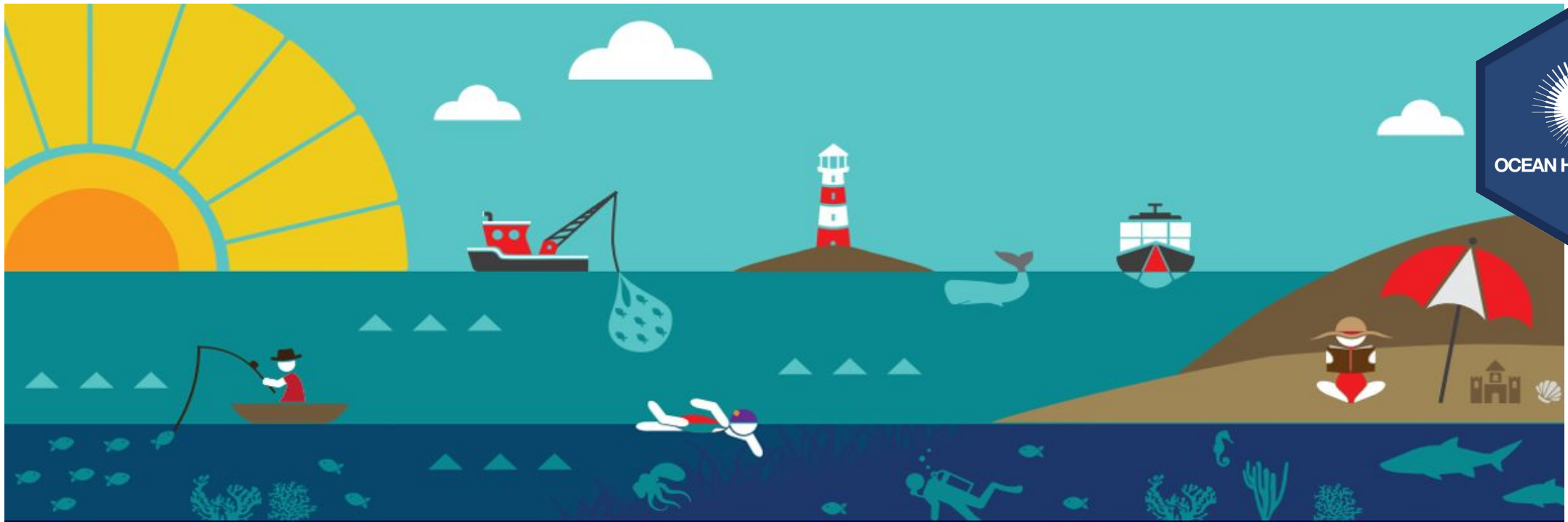
Environmental open data science communities



Enabling international ocean science & policy teams



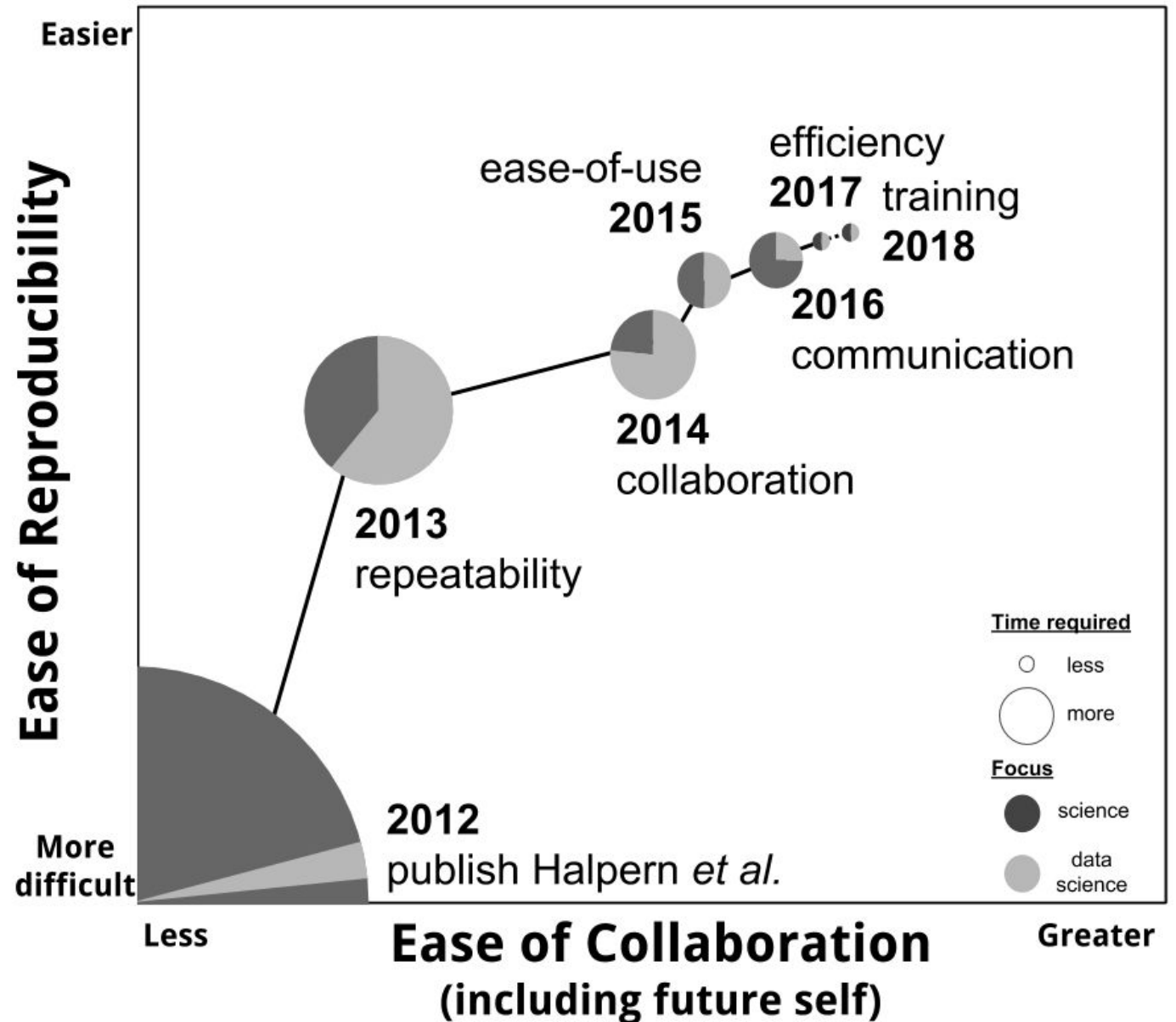
Empowering environmental science labs



**FROM TOURISM, TO CLEAN WATERS, TO BIODIVERSITY,
THE OCEAN HEALTH INDEX MEASURES**
— ALL THAT WE VALUE ABOUT OUR OCEANS —

Halpern et al. 2012, *Nature*
ohi-science.org

Open data science improves working as a team



Open data science enables local ocean teams

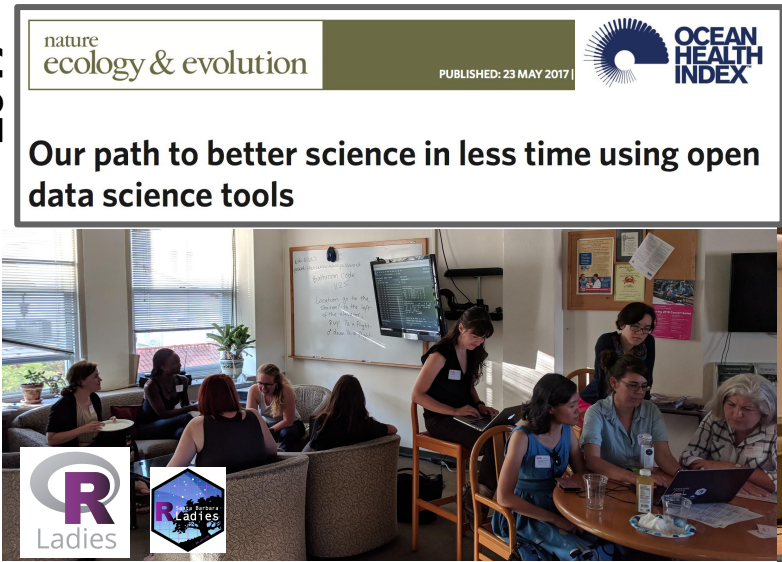


My OHI open data science journey

2013+



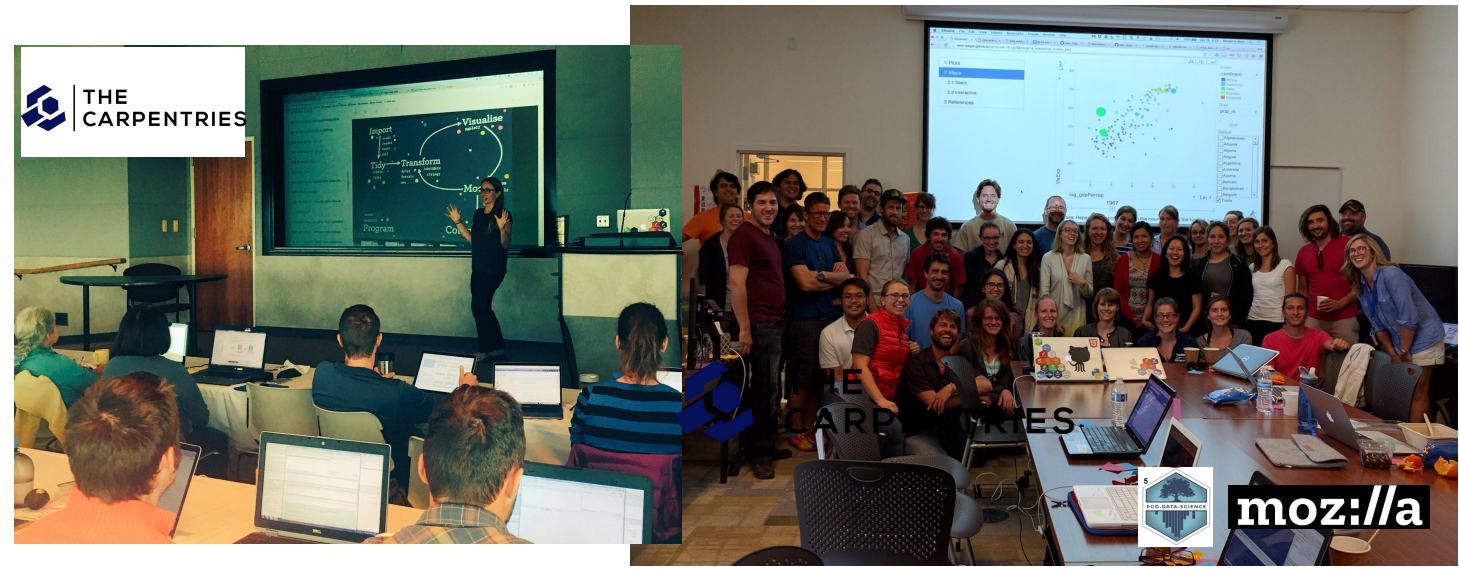
2017+



2014+



2016+





How do we welcome & empower more (environmental) scientists with open data science?

How can we help science labs work like teams?



OPENS CAPES

- Complement existing efforts by welcoming & empowering scientists as labs
- Increase visibility & value by amplifying labs



CHAMPIONS PROGRAM



- Mentorship program for early career scientists & their labs
- Normalize open data science in the lab & seed change beyond

5-month remote program à la Mozilla Open Leaders

The image shows a screenshot of the Openscapes Champions Series website. On the left is a sidebar with a navigation menu. The main content area displays the title 'Openscapes Champions Series' by Julie Lowndes, dated 2019-03-14, and 'Chapter 1 Welcome'. The text describes the program as a mentorship series for environmental scientists, emphasizing open data science practices and collaboration. A table of contents on the right lists 10 chapters, each with links to 'Agendas', 'Chapters', and 'Slides'.

Openscapes Champions Series

← Back to openscapes.org

1 Welcome

- 1.1 Agendas

2 Overview

- 2.1 Why we're here
- 2.2 What to expect
- 2.3 What's possible with open dat...
- 2.4 What we'll learn
- 2.5 Deliverables
- 2.6 Additional reading

3 Openscapes Mindset

- 3.1 Data science as a discipline
- 3.2 Open data science tools exist
- 3.3 Open as a way to work
- 3.4 Lab members as a team
- 3.5 Learn with collaborators and ...
- 3.6 The internet as an underlever...

4 Better science in less time

Openscapes Champions Series

Julie Lowndes

2019-03-14

Chapter 1 Welcome

This book is a lesson series for the Openscapes Champions program. **It is under some chapters are only notes at this point.**

Openscapes Champions is a mentorship program that empowers environmental scientists to use open data science tools and grows the community of practice. We mentor early career environmental researchers in leadership roles – faculty, lecturers, program managers, and others – to help them use open data science practices in their labs and on their campuses. It is designed to help them understand who they are and help identify incremental steps to make their data workflows more efficient. We have been building Openscapes from an open data science angle, but along with that comes a focus on openness, collaboration, good intentions, and creating the culture we want in science that is broadly defined.

The Series is framed around [Lowndes et al. 2017, Nature Ecology & Evolution: Our progress in less time using open data science tools](#). That paper is a retrospective of how a team of scientists changed over four years; the Openscapes Series aims to help guide other labs to make similar progress themselves, no matter where they are starting from.

Agendas	Chapters	Slides
1. Openscapes overview & mindset	overview, mindset	overview, mindset
2. Better science in less time	better science in less time	better science in less time, data interlude
3. Lab culture	lab culture, code of conduct	lab culture, code of conduct
4. GitHub for the lab	GitHub for publishing, GitHub for project management	GitHub for publishing, GitHub for project management
5. Streamlined workflows with code	source files, filepaths & project oriented workflows	source files & file paths; project oriented workflows
6. Mid-series check in		
7. Coding with communities, part 1		coding with communities, part 1
8. Coding with communities, part 2		coding with communities, part 2
9. Communicating science openly		
10. Presentations: Openscapes pathways		

Discipline agnostic: openscapes.org/series



CHAMPIONS COHORT 1

- Jan – May 2019
- 7 Champions & their labs (24 participants)



Halley Froehlich, PhD
University of California at Santa Barbara

Dr. Froehlich is a marine aquaculture & fisheries scientist studying **global food systems and climate change**. She inspires and empowers audiences of all kinds, including through Netflix's **Bill Nye saves the world**.



Allison Horst, PhD
University of California at Santa Barbara

Dr. Horst is a data science and statistics lecturer in an environmentally-focused graduate program. Dr. Horst was awarded the student-appointed Bren School of Environmental Science & Management Distinguished Teaching Award in 2018.



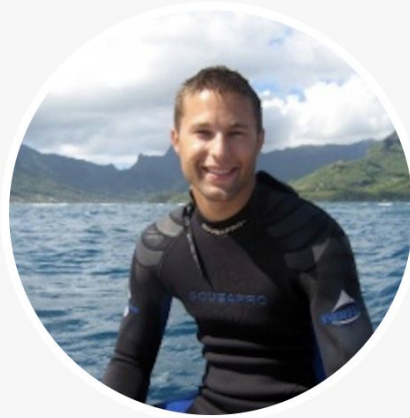
Nishad Jayasundara, PhD
University of Maine

Dr. Jayasundara is a physiologist studying organismal adaptation to their habitat and effects of **external environmental factors**. His ongoing research includes capacity building to address **environmental health in Sri Lanka**.



Malin Pinsky, PhD
Rutgers University

Dr. Pinsky is an ecologist studying the **impacts of climate change on ocean life**. With expertise on shifting habitats of ocean animals, Dr. Pinsky leads **OceanAdapt**, a website used by governments and NGOs for climate adaptation planning.



Adrian Stier, PhD
University of California at Santa Barbara

Dr. Stier is a marine ecologist studying the **recovery and resilience of ocean ecosystems**. Included in the systems he studies are coral reefs, and he recently was a Keynote Speaker at the **4th Coral Reef Symposium**.



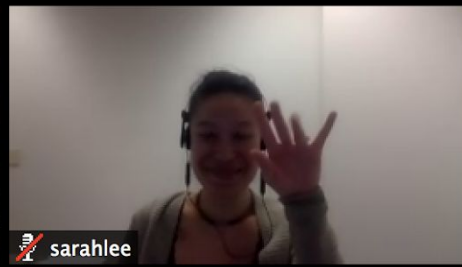
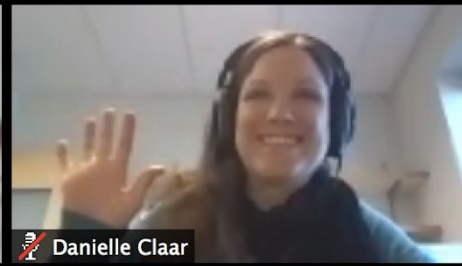
Nina Therkildsen, PhD
Cornell University

Dr. Therkildsen is an evolutionary biologist using genomic analyses to **improve marine conservation and fisheries management**. Dr. Therkildsen **studies genetic adaptation** using current, historic, and ancient DNA.



Chelsea Wood, PhD
University of Washington

Dr. Wood is an ecologist studying marine and freshwater **parasites in a changing world**. Her work was recently featured in a bioGraphic video, **Protected by prawns**, by the California Academy of Sciences.



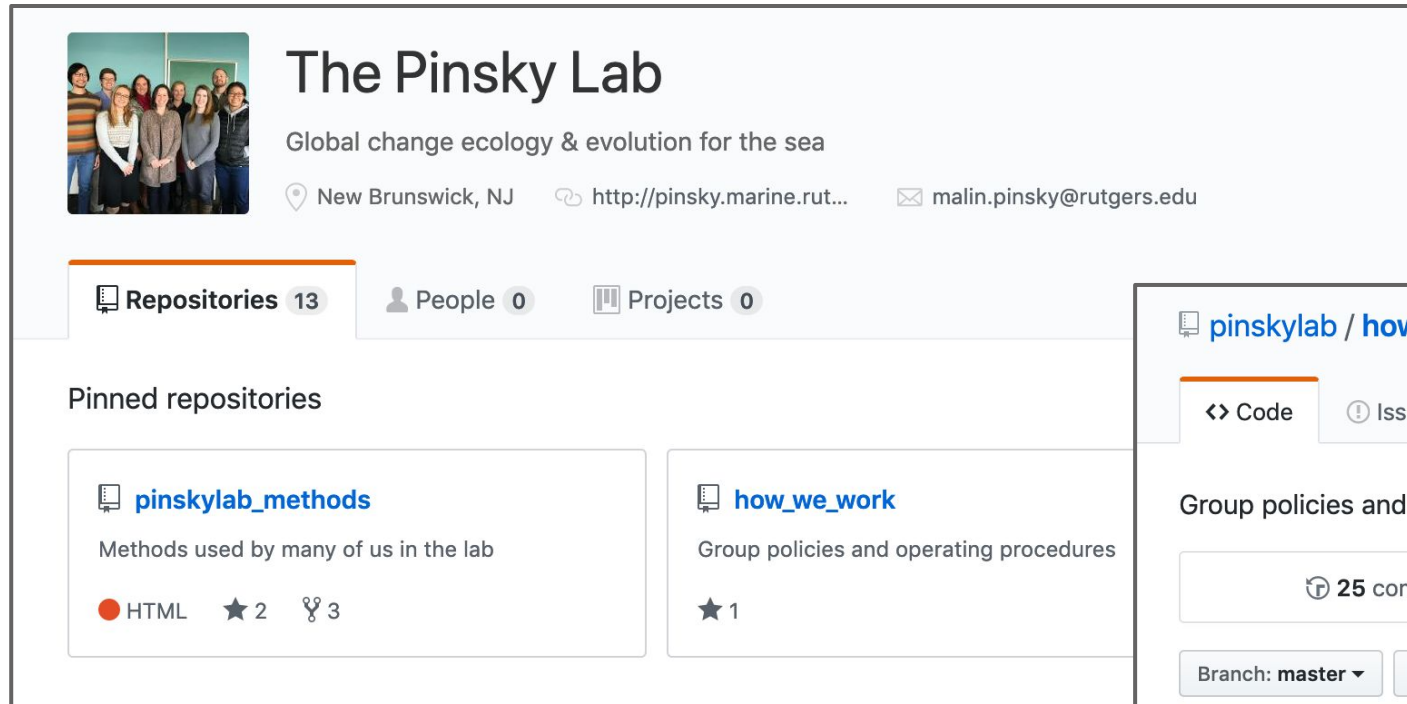


OUTCOMES

In four months we've already seen:

- Mindset shifts in individuals
- Increase in skills & practice
- Culture shifts in labs
- Leadership & championing

Lab GitHub organizations, CoCs, & protocols

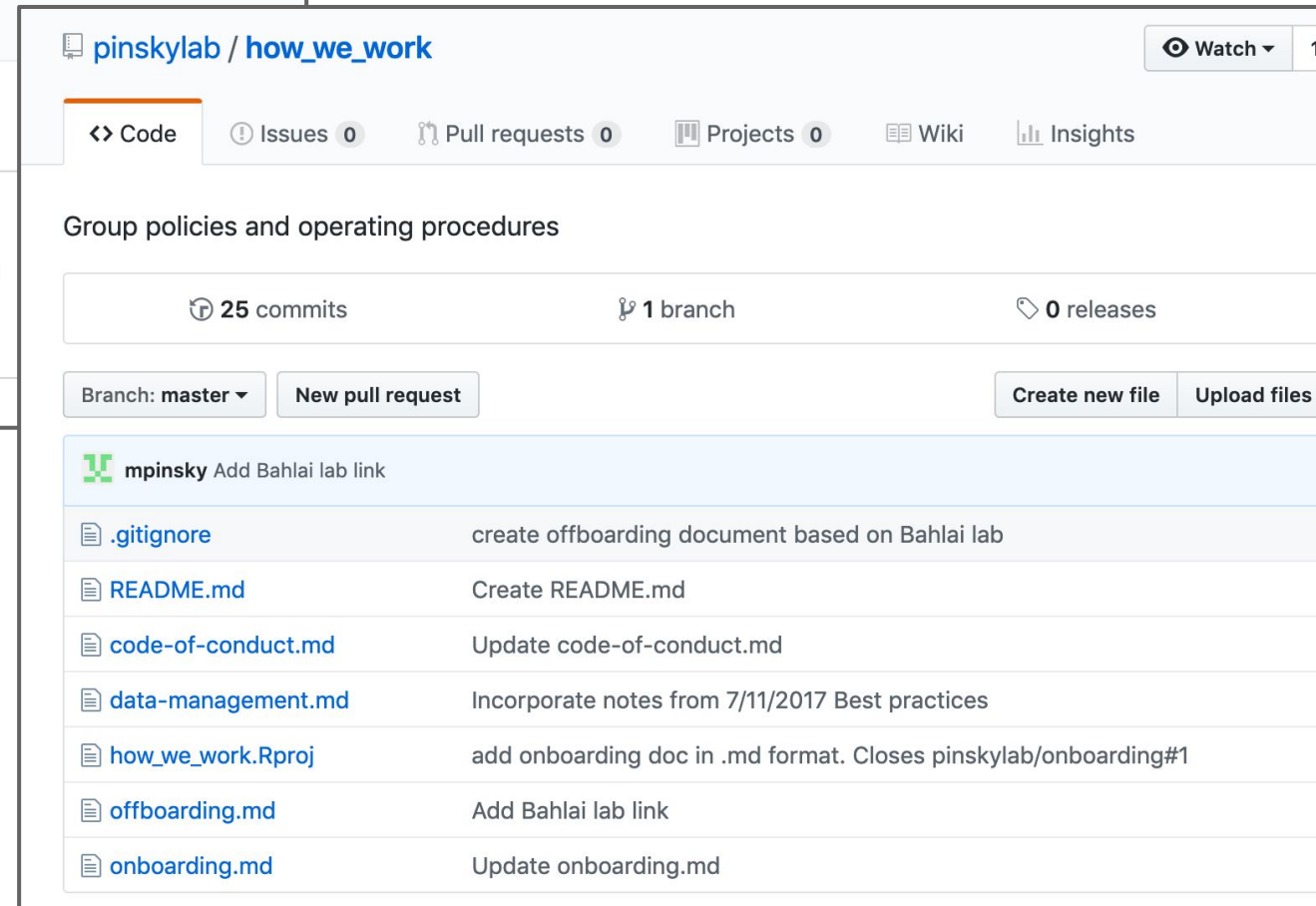


The Pinsky Lab
Global change ecology & evolution for the sea
New Brunswick, NJ | http://pinsky.marine.rut... | malin.pinsky@rutgers.edu

Repositories 13 | People 0 | Projects 0

Pinned repositories

- pinskylab_methods**
Methods used by many of us in the lab
HTML | ★ 2 | 3 forks
- how_we_work**
Group policies and operating procedures
★ 1



pinskylab / **how_we_work** | Watch 1

Code | Issues 0 | Pull requests 0 | Projects 0 | Wiki | Insights

Group policies and operating procedures

25 commits | 1 branch | 0 releases

Branch: master | New pull request | Create new file | Upload files

mpinsky	Add Bahlai lab link
.gitignore	create offboarding document based on Bahlai lab
README.md	Create README.md
code-of-conduct.md	Update code-of-conduct.md
data-management.md	Incorporate notes from 7/11/2017 Best practices
how_we_work.Rproj	add onboarding doc in .md format. Closes pinskylab/onboarding#1
offboarding.md	Add Bahlai lab link
onboarding.md	Update onboarding.md

github.com/pinskylab

github.com/therkildsen-lab

github.com/wood-lab

github.com/stier-lab

github.com/allisonhorst

github.com/jayasundara-lab

Normalizing talking about open data science

BY JULIE LOWN

[Sea]side Chats for data workflows

Seaside Chats. Bluffside Chats. Fishbowl Chats. Bayside Chats. This is where we discuss data

One of the long-term goals of Openscapes is to change the culture about how we work and normalize even talking about data. We need to be able to have meaningful conversations

Bayside Chats - Wood Lab

Welcome to Bayside Chats with the Wood Lab!

Here, we eat lunch and chat about reproducible research, coding problems, and cool new packages/software/computational methods that are applicable to our research.

Meetings are held weekly on Tuesdays from noon to 1pm, in second floor kitchen/lunch room area near the Wood Lab postdoc/graduate offices. Our meetings are open to all Wood Lab members, affiliates, and other SAFS labs, and we emphasize collaborative learning and support. Have a problem/question? Bring it! Find a cool new package that others might be interested in? Mention it during discussion or sign up to present!

Presentations are informal and can be short (e.g. as short as 5 minutes, really!) or longer (up to ~30-45 minutes, so we have time for questions/discussion). You can propose a thing you're having trouble with (present the problem, and what you've tried so far), or something that you just started figuring out how to do (present the package/skill, its uses, and what you're using it for now). The goal is to get everyone involved in sharing and

FEBRUARY 8, 2019 BY MICHELLE STUART

Fishbowl Chat #1

As part of the [openscapes](#) initiative, the Pinsky Lab met this week to discuss better data science, starting with getting everyone in the lab connected to our [GitHub organization](#).

We began by explaining the difference between git and GitHub and then had a 20 minute group discussion about what we should be putting on GitHub and how we wanted to use it as a group tool.

We spent the rest of the hour in breakout groups addressing different obstacles people faced as beginner GitHub users. One group was creating accounts, one group was connecting to the [pinskylab](#) organization, and another was connecting RStudio to GitHub.

It was great to see people migrating from group to group as issues were solved. By the end of our time together, it seemed like everyone had a good handle on using GitHub to share work with the rest of the team.

This open communication has leaked into the general discussion going on in our open work space. Lab members seem more comfortable with asking teammates for help, and it is exciting to see all of us getting on the same page with our data science.

stier-lab / Seaside-chats

Code Issues 1 Pull requests 0 Projects 1 Insights

Seaside chat schedule Updated 7 days ago

Filter cards

- 2 Package/topic selected/Name of lead
 - Swirl/Lily Added by lilyz Zhao
 - working in terminal/Bart Added by lilyz Zhao
- 0 Next meeting (Tuesday at 1pm in MSI conference room before lab meeting)
- 2 Done/folder created and README written
 - Here package/Sam Added by lilyz Zhao
 - esquisse/Joe Added by lilyz Zhao

pinsky.marine.rutgers.edu/fishbowl-chat-1

github.com/wood-lab/wood-lab-resources

openscapes.org/blog/2019/03/10/seaside-chats

Joining & leading communities outside the lab

BY ALLISON HORST | MAY 2, 2019

Starting our #tidytuesday hacky hours

This is our first community blog post by Openscapes Champion Allison Horst!

Hi everyone! I'm Allison. I teach data analysis, statistics and presentation School of Environmental Science and Management at UC Santa Barbara.


In [Openscapes](#) we discuss the need to create supportive spaces, like [cod](#) their coding skills.

With Bren masters student Gracie White ([@GracieGW](#)), I've recently started Santa Barbara. Here, I'll share how [#tidytuesday](#) has reduced our workload, organize our events, and a few things we've learned so far.

twitter.com/allison_horst
openscapes.org/blog
twitter.com/highlandladies

First RLadies chapter in New Jersey!



 Allison Horst
[@allison_horst](#) Following

Our 2nd [#tidytuesday](#) hacky hours, with four [@ucsb](#) departments represented ([@brenucsb](#), Anthropology, EEMB, Environmental Studies) + [@nceas](#)! 🥳🎉📊
[#rstats](#)



5:53 PM - 9 Apr 2019



EcoDataScience [@ecodatasci](#) · Apr 9

Learning about High Performance Computing at UCSB with [@fishymary](#) and Sharon Solis!



2 2 8



JuliaStewart Lowndes



[@juliesquid](#) Following

Replying to [@ecodatasci](#) [@fishymary](#)

And so cool to have a few first time attendees who are [@openscapes](#) -ers: 🙌
[@lilyzzhao](#) [@AdrianStier](#) [@DocFroehlich](#)!

12:29 PM - 9 Apr 2019


Being ambassadors & engaging with #rstats Twitter

 **Halley E. Froehlich** 
@DocFroehlich Following

Um 'rnoaa' package is an absolute game changer. Thanks @juliesquid @openscapes for the intro! 🧡

[cran.r-project.org/web/packages/r...](https://cran.r-project.org/web/packages/rnoaa/)

12:02 PM - 17 Jan 2019

4 Retweets 31 Likes 

3 4 31

 Tweet your reply

 **Julia Stewart Lowndes** @juliesquid
Replying to @DocFroehlich
Cc: @rOpenSci @sckottie

1

 **Scott** @sckottie · Jan 17
woot woot. glad you like it.

 **Adrian Stier**
@AdrianStier Following

@seankross is showing @openscapes cohort @swirlstats rn and it's 🔥

Sean is so nice and this is such a cool way of helping people learn how to use R. Thanks Sean! #rstats @R4DScommunity

11:41 AM - 25 Apr 2019

 **Allison Horst**
@allison_horst Following

When @juliesquid gently encourages you for over a year to join the R community on Twitter and you reluctantly give in. #rstats #rladies



9:26 AM - 24 Nov 2018

New scientific collaborations



Manuscript in prep!

twitter.com/allison_horst
openscapes.org/blog

I am championing open data science in faculty meetings • I said we're doing our students a disservice

• I'm **So many other wins to measure & share** ping notes in

google docs, openscapes style! • our lab tech will teach a new data science course • we have a code of conduct! • us too! • all this is something I've worried about a lot and feeling better about it • all our lab protocols are now on GitHub • I reorganized my teaching materials so it's better next year • all my capstone students are using GitHub for their analyses • I'm now pushing GitHub on all my collaborators • we have a more open culture • I organized and put all my teaching materials online • I didn't realize there would be so much to talk about • we have a shared lab Google Drive • we developed a way to offboard our undergrads • my lab has put all our scripts online • we are going to have a lab hackathon • thank you for saying the code of conduct on each call • I didn't know about #rstats twitter • these efficiency tips save me so much time • I taught a course from R4DS, learning the night before • I want to do everything a bit better • I reran my collaborator's code! • we improved our documentation • we improved our metadata • this saved me so much time • everyone in our lab now has a GitHub account • I led a discussion on data sharing practices for our lab • we are now officially an open science lab • I'm going to put all my teaching materials online • I am starting an RLadies chapter • I organized our lab's code on GitHub • I feel a part of something bigger • I will start teaching R in my classes • I thought I was utterly incapable of learning GitHub • this happened just at the right time • this isn't just about coding and GitHub, this is about changing the way we do science

Challenges

- Labs don't by default think/act like a team
- Imposter syndrome & hierarchy
- Limited time, hard to prioritize with no academic incentives

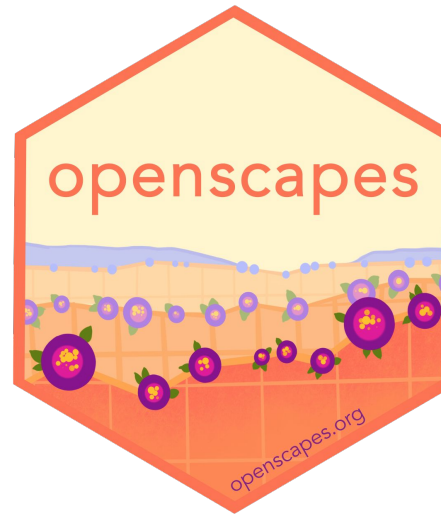
Challenges

- Labs don't by default think/act like a team
- Imposter syndrome & hierarchy
- Limited time, hard to prioritize with no academic incentives

Ideas

- Links between open software & kinder culture IRL
- Invest in people that enable open data science
 - lecturers
 - researchers
 - valued with \$\$ & job security





openscapes.org
@openscapes



ohi-science.org
@ohi-science

moz://a



Thank You

slides: openscapes.org/media

Julia Stewart Lowndes, PhD

<http://jules32.github.io>

lowndes@nceas.ucsb.edu

@juliesquid

Outline

- Data science as a discipline
 - Open data science tools exist
- Open as a way to work
- Lab members as a team
- Collaborators and community (redefined) as a way to
- The internet as an underleveraged tool for science

5. Streamlined workflows with code

March 14th, 2019
10:30 PT // 1:30 ET
(85 minutes)

This week: We will discuss good coding practices for beginning and seasoned coders alike that make it easier to work with other people, times, and computers.

Zoom room:

Recording

Roll call

Name / a way you've incorporated something we've discussed into your data lifestyle (5 min)

- Julie Lowndes / the efficiency tip about command-[, command-] (I learned for Openscapes) and it is so helpful for working in our agenda docs
-
-
-

Agenda

Remind Julie to record!!!!

- **Today's learning goals** (20 min)
 - How to streamline
 - for you, you
 - across time
 - Source files, [filepaths](#)
- **Community Participation** (10 min)
 - Be respectful, honor others, and learn from everyone
 - Do not attack, denigrate, or engage in such behavior.
 - See also: full CPG [link]
 - Issues: report them
- **Housekeeping:** (5 min) –
 - Special Guest
 - Followup:
- Examples of using Markdown/Github like we learned?
 - [allisonhorst/esm-244-2019](#)
 - [pinskylab/pinskylab_methods/cookbook](#)
 - [BahlaiLab/Policies/Consulting](#)
- Other announcements?
 -
- **Breakout groups** (10 min) – All (Champions separately)
 - How have Seaside Chats been going?
 - Did you get your Code of Conduct online (on GitHub or otherwise)?
 - Have you discussed using GitHub Issues/Projects in the lab?
 - Did you start going through OHI-Science's data-science-training:
 - [RStudio](#)
 - [GitHub](#)
 - [Collaborating with GitHub](#)
-
- **Discussion** (10 minutes)

Cohort Call [Agendas](#)
and [Slides](#)



JuliaStewart Lowndes @juliesquid · Apr 19

Congratulations @allison_horst !!!! This award is *such* a big deal and so well deserved!!! Thank you for being such an inspirational teacher and mentor to so many at Bren and far far beyond. We are so lucky to have you in the #rstats community 🍷🥰🥰



UCSB Bren School @brenucsb

Congratulations to Bren lecturer Allison Horst, who was awarded #UCSB's Distinguished Teaching Award! 🏆 She makes data analysis and statistics accessible, which we call a win-win for Bren and our students! Also pictured:

6 12 79



Openscapes @openscapes · Apr 19

And we are so lucky to have you in the @openscapes community 🍷

1 6



Allison Horst

@allison_horst

Following

Replying to @openscapes @juliesquid

Thanks @openscapes, for helping me improve as a data scientists individually and for revolutionizing the way I teach the next generation of environmental scientists!

4:16 PM - 19 Apr 2019



Andy van der Schatte Olivier @AndyVDSOlivier · 14 Sep 2018

Science twitter, #marsocsci, @MarSocSci , amongst colleagues there is a dislike of using social media, and I somehow volunteered to run a workshop. Could you answer this to help,

“Why should scientists use Twitter /what should researchers use Twitter for?”

Help much appreciated



47



19



38



Julia Stewart Lowndes

@juliesquid

Replying to @AndyVDSOlivier @MarSocSci

I joined to learn R + have been blown away by the community, support, friendship, + opportunities (eg #rstats, @rOpenSci, @swcarpentry). It has been game-changing for our science @nceas ([nature.com/articles/s4155...](https://www.nature.com/articles/s4155...)), which is now the focus of my @mozilla fellowship (found on Twitter)

7:37 AM - 16 Sep 2018



Openscapes

@openscapes

Thank you @OpenOCTO for being so important for our ocean communities 🥰



OCTO @OpenOCTO

Day 11 of #30EarthMonthHeroes and @juliesquid (Julia Stewart Lowndes) is our hero of the day! She is a champion for open environmental data science, a squid fan (obviously), and founder of @openscapes.

9:50 AM - 11 Apr 2019