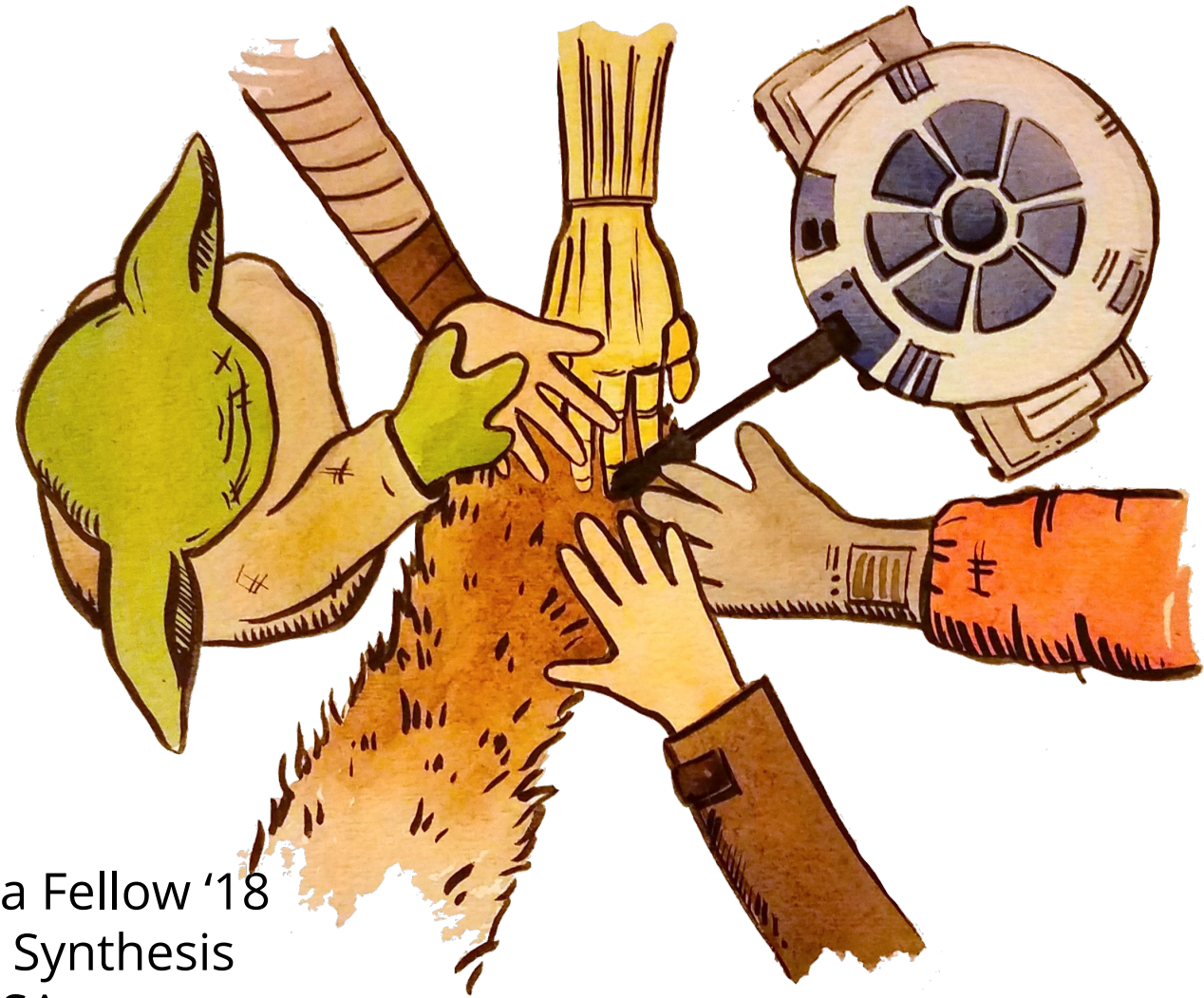


Building communities of practice around environmental open data science



Julia Stewart Lowndes, PhD

Marine Data Scientist, Senior Fellow, Mozilla Fellow '18
National Center for Ecological Analysis and Synthesis
University of California at Santa Barbara, USA
lowndes@nceas.ucsb.edu; @juliesquid
October 16, 2019 • FORCE2019, Edinburgh

moz://a



slides: openscapes.org/media; [CC-BY](#)

Artwork by Allison Horst

The problem

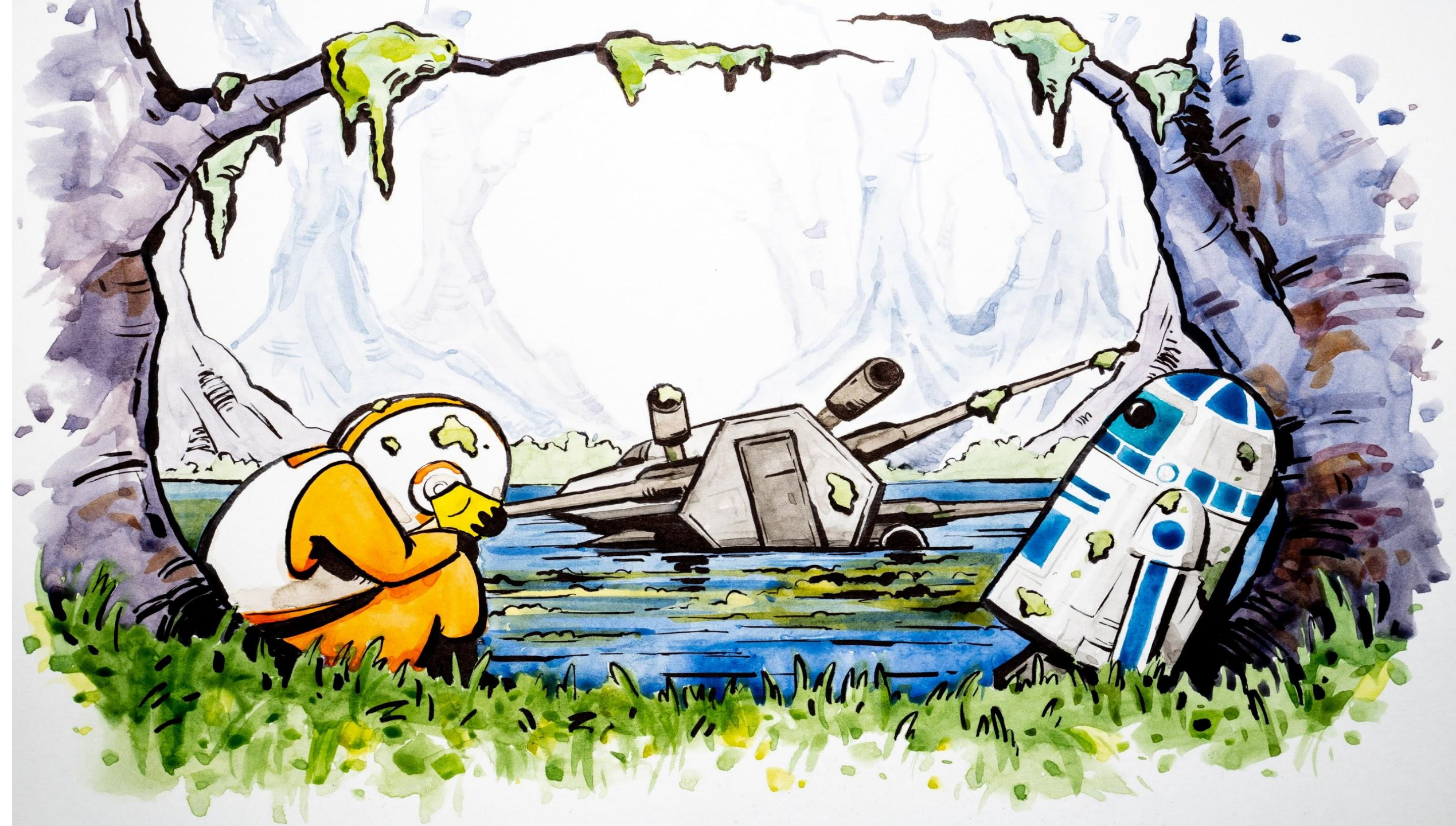
Many scientists don't practice open science, and also struggle with data – as individuals

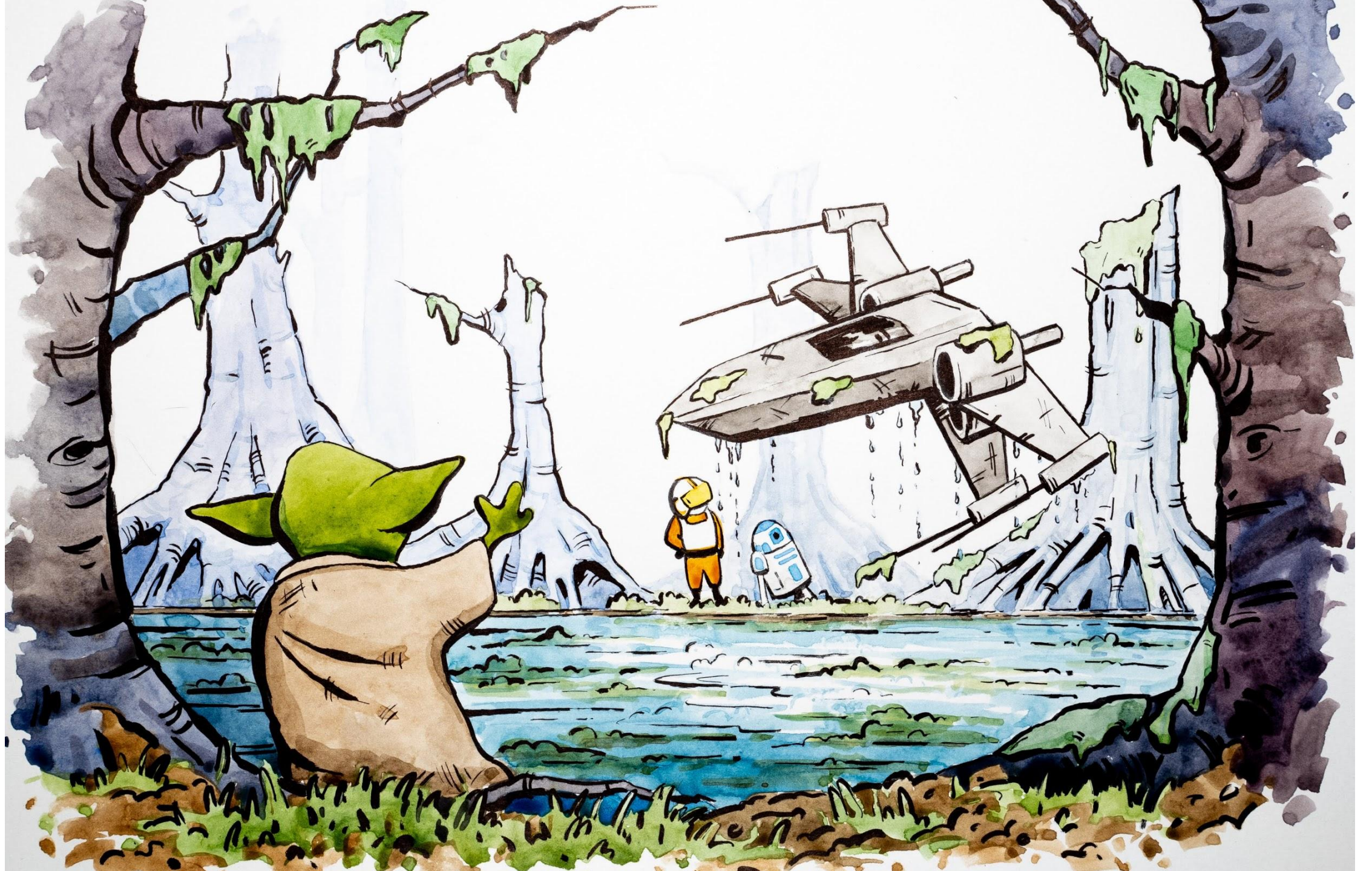
This matters now

Early career leaders are perpetuating closed, homegrown practices... and studying climate change, there's no time to waste

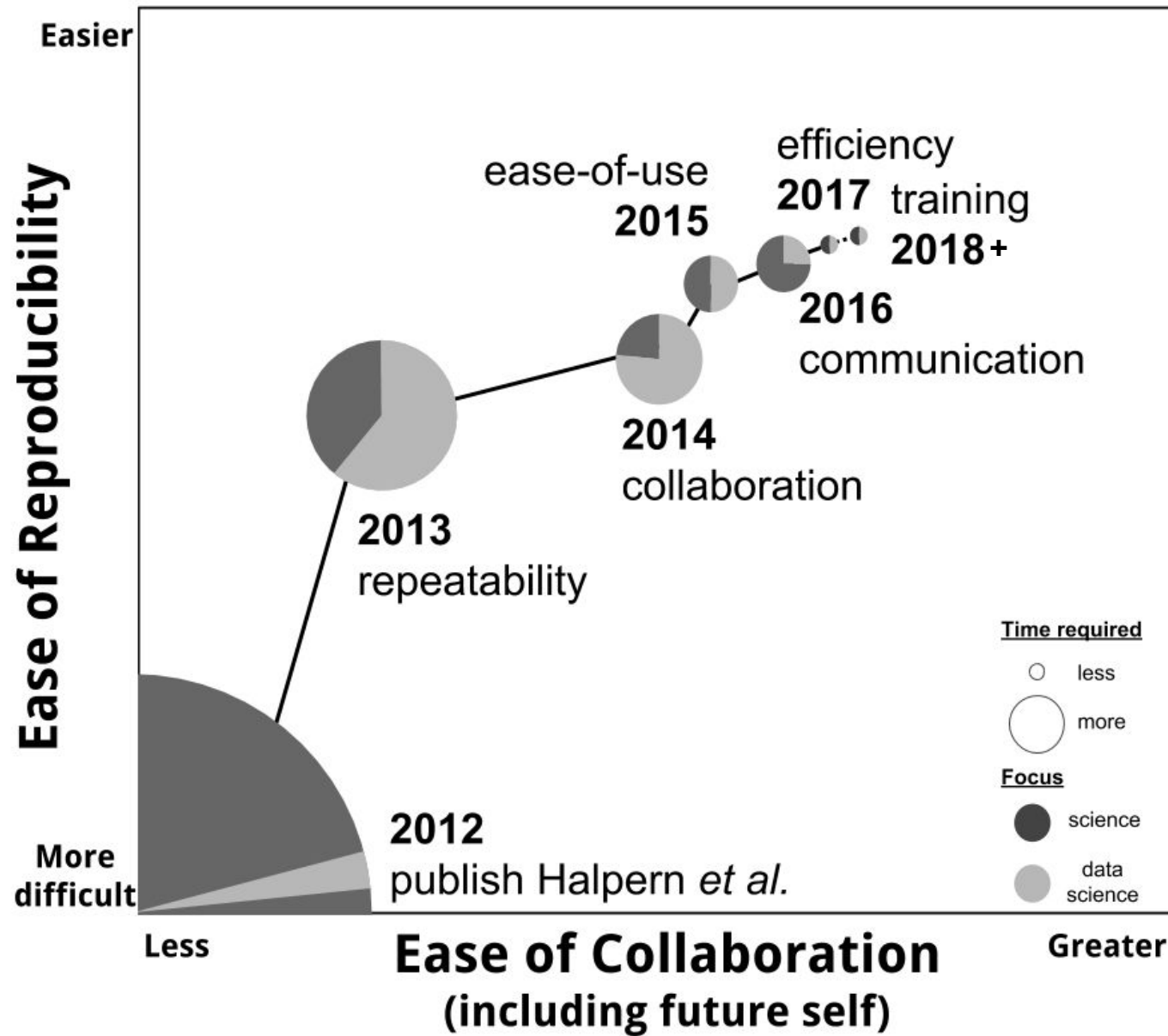
A contributing solution

Welcome scientists to open science by empowering them with open data science tools & communities – as teams







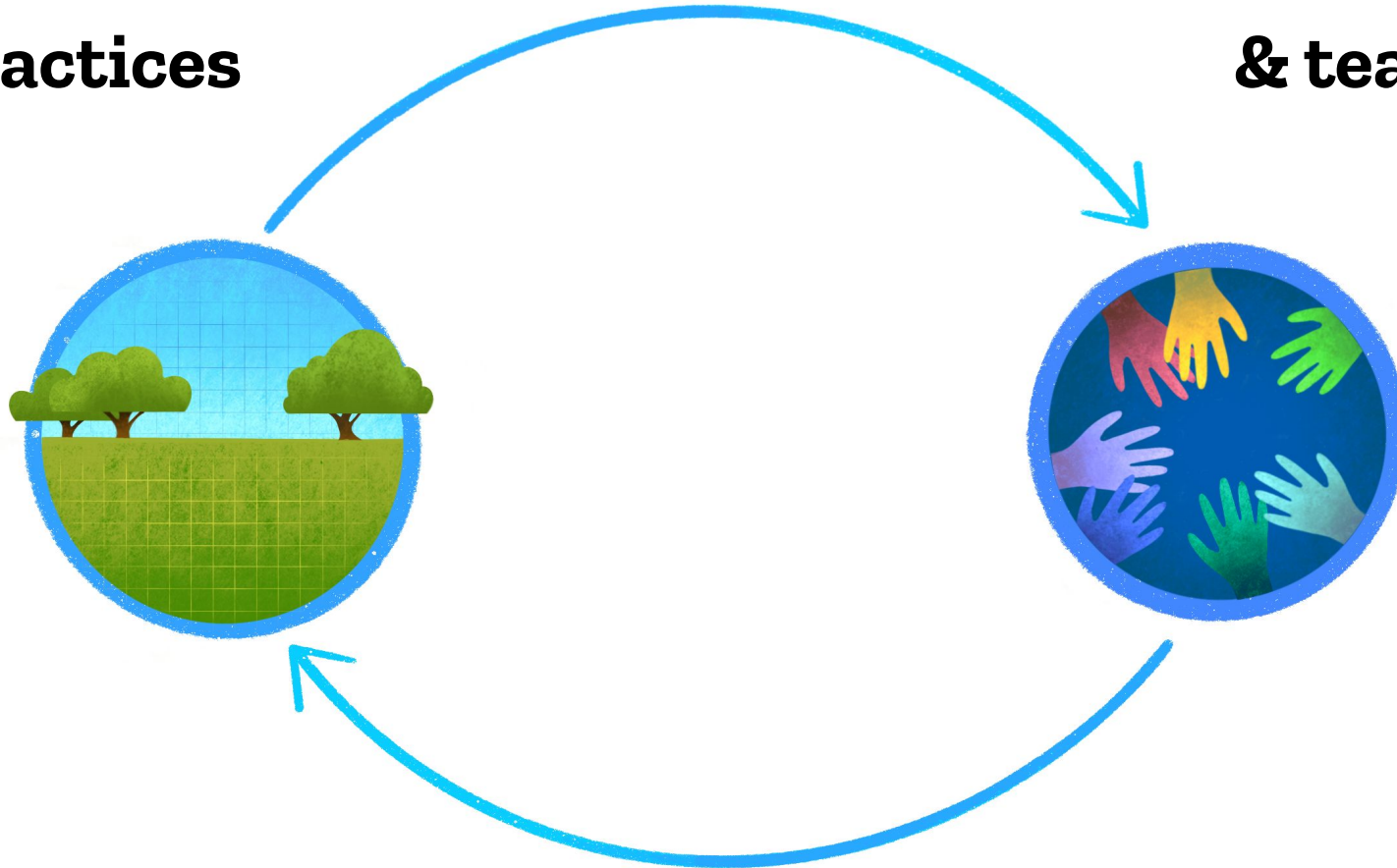


Our path to better science in less time using open data science tools

[Lowndes et al. 2017, Nature Ecology & Evolution](#)

**Open data science
tools & practices**

**Collaboration
& teamwork**



Let's welcome more scientists to this powerful feedback loop



OPENSAPES

LET'S DO BETTER SCIENCE
IN LESS TIME
TOGETHER

We welcome scientists to open data science, and grow the open movement.

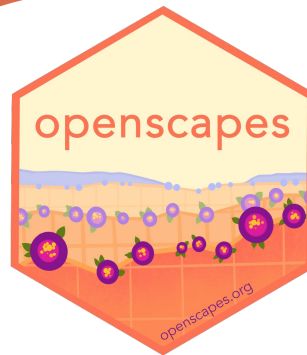
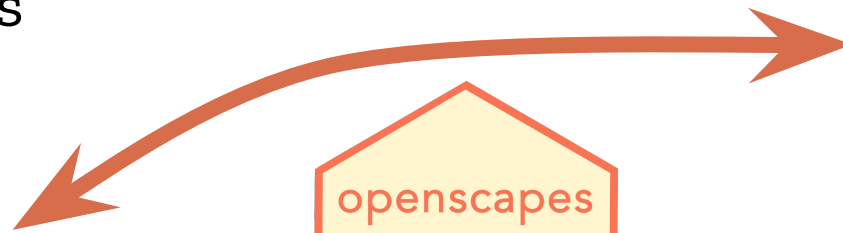
Engage: build awareness and excitement with empathy, art, and storytelling

Empower: connect with existing open software and communities

Amplify: champion broadly to increase visibility, value, and practice

Openscapes complements existing efforts

Awesome researchers tackling time-sensitive questions



Powerful open tools, practices, communities





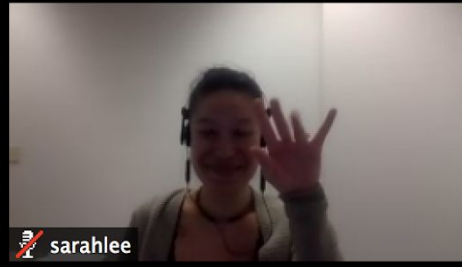
CHAMPIONS PROGRAM

A mentorship program for science teams, centered around open data science.

Structure: 5-month remote program à la Mozilla Open Leaders

Curriculum: open software, workflows, communities, culture

Participants: cohort of 7 early career leaders & their research groups



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 ***some chapters are only notes at this point.***

Openscapes Champions is a mentorship program that empowers en data science tools and grows the community of practice. We mentor researchers in leadership roles – faculty, lecturers, program manager open data science practices in their labs and on their campuses. It is they are and help identify incremental steps to make their data workt been building Openscapes from an open data science angle, but also openness, collaboration, good intentions, and creating the culture w broadly defined.

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

Agendas

Chapters

1. Openscapes overview & mindset

[overview, mindset](#)

2. Better science in less time

[better science in less time](#)

3. Lab culture

[lab culture, code of conduct](#)

4. GitHub for the lab

[GitHub for publishing, GitHub for project management](#)

5. Streamlined workflows with code

[source files, filepaths & project oriented workflows](#)

6. Mid-series check in

7. Coding with communities, part 1

[coding with communities](#)

8. Coding with communities, part 2

9. Communicating science openly

10. Presentations: Openscapes Case Studies

R + Github for publishing

Methods & publications
made with RMarkdown

Manuals, Trainings,
Books
made with bookdown

```
2 title: "Visualizing the ocean floor"
3 output: html_document
4 params:
5   data: "hawaii"
6 ---
7
8 ```{r include = FALSE}
9 library(marmap)
10 library(ggplot2)
11 ```
12
13
14 The [marmap](https://cran.r-project.org/web/packages/marmap/index.html) package provides tools and data for visualizing the ocean
```

Openscapes Champions Series

- 1 Welcome
- 2 Overview
 - 2.1 Why we're here
 - 2.2 What to expect
 - 2.3 What's possible with open dat...
 - 2.4 What you'll learn
 - 2.5 Deliverables
 - 2.6 Additional reading
- 3 Openscapes Mindset
 - 3.1 Future you as your most impo...

Openscapes Champions Series

Openscapes Team

2019-01-08

Chapter 1 Welcome

This book is a lesson series for the Openscapes Champions program. *It is under heavy development.*

The Openscapes Champions program is designed to meet scientists where they are and help identify incremental steps to make their data workflows more efficient and open. The lessons were developed from [Our path to better science in less time](#), using the topics discussed in that paper as a guide.

The program is modeled after [Mozilla's Open Leadership Training Series](#).

Openscapes is operated by the National Center for Ecological Analysis & Synthesis (NCEAS) and is incubated by a [Mozilla Fellowship](#) awarded to [Julia Stewart Lowndes](#).

openscapes

CHAMPIONS PROGRAM RESOURCES BLOG ABOUT

OPENSAPES

LET'S DO BETTER SCIENCE
IN LESS TIME
TOGETHER

Websites
openscapes.org
made with blogdown



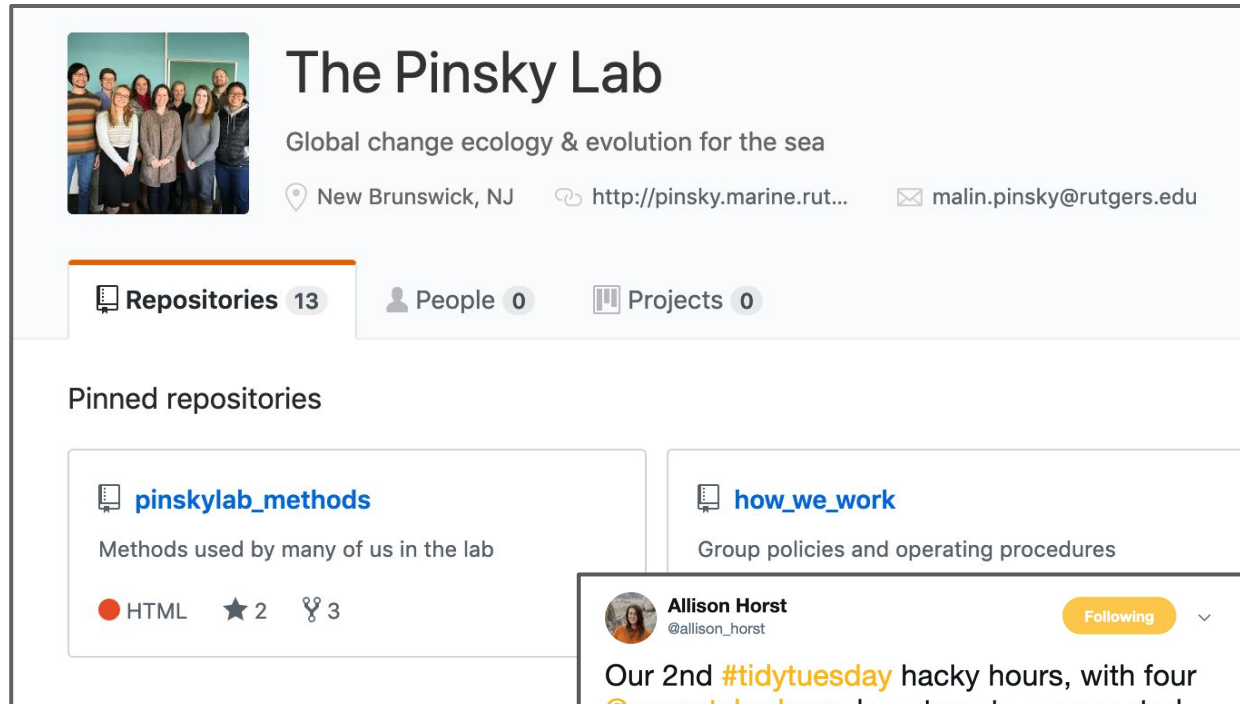
OPENSAPES IMPACT

"This isn't just about coding & GitHub, it's about changing the way we do science"
- Malin Pinsky

Participants: open practices & culture in the research group;
championing beyond; continued momentum as alumni

Program: champion open data science broadly; community
growth, interest, & amplification; support

GitHub organizations



The Pinsky Lab
Global change ecology & evolution for the sea
New Brunswick, NJ | <http://pinsky.marine.rutgers.edu> | 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
- how_we_work**
Group policies and operating procedures



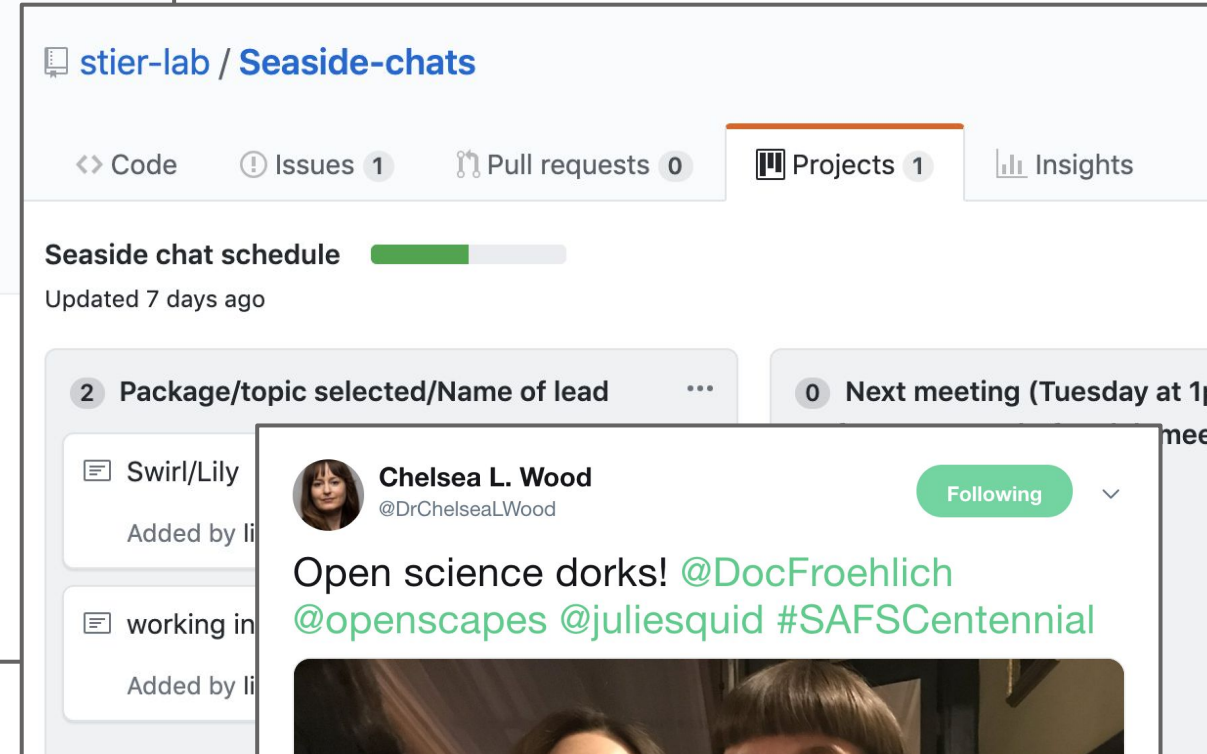
Allison Horst @allison_horst Following

Our 2nd **#tidytuesday** hacky hours, with four **@ucsantabarbara** departments represented (**@brenucsb**, Anthropology, EEMB, Environmental Studies) + **@nceas**! 🤖🏀📈 **#rstats**



Leadership

Data-centric chats



stier-lab / Seaside-chats

Code | Issues 1 | Pull requests 0 | Projects 1 | Insights


Seaside chat schedule Updated 7 days ago

- 2 Package/topic selected/Name of lead
- 0 Next meeting (Tuesday at 10:00 AM)

Swirl/Lily | working in

Chelsea L. Wood @DrChelseaLWood Following

Open science dorks! **@DocFroehlich** **@openscapes** **@juliesquid** **#SAFSCentennial**



New collaborations

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 feel better • I now require GitHub with 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 & GitHub, it's about changing the way we do science**

Supercharging research with open data science and teamwork

(working title)

Lowndes et Champions, *in revision*

Ideas for how research groups can get started:

1. Normalize data discussions
2. Identify and address shared needs
3. Think ahead for Future You and Future Us

Table of actions for how to get started in 10 weeks

Opening keynote at useR! 2019

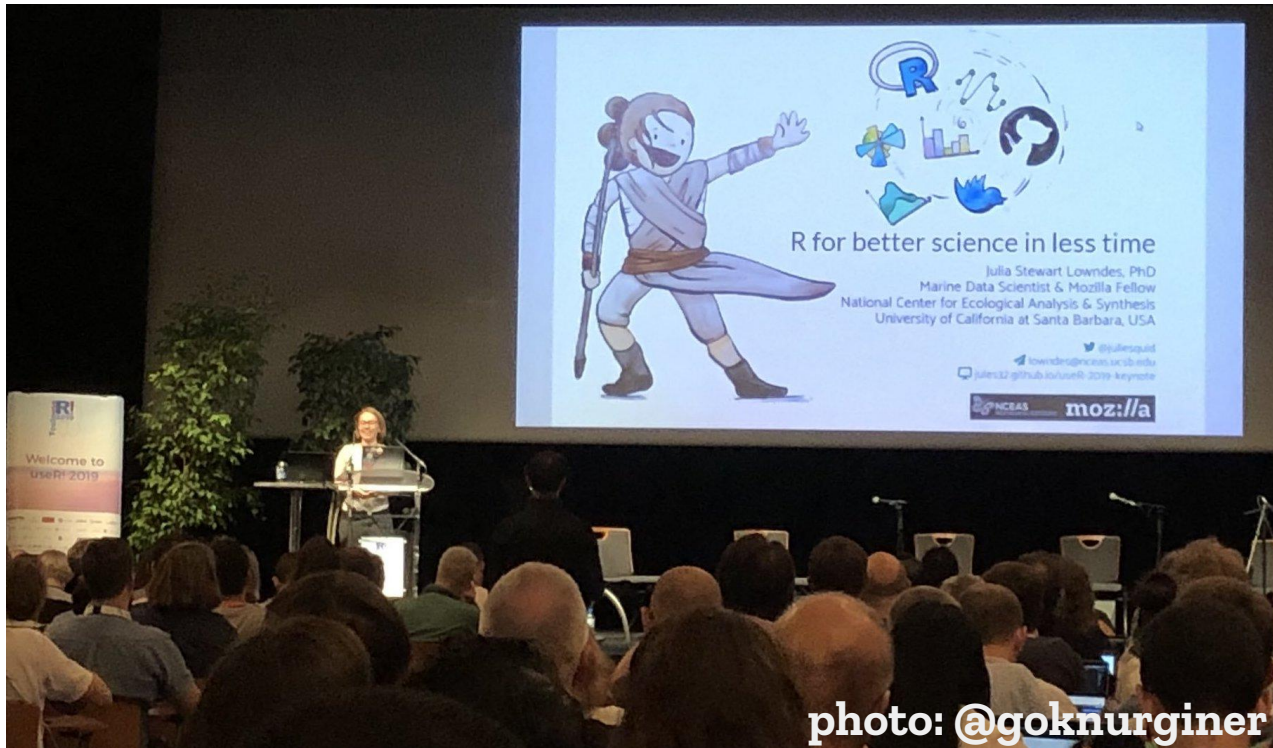


photo: @goknurginer

Community engagement



Jeff Hollister
@jhollist

If you are into [#OpenScience](#), [#DataScience](#), and [#EnvironmentalScience](#) you should really follow [@openscapes](#). They are doing some great stuff for the current and next generation of Environmental Data Science!

4:23 PM · Jun 11, 2019 · [Twitter Web Client](#)

10 Retweets 19 Likes

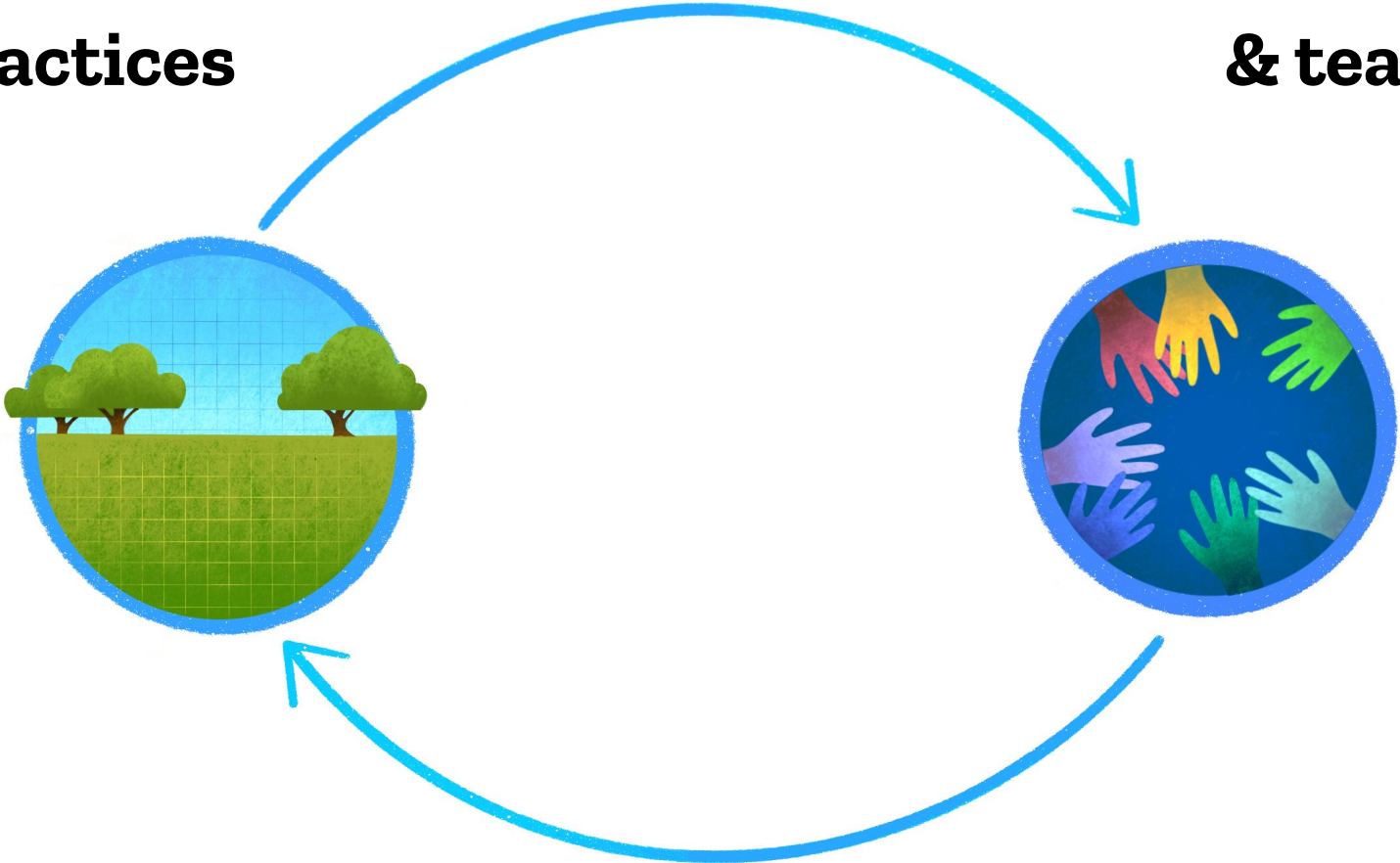
Funding

moz://a

GORDON AND BETTY
MOORE
FOUNDATION

**Open data science
tools & practices**

**Collaboration
& teamwork**



Entryways start with trust



OPENS CAPES FUTURE

Plan: long-term self-sustaining program to supercharge research & scientific culture

Scaling: expansion & propagation

Impact: champions > research group > beyond

Home: NCEAS at University of California Santa Barbara, USA

The problem

Many scientists don't practice open science, and also struggle with data – as individuals

This matters now

Early career leaders are perpetuating closed, homegrown practices... and studying climate change, there's no time to waste

A contributing solution

Welcome scientists to open science by empowering them with open data science tools & communities – as teams

Openscapes Vision

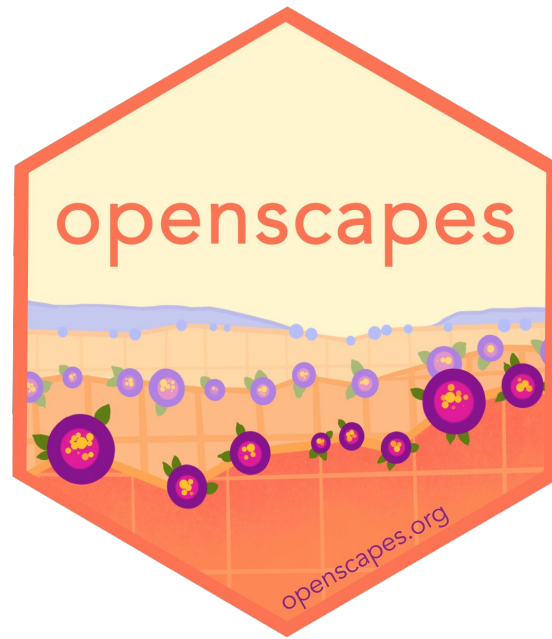
We can get to **data-driven solutions faster**

if we are more

efficient & collaborative

in how we do science.





openscapes.org
@openscapes

moz://a



Thank You

Slides: openscapes.org/media; [CC-BY](#)

Artwork by Allison Horst [@allison_horst](#)

Julia Stewart Lowndes, PhD

@juliesquid

<https://jules32.github.io>

lowndes@nceas.ucsb.edu