2021 CESM Tutorial
Welcome & Orientation

Gustavo Marques, Elizabeth Faircloth (Climate and Global Dynamics Laboratory)

Davide Del Vento (Computational and Information Systems Laboratory)

Valerie Sloan, Jerry Cyccone, Elise Mason (Education & Outreach)

July, 20th 2021

NCAR
NATIONAL CENTER FOR ATMOSPHERIC RESEARCH

Welcome to NCAR

This is where we would be in non-COVID time.

Today's agenda

11:00 am	Welcome and introductions of staff Ask participants to type in their reasons for wanting to do the tutorial (PollEv word cloud). Present agenda for today and the tutorial week (August 9-13)
11:05 am	A brief introduction to the CESM Tutorial including: • Tutorial Agenda - topics, speakers, timing of activities • Expectations w.r.t. watching lectures and completing exercises • Communicating: Slack Channel, PollEv, Zoom, Email
11:40 am	Q & A session & stretch break
12:00 pm	Topics: • Establishing group norms • Listening activity and breakout rooms (2 per room) • Elevator speeches (w/breakout rooms - 2 per room) • Bringing our identities to science, privilege, & power • Anti-harassment, bystander tips • Creating a kind culture
12:55 pm	End of meeting

Introductions

- **Tutorial Organizing Committee:**

Gustavo Marques, Alice DuVivier, Cécile Hannay, Gunter Leguy, Peter Lawrence, Adam Phillips, and Christine Shields

- **Logistics**: Elizabeth Faircloth

- **Education & Outreach**: Valerie Sloan, Jerry Cyccone

- **Computing support**: Davide Del Vento

- **Web support:** Ryan Johnson

- **Funding**: National Science Foundation

Main reason for attending this tutorial

What is the one word that best describes your main reason for attending this tutorial?

Community Earth System Model Tutorial

# 2021 CESM tutorial website

www.cesm.ucar.edu/events/tutorials/2021/ ← If you need to find the link:
Google "2021 CESM Tutorial"

Tutorial Links

- **Home**: Main page for the 2021 CESM tutorial
- **Agenda**: View the agenda in pdf format *Coming soon
- **Announcement**: Information about the event and how to apply to the tutorial
- **Participants**: Participants of the 2021 CESM Tutorial
- **Prerequisites**: Please complete the following activities to ensure you are prepared for the tutorial
- **Coursework**: View the sciences presentations and the labs exercises.
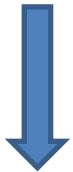
Tutorial Links

Agenda, list participants, presentations, lab exercises are online (or will be soon)

Tutorial Prerequisites

www.cesm.ucar.edu/events/tutorials/2021/prerequisites.html

Account setup homework (email sent on 07/12/2021)
- Make sure you are able to access Cheyenne and can perform basic tasks.

UNIX tutorial
- Will help those new to computing in the geosciences become familiar with working in a command line environment.

Introduction to Programming & Fortran Lesson
- Introduces users to scientific programming structures and methods and the history, basic syntax and functionality of Fortran, which makes up much of CESM

Expectations for the lectures & exercises

- We are on **different time zones**
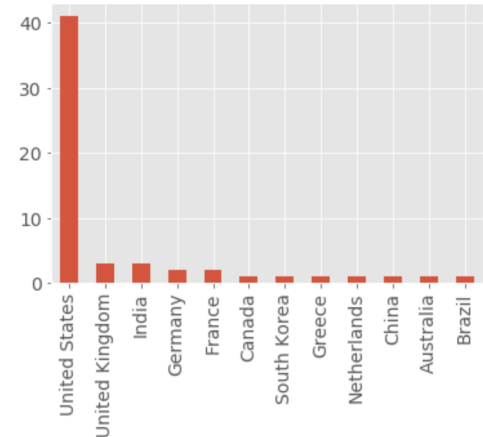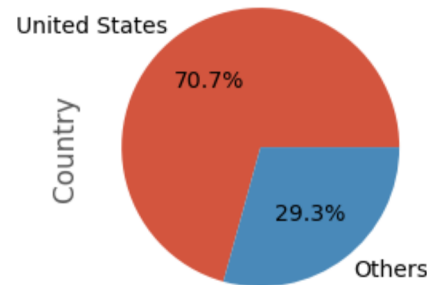
- You will be **working on your own time**
  (no group work)

- **Save your questions** for the Q&A's and office hours

- We encourage you to **help each other** using the tutorial **Slack channel**

- Take advantage of the **CESM Forums:** https://bb.cgd.ucar.edu/cesm/

- All **Q&A sessions** will be **recorded**

Typical Day (*)

Morning (8:40 am to 10:50 am MDT)

- Quick announcements
- Q&A panel sessions (recorded session, will be posted online)
- Meet a scientist (except Monday)
- 15 min. break

Lunch (10:50 am to 12:30 pm MDT)

- Possibility to meet with other participants in breakout rooms

Afternoon (12:30 pm to 2:30 pm MDT)

- Office hours

Community Earth System Model Tutorial

Theoretical lectures

- **1)** Introduction to the coupled system (**the only live lecture**); **2)** Atmosphere Modeling I: Intro & Dynamics; **3)** Atmosphere Modeling II: Physics (**Monday**)

- **4)** Land Modeling I: Biogeophysics; **5)** Atmosphere Modeling III: WACCM; **6)** Atmos. Modeling IV: Chemistry, Aerosols (**Tuesday**)

- **7)** Land Modeling II: Biogeochemistry; **8)** Ocean Modeling I (**Wednesday**)

- **9)** Ocean Modeling II; **10)** Ocean Biogeochemistry; **11)** Sea Ice Modeling (**Thursday**)

- **12)** Land Ice Modeling (**Friday**)

Morning Q&A panel sessions

- You can ask questions regarding the **theoretical lectures** in these sessions;

- We will use the Zoom polling feature to ask basic questions (anonymous);

- These sessions **will be recorded** and will be posted on the 2021 tutorial coursework webpage;

- Please mute yourself during the session;

- We highly encourage keeping your camera on, if possible;

- Raise your hand if you'd like to ask a question and wait for the moderator to give you the floor;

- There will be an option to ask questions in advance using PollEv (watch your email for additional instructions)**.**

Practical lectures

- **1)** NCAR computing environment; **2)** Run CESM2: Introduction (**Monday**)
- **3)** Run CESM2: Simple Modifications (**Tuesday**)
- **4)** Diagnostics and Output (**Wednesday**)
- **5)** Namelist and Code Modifications (**Thursday**)
- **6) to 12)** Breakout into different components: ocean&sea-ice, land ice, land, BGC, Atmosphere, WAACM/CAM-CHEM (**Friday**)

CESM Sandbox to be used:

- /glade/p/cesm/tutorial/cesm2.1_tutorial_2021

Project account (UESM0009)

- You should have all been added to this account.

Community Earth System Model Tutorial CESM

Afternoon office hours

Your chance to meet CESM expert users and ask questions related to the <u>practical lectures</u> and <u>exercises</u>

- On a given day we will follow the practical's scheduled for that day;

- Typically, the exercises are located at the end of the presentation;

- Please mute yourself at the beginning of the session;

- Raise your hand if you need help;

- You will have one-on-one interaction with a helper in a breakout room.

Office hours will not be recorded.

Community Earth System Model Tutorial
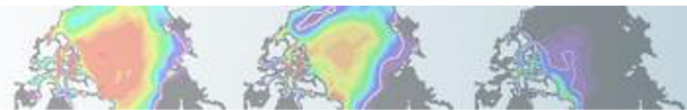
Applications talks

These are pre-recorded talks (~ 12 to 30 min long) and are meant to give you an idea of the scientific problems that can be pursued using CESM.

- **1)** Isotopes; **2)** Climate Intervention / Geoengineering; **3)** Decadal Earth System Prediction using CESM (**Tuesday**)

- **4)** Deep Time; **5)** Large Ensembles; **6)** Extremes in the Arctic (**Wednesday**)

- **7)** Ocean BGC ; **8)** Machine Learning with CESM; **9)** Applications of wildfire in CESM (**Thursday**)

- **10)** Using the CESM to Evaluate Global Carbon Dioxide Removal Potentials; **11)** Does the Atlantic force the Pacific or does the Pacific force the Atlantic? (**Friday**)

Community Earth System Model Tutorial
CESM
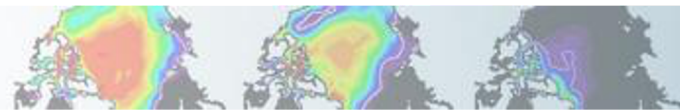
Specialized talks

These are pre-recorded talks (~ 20 to 30 min long) and are meant to cover topics related to porting, tunning, simpler models and containerized environment with CESM + Jupyter Lab

- Simpler Models (**Tuesday**)

- Model development: Coupling/Tuning (**Wednesday**)

- Porting CESM (**Thursday**)

- NEW: An Introduction to CESM-Lab (**Friday**)

Meet a scientist (optional) 10:00-10:50 a.m.

- This is **YOUR** time with a scientist, there is no agenda. Try to obtain the information you came looking for;

- These meetings will **NOT** be recorded;

- Please unmute yourself during the session or follow the guideline of the scientist;

- Please, do not monopolize the conversation and let everyone have a turn;

- **Watch your email**:
  - we will send you the scientists bio and you will be able to choose who you want to meet with;
  - sign up for a spot (maximum 6 students per scientist, first come-first served).
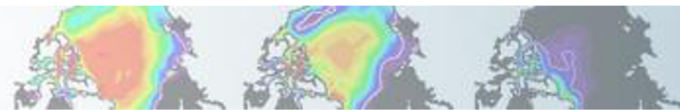
Lunch activity (Optional)

Meet with other participants

- We can arrange for you to meet in breakout rooms;

- Great networking opportunity: your space, your time;

- Feel free to eat your lunch while doing so!

Other ways of communicating amongst yourselves:

Slack channel

Asking questions

There are no "stupid" questions!
We all come from different background and we are here to learn.

- The worst that could happen is to leave the tutorial with your "stupid" question unanswered.

- If your question has not been answered in a session due to lack of time, let me know and I will have someone answer it.

Zoom: what you need to know for the tutorial week

**Elizabeth Faircloth will be the zoom host.**

- Make sure you have the most recent version of Zoom (zoom.us)
- Mute yourself upon entry in the "main" zoom room and as needed

- To ask questions during lecture or Q&A panel and office hours:
  1. Raise your hand and wait for the moderator to give you speaking permission.
  2. Ask your question in the room chat.

- Even though we are online, the zoom link is an NCAR address and NCAR rules are in place (e.g. code of conduct)

Quick look at Zoom tools
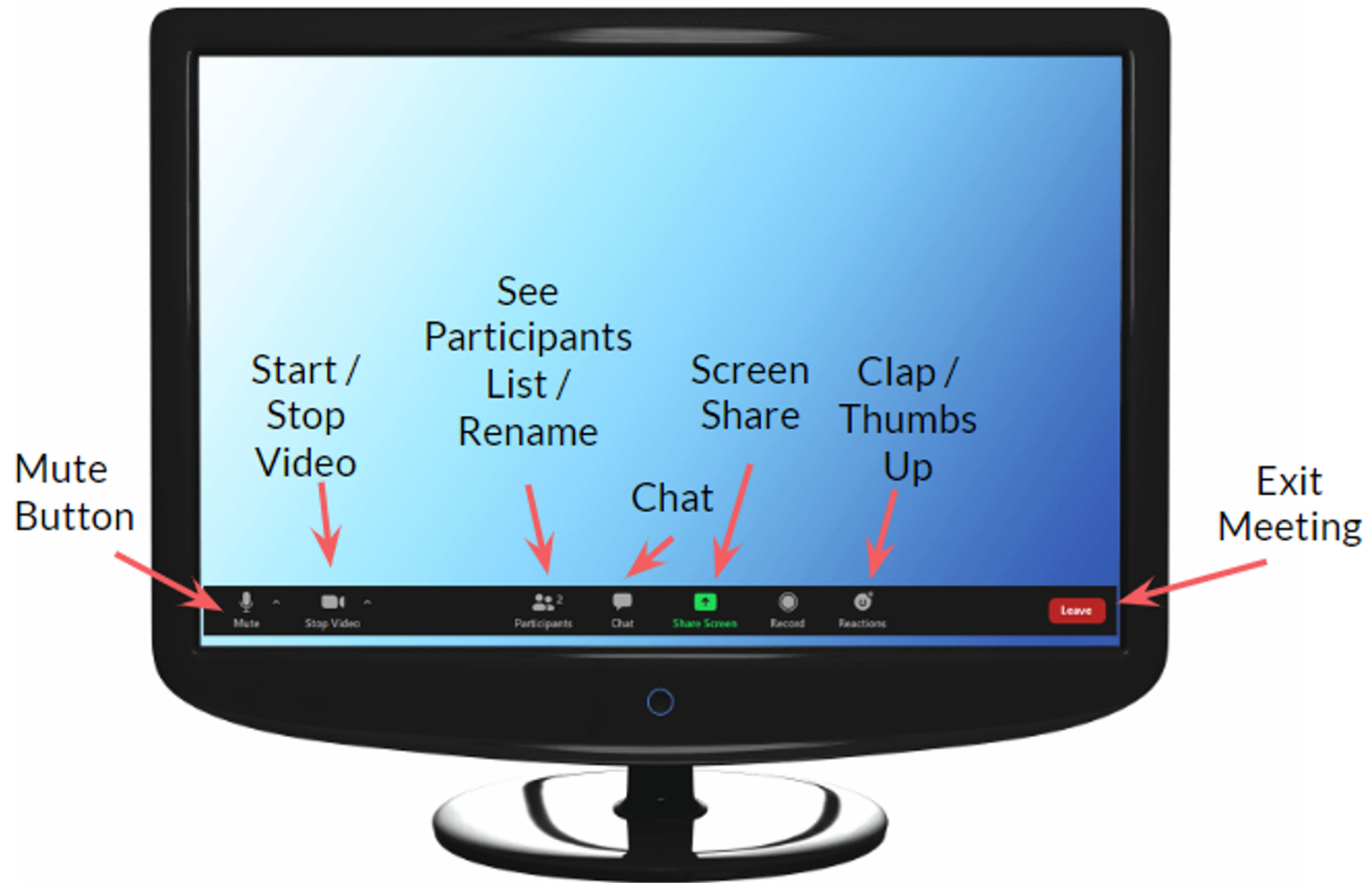
Participant tools in Zoom

The attendee controls appear at the bottom of your screen if you're not currently screen sharing.
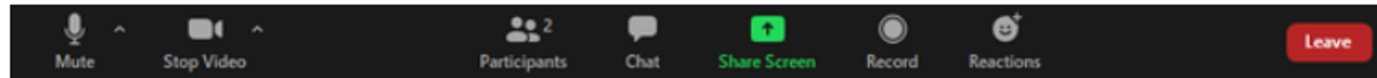
1. While in a meeting, click **Chat** in the meeting controls.

2. This will open the chat on the right. You can type a message into the chat box or click on the drop down next to **To:** if you want to send a message to a specific person.
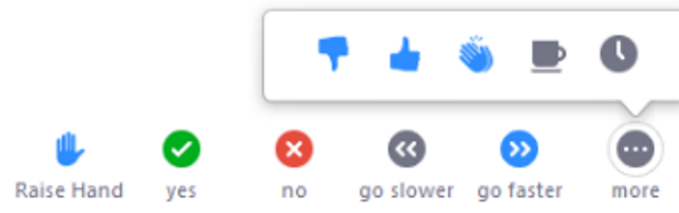
Chat

To: Everyone ▾   More ˅

Type message here...
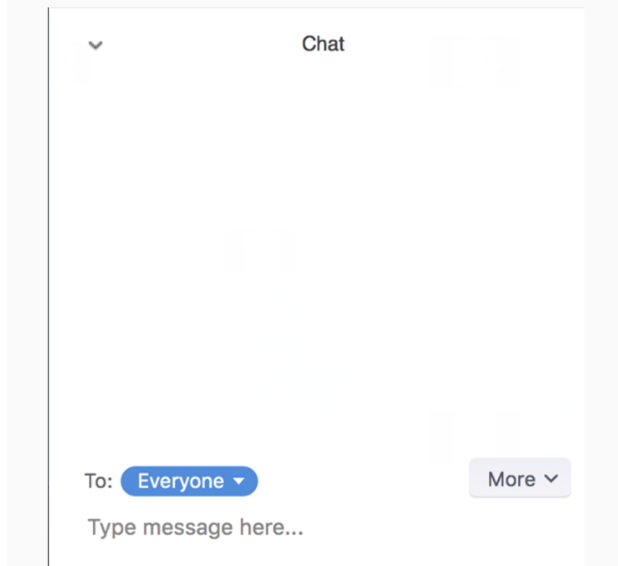
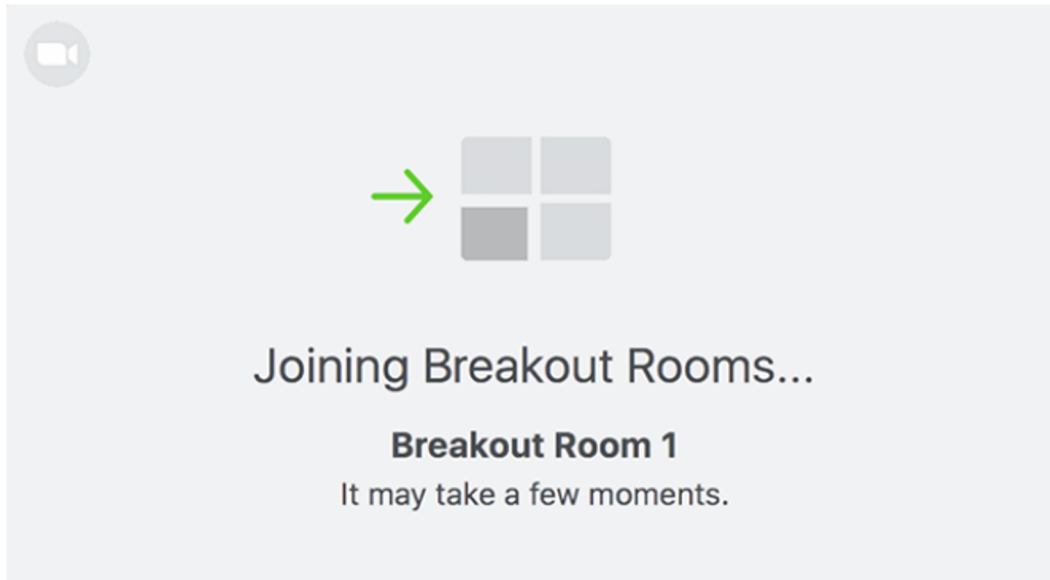2. Click the **Participants** button.

3. Click one of the icons to provide feedback to the host. Click the icon again to remove it.

   Note: You can only have one icon active at a time.

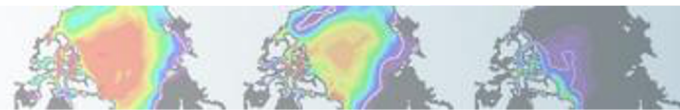   Raise Hand   yes   no   go slower   go faster   more

   - Raise Hand / Lower Hand

Breakout Rooms

To Exit a breakout room, click the button in the lower right-hand corner, "Leave Breakout Room". You will have the option of leaving the room or the meeting.

CESM

Slack

- Invitation to join will be sent soon
- Channel for 2021 participants
- Post questions outside of tutorial hours, share resources, etc.

Summary

- You will be **working on your own time.** Lectures and exercises are already posted in the 2021 CESM Tutorial website;

- **Save your questions** for the Q&A's and office hours. We also encourage you to help each other using the Slack channel;

- Take advantage of the **social activities** during the tutorial week (lunch activities & meet a scientist). It is very important that you get to know each other!

- **Get familiar with the tools** that will be used in the tutorial: **Zoom** (make sure to download the latest version) and **Slack** (a link was sent via email yesterday).

Q&A

- Now is your time to ask questions related to the Cheyenne homework or any other questions that you might have (**please use the raise hand option on Zoom**)

- If you do not have any questions feel free to take a break. We will reconvene at 12:00 pm MDT

Communication and Cultural Competency
CESM Tutorial Session

Valerie Sloan, Jerry Cyccone, and Elise Mason
NCAR Education & Outreach

NCAR
UCAR

VALUES   CULTURE   NORMS

Values are the beliefs, philosophies, and principles that drive a group.

Norms are the ground rules that dictate how people interact.

Culture is the interaction between the two; the beliefs and the behaviors of the group.
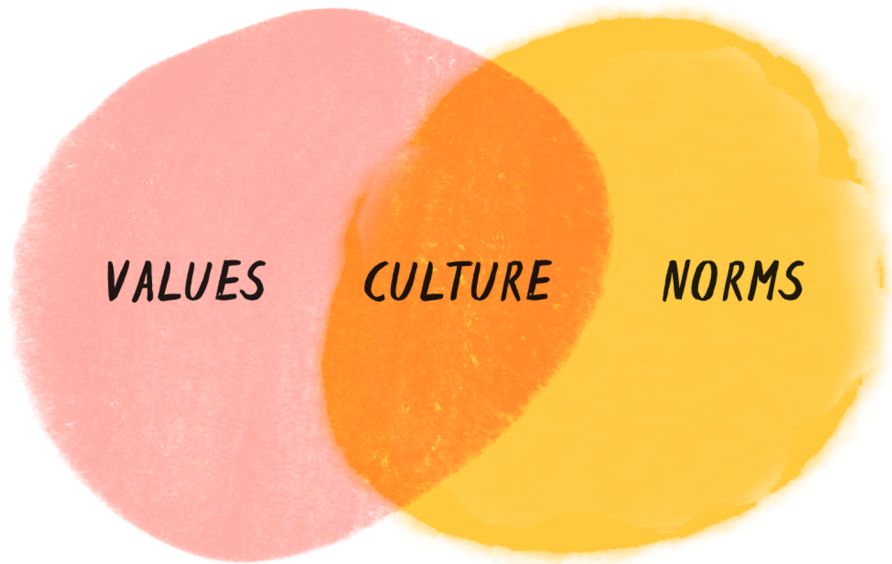
What behaviors and norms do you want this group to show, and to agree on for today, for the week, and beyond?

NCAR
UCAR

Please enter a word or short phrase that describes the norms/behaviors you expect and hope to see in this group

NCAR
UCAR

The Many Identities We Hold

NCAR UCAR

Race   Ethnicity   Nationality/ Citizenship Status

Sex   Gender Identity   Sexual Orientation

Religion/ Spirituality   Ability (physical, mental, etc.)   Age

Language   Caregiver

Socio-Economic Status   Education Level   Profession
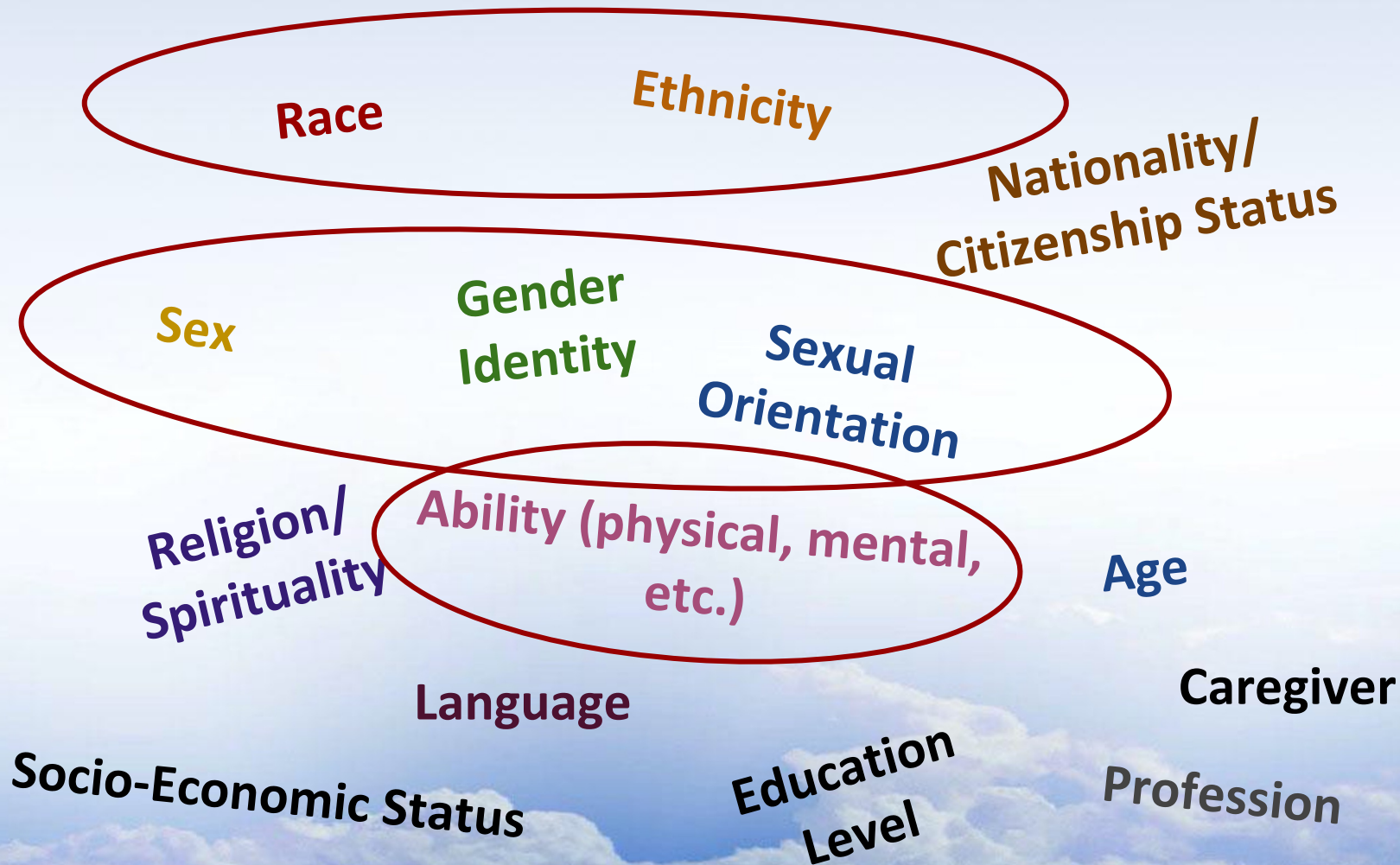
Example: Elise

Black

Spiritual, and a little Christian

African-American

Able-bodied

Female

Straight (cis-het)

Woman

29

lower-middle class

US citizen

Master's Degree

Example: Jerry

White

Italian American

US Citizen

Male

Man (he/they)

Queer

Atheist

Able-bodied

44

English is 1st Language

1st Generation College Graduate

Low-income Background

Bachelor's Degree

WHEEL OF POWER/PRIVILEGE
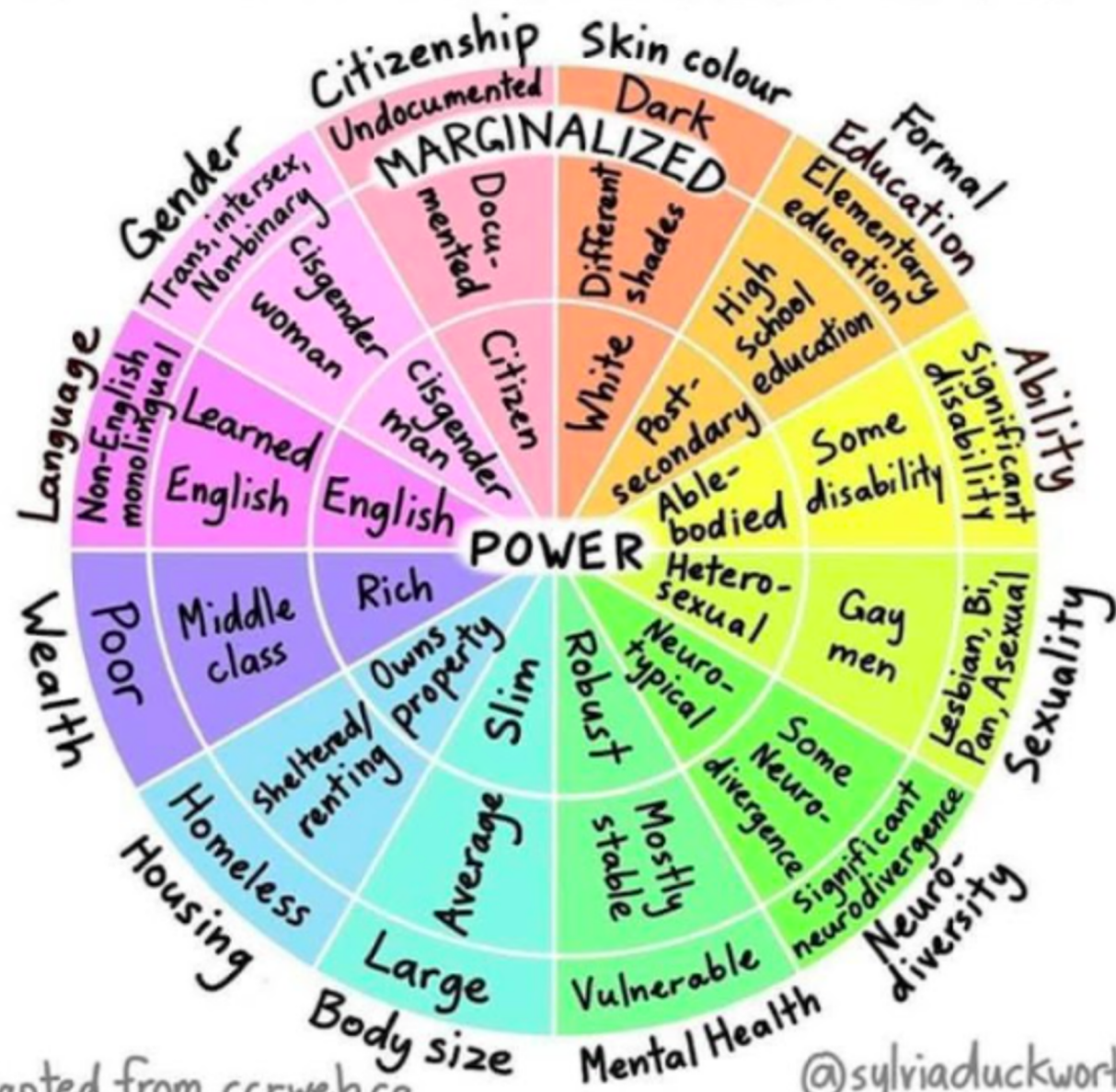
Adapted from ccrweb.ca

@sylviaduckworth

Social Identities - Privileged & Marginalized

Age
Ageism

Gender Identity & Expression
Genderphobia
Transphobia

Socio-Economic Status
Classism

Race & Ethnicity
Racism

Abilities/Disabilities
Mental, physical, learning, and/or
Emotional; Neurodiversity
Ableism

Sex
Sexism
Misogyny

Size
Sizeism

Sexual Orientation
Biphobia
Homophobia

Nationality
Documented/Undocumented
Xenophobia

Spirituality/Religion
Religious Bigotry
Islamophobia

Connecting past to present: race & geology

"… nearly every single day there feels to me to be racial tension between me and someone in the field where we're doing our research"

-Joshua Anadu *(Hazards of Field Work While Black)*

- The outdoors, the field, and undergraduate recruitment
  - History of outdoors as site of exclusion & violence
  - Safety of field geology classes or research

- Early US geology rooted in imperialism, colonialism, and scientific racism
  - Defining racial categories & justifying white supremacy

- No context for history of racism in geology →
No context for students to understand their experience with cultures of whiteness, masculinity, and exploitation

  - Access to knowledge about experience empowers students to navigate existing power dynamics access to knowledge about experience

Tamara Pico (...

nature

Explore content ∨ | Journal information ∨ | Publish with us ∨ | Subscribe

nature > news > article

NEWS | 24 August 2020

Racism and harassment are common in field research — scientists are speaking up

Researchers call on universities to offer inclusive policies that make fieldwork safer.

"Josh Anadu had been at the receiving end of uncomfortable stares before. As a Black environmental-science undergraduate, he had become "pretty used to" being regarded with suspicion while collecting field data. . . But he never expected to come face-to-face with white supremacists"
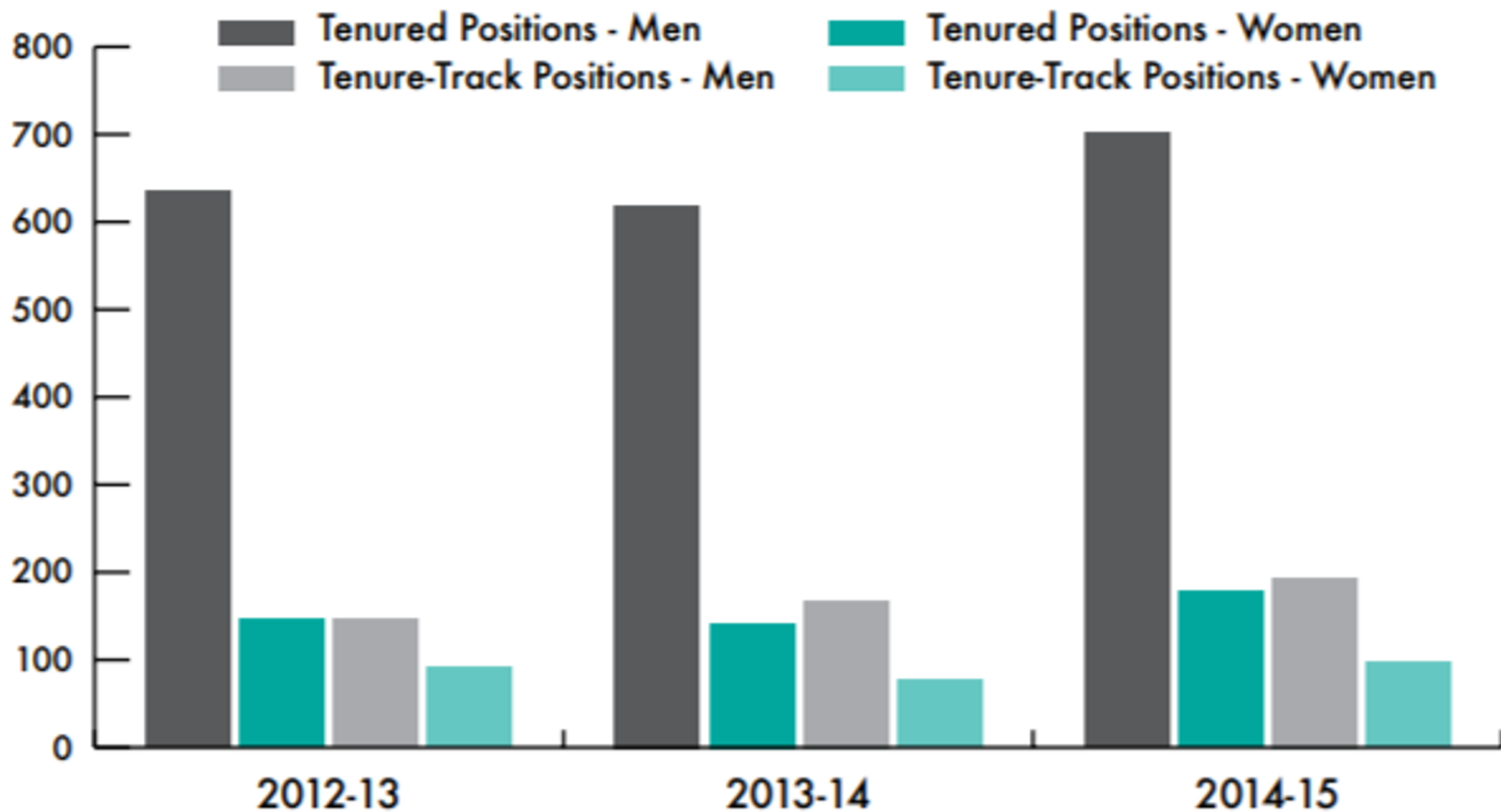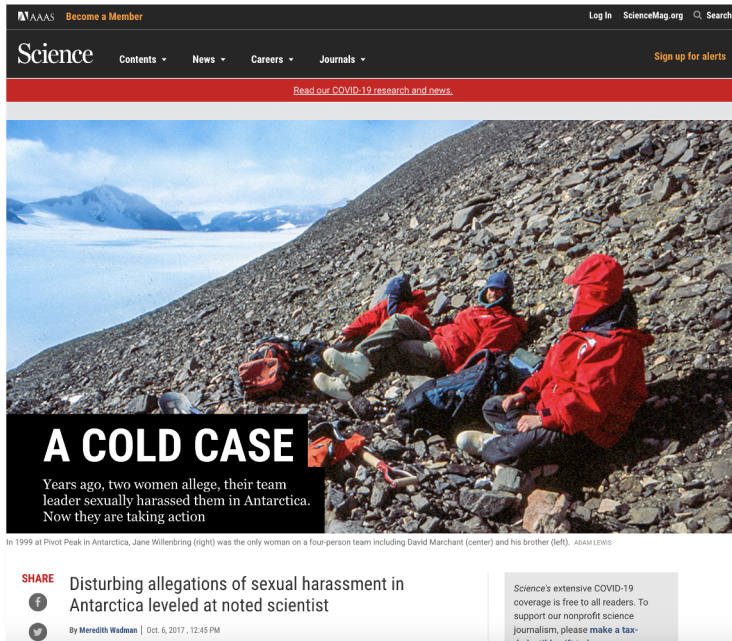
FIGURE 5. Total reported tenure and tenure-track positions by gender.

Disturbing allegations of sexual harassment in Antarctica leveled at noted scientist

A COLD CASE

Years ago, two women allege, their team leader sexually harassed them in Antarctica. Now they are taking action

In 1999 at Pivot Peak in Antarctica, Jane Willenbring (right) was the only woman on a four-person team including David Marchant (center) and his brother (left). ADAM LEWIS

SHARE

Disturbing allegations of sexual harassment in Antarctica leveled at noted scientist

By Meredith Wadman | Oct. 6, 2017, 12:45 PM

https://www.sciencemag.org/news/2017/10/disturbing-allegations-sexual-harassment-antarctica-leveled-noted-scientist

The documentary "Picture a Scientist" - now on Netflix - tells a decade-long story of a how a few women have helped to change things.

"Stop asking how we can get more women interested [in science] and protect the women, and people of color, and people with disabilities, and LGBTQ persons who are in science already,"

#BriefButSpectacular Geologist Jane Willenbring and calling out harassment in the sciences.

https://twitter.com/hashtag/BriefButSpectacular?src=hashtag_click

How to address discriminatory remarks or terms

Mini-bystander training

- Address it in the moment

- Respond based on **your own** discomfort and reaction

- Do not redirect to the target or put them on the spot

- Check in with the target later

- Talk to the commenter later - or - talk to the person in charge

- Be a leader even if you aren't the person in charge - if they don't address it or deal with it appropriately, if you can.

You are protected from harassment and discrimination in this program

- Harassment policy
- NCAR policies and protection
- Federal protection

You are protected from discrimination based on race, color, religion, sex (including pregnancy, sexual orientation, or gender identity), national origin, age (40 or older), disability and genetic information (including family medical history).

You are also protected from retaliation (punishment) for filing a charge or complaint of discrimination, participating in a discrimination investigation or lawsuit, or opposing discrimination (for example, threatening to file a charge or complaint of discrimination).

If you experience or witness <u>any</u> type of harassment or discrimination, please report it to one of the team members:

- Gustavo at gmarques@ucar.edu
- Elisabeth Faircloth at fair@ucar.edu
- Valerie Sloan at vsloan@ucar.edu
- Jerry Cyccone at cyccone@ucar.edu

https://www.aaas-iuse.org/how-kindness-is-part-of-an-excellent-stem-education/

Kindness and Leadership

Think of a situation in your life where the culture was kind (e.g. a classroom, family setting, in a work group, with friends).

How did the people cultivate that atmosphere of kindness?

How did the kindness show up or manifest itself in the culture? What behaviors or traits come to mind?

What were the ripple effects and long term effects of having a kind culture?

Communicating in Science & the Workplace

What skills do we need to be effective communicators with our colleagues?

What behaviors helps with communication?

Active Listening

Deep Listening: Giving your full attention to all levels of communication, including feelings and nonverbal messages.

The Art of Inquiry and Reflection: Getting to the core of what is being said and felt; discovering real meaning through questions. Showing that you are hearing them.
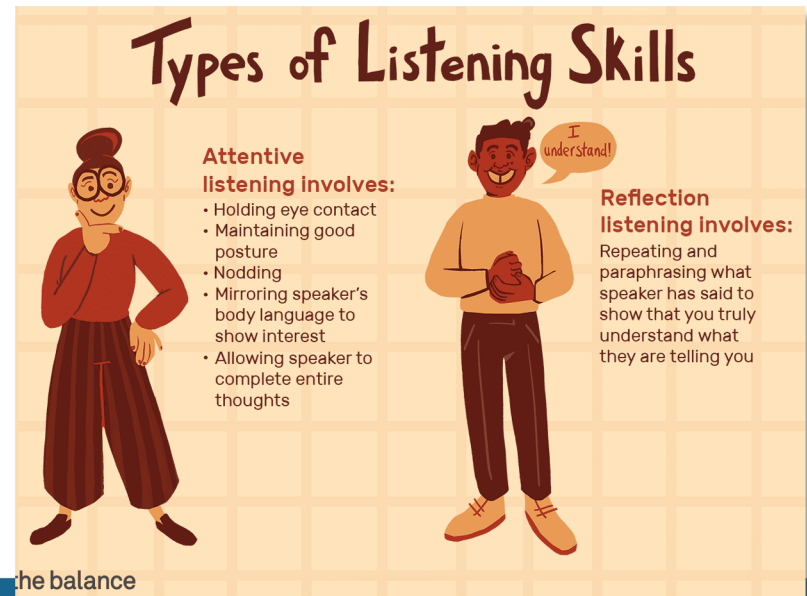
Suspending Judgment: Revealing and unraveling thought processes, assumptions and beliefs.

Examples for active listening:

"So what you're saying is that you . . ."
"It sounds like you …"
"I hear that you . . . "

Types of Listening Skills

Attentive listening involves:
- Holding eye contact
- Maintaining good posture
- Nodding
- Mirroring speaker's body language to show interest
- Allowing speaker to complete entire thoughts

Reflection listening involves:
Repeating and paraphrasing what speaker has said to show that you truly understand what they are telling you

the balance

Why have an "elevator speech"?

Imagine you are at a conference and you get 45 seconds on an elevator to connect with someone you've been wanting to meet.

Would you know what to say when they ask you what you do?

Another Perfect Business Opportunity **Wasted** Because of No Good **Elevator Pitch**

Elevator Speech Recipe

Now imagine you are on campus
sitting beside a stranger.
What to say??

- Introduce yourself
- Start with the big picture
- Explain why we care
- Put your research into the context of the big picture
- Leave out the specifics and no jargon!

Assume you have a smart listener, but one who doesn't
    know anything much about your topic
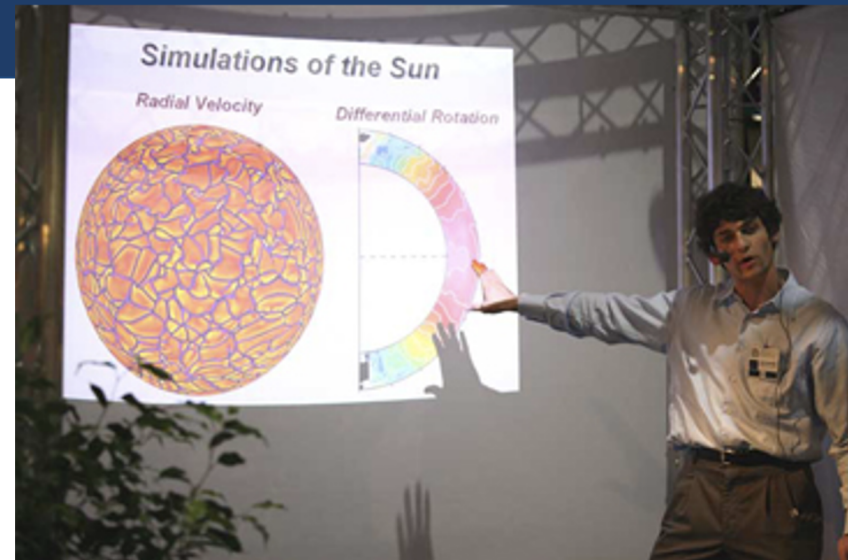
Take a couple of minutes to draft an elevator speech.

Remember:

- Introduce yourself
- Start with the big picture
- Explain why we care
- Put your research into the context of the big picture
- Leave out the specifics and no jargon!

Assume you have a smart listener, but one who doesn't know anything much about your topic

*Note: WHY is the most important point. *

Time to Give Your Elevator Speech!

Join the breakout group that you are invited into.

Decide who will go first. Pull out your phone or web timer.

The speaker gets 45 seconds to give their speech.

45 SEC

Next, the listener gets 90 seconds to give feedback.

Start the timer and with a compliment. What did you like, and what was done well?

Give suggestions and feedback, in as neutral a tone as you can.

Next switch roles and repeat.

(5 minutes total in the breakout room)

Time to reflect

Take care of each other

Be kind

Make space, take space

Practice Gratitude

Thank you for taking part in this workshop!

Feel free to contact us at:

Valerie Sloan	vsloan@ucar.edu
Jerry Cyccone	cyccone@ucar.edu
Elise Mason	elisem@ucar.edu