

# Diversity, Equity, and Inclusion in Ocean and Climate Science Community

Conveners: Mike Patterson and Chidong Zhang

Introduction and US CLIVAR DEI Efforts

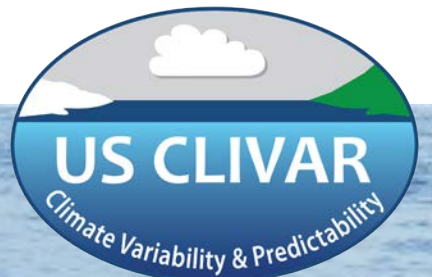
Mike Patterson

Proposed Study on Diversity, Equity, Inclusion, Justice,  
Accessibility, and Belonging in Ocean Sciences

Claudia Benitez-Nelson, OSB Chair &  
Susan Roberts, NASEM OSB Director

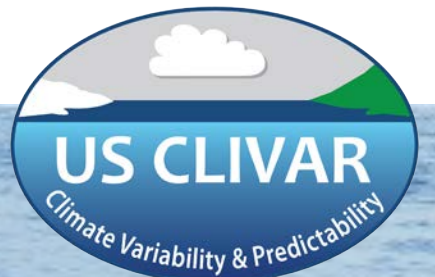
Ethical Practices and DEI in the Geosciences:  
The Role for Scientific Societies

Billy Williams, AGU Exec Vice President  
for Ethics, Diversity, & Inclusion



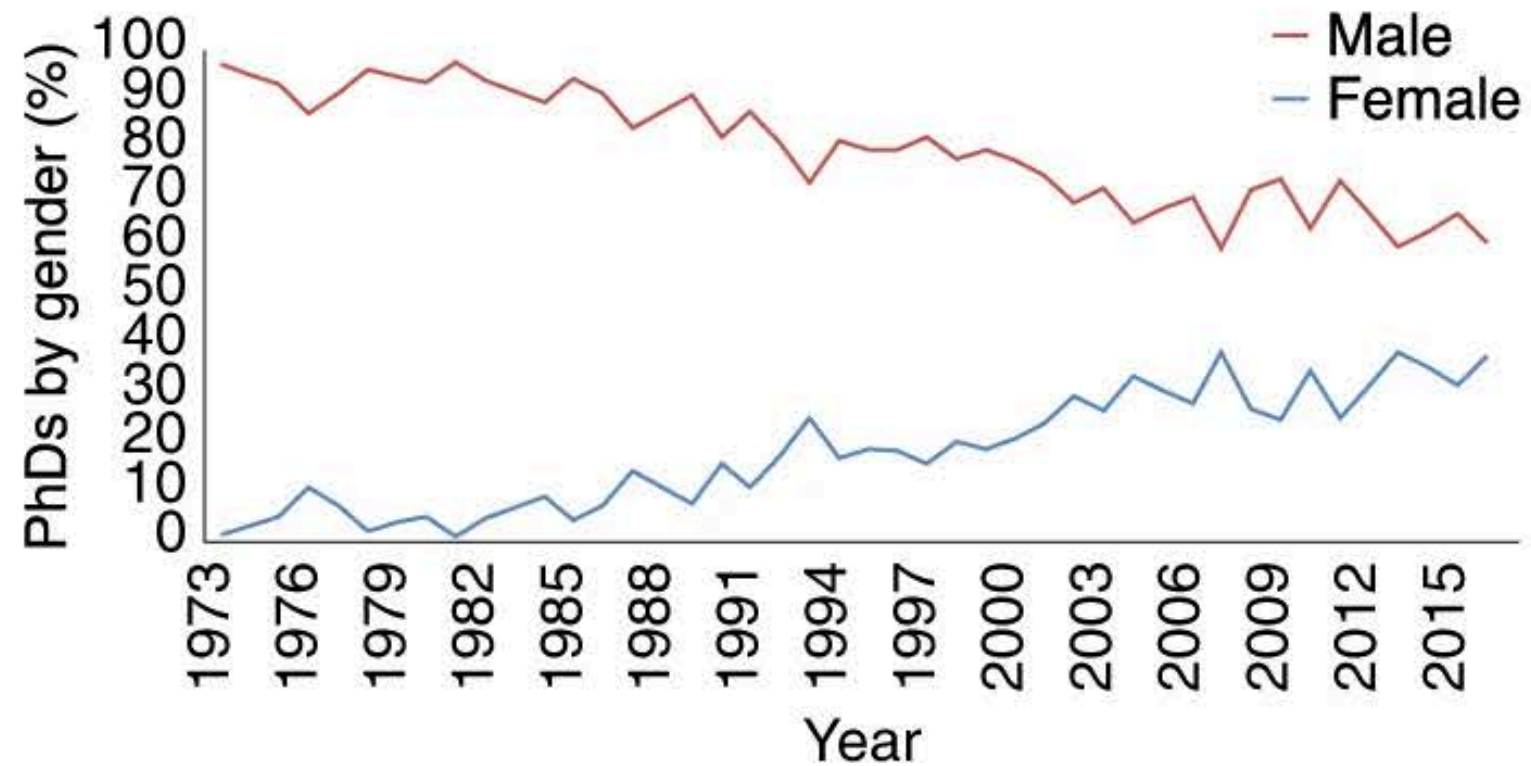
# Session Objectives

- To explore the role of US CLIVAR in improving Diversity, Equity, and Inclusion in the ocean and climate community that we serve
- To review current approaches, progress, and challenges
- To identify avenues for addressing barriers and expanding participation in US CLIVAR among underrepresented members of the community
- To gain awareness of other organizational activities to address DEI within ocean, climate, and geosciences, with which US CLIVAR could partner and leverage
- To discuss DEI-related opportunities in conducting ocean and climate research
- To inform next step actions for US CLIVAR

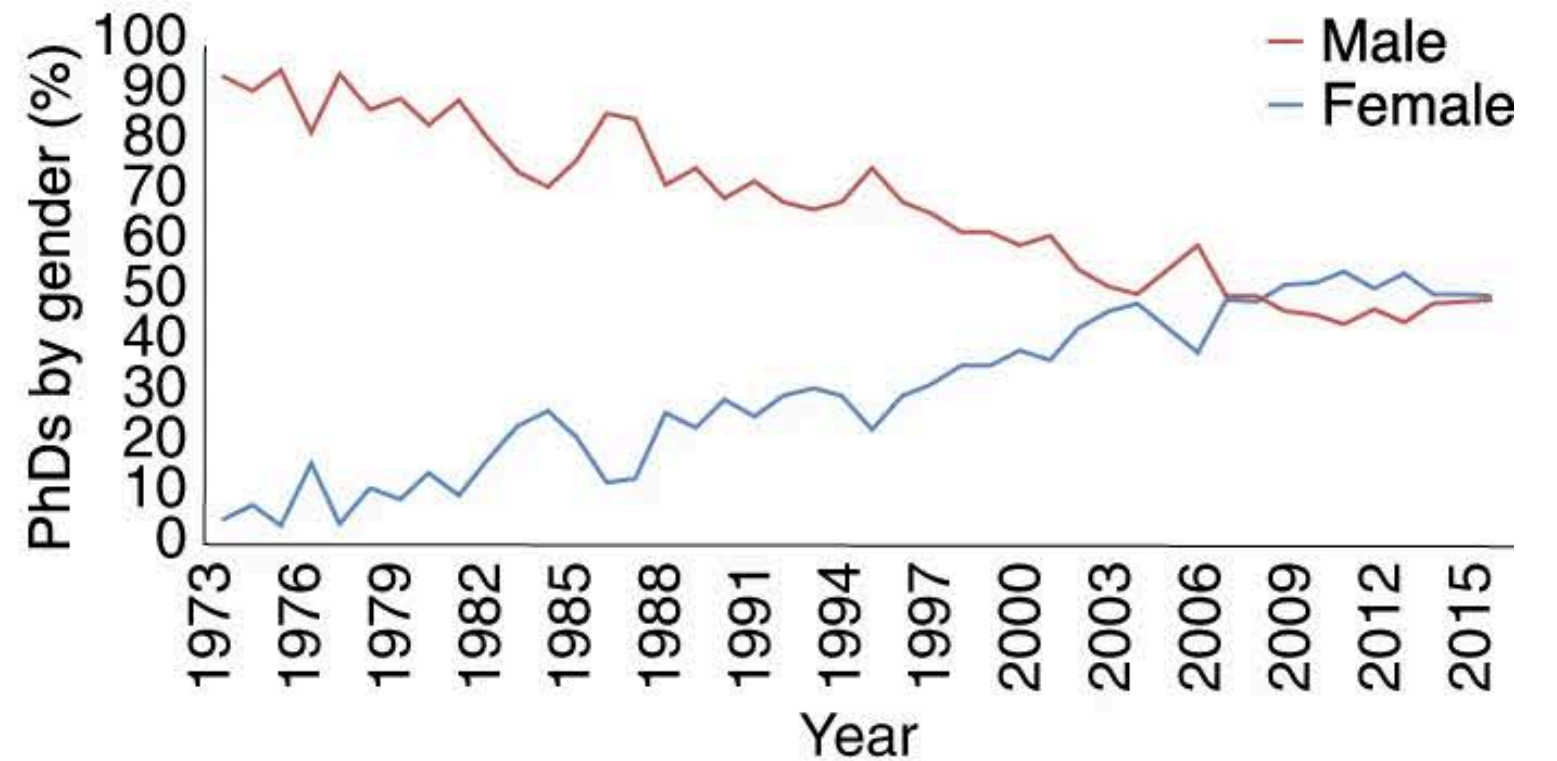


## PhDs earned by gender between 1973 and 2016

**b** Atmospheric sciences



**c** Ocean sciences



*Bernard & Cooperdock, Nature Geoscience, 2018*

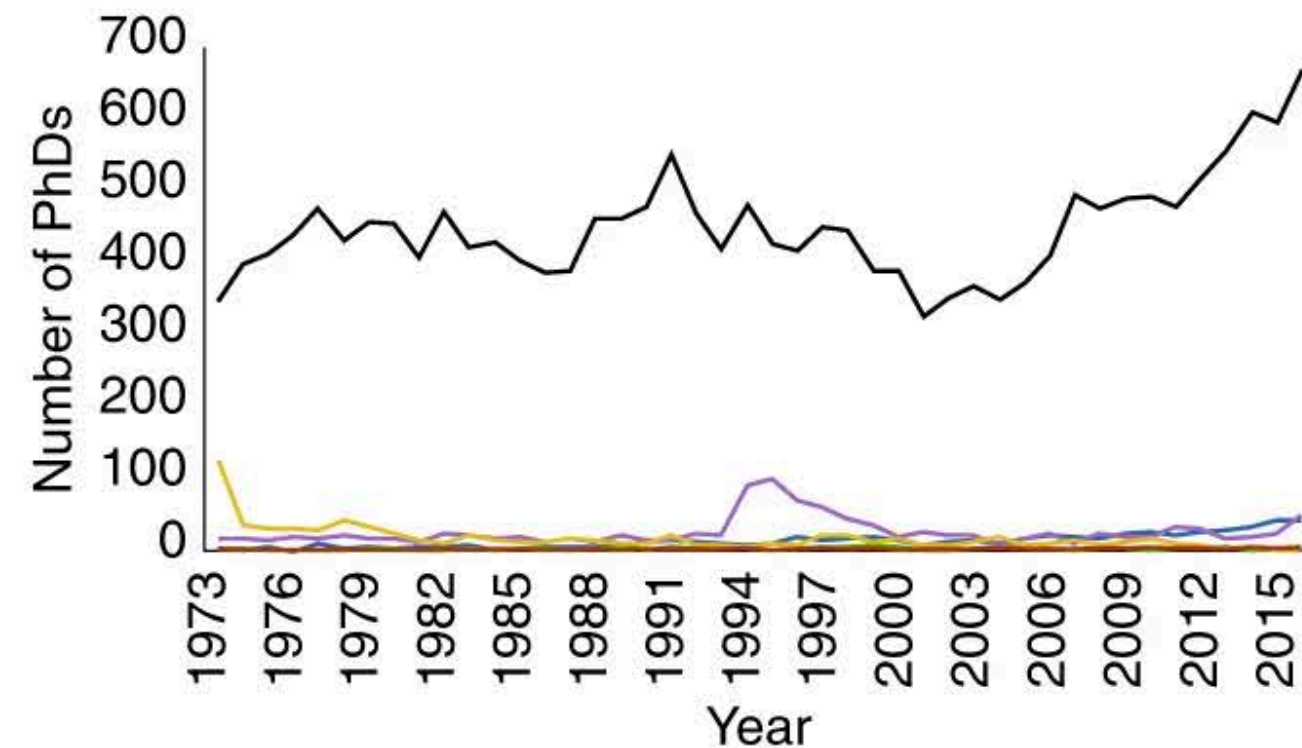


## 2018 AGU Section Demographics by Career Stage and Gender

		Student	Early Career	Mid-Career	Experienced	Retired
Ocean Sciences	Female	50.57%	42.86%	32.18%	17.60%	4.19%
	Male	48.55%	56.60%	67.13%	81.61%	95.55%
	No answer	0.88%	0.54%	0.69%	0.80%	0.26%
Physical Oceanography	Female	45.35%	36.02%	24.52%	11.57%	4.55%
	Male	53.62%	63.02%	75.10%	87.86%	95.45%
	No answer	1.03%	0.95%	0.38%	0.57%	0.00%
Atmospheric Sciences	Female	44.17%	33.96%	26.61%	13.44%	5.59%
	Male	55.18%	65.28%	72.43%	85.77%	94.41%
	No answer	0.65%	0.76%	0.95%	0.78%	0.00%
Physics, Dynamics, and Climate	Female	43.21%	31.14%	22.34%	10.27%	4.69%
	Male	55.83%	68.05%	76.75%	88.90%	94.84%
	No answer	0.96%	0.81%	0.91%	0.84%	0.47%

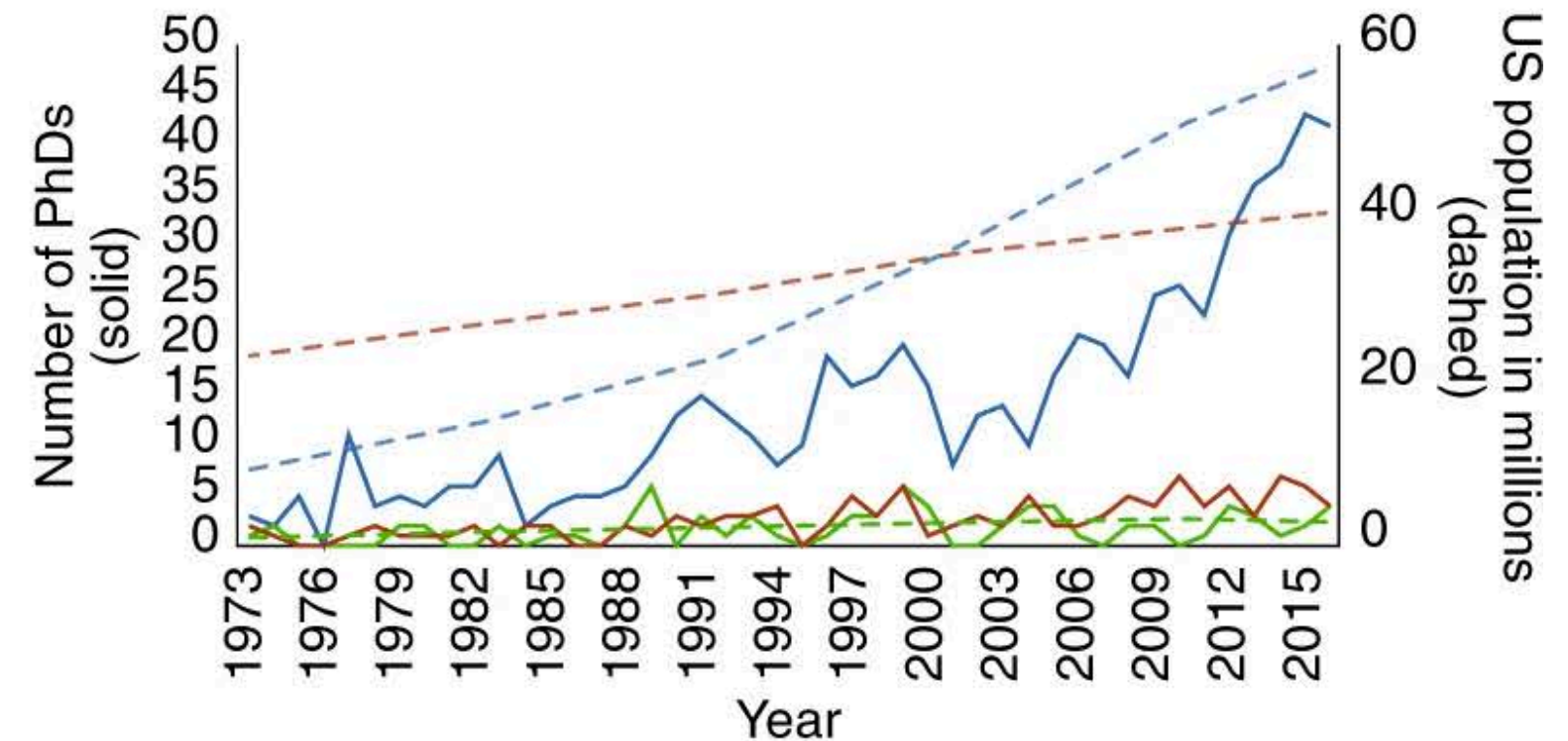
# Earth, Ocean, & Atmos PhDs earned by race and ethnicity between 1973 and 2016

**b** By race and ethnicity (subfields combined)



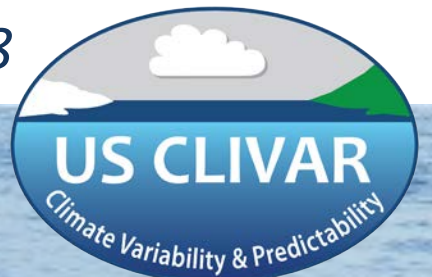
- White, non-Hispanic
- Native American, non-Hispanic
- Asian, non-Hispanic
- Black, non-Hispanic
- Hispanic or Latino
- Other or unknown

**c** For underrepresented minorities only (subfields combined)



- Geoscience PhDs
- US Population
- Hispanic or Latino
- Native American, non-Hispanic
- Black, non-Hispanic

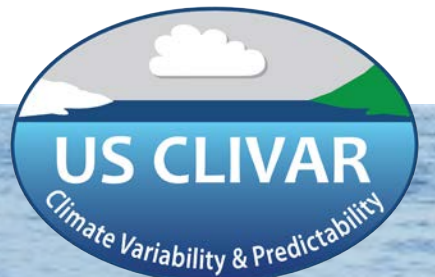
*Bernard & Cooperdock, Nature Geoscience, 2018*





# History of DEI Measures in US CLIVAR

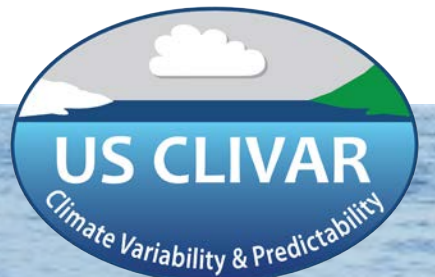
- DEI factors considered for membership in organization and participation in activities
  - Scientific expertise
  - Institutional affiliation and regionality
  - Gender – binary gender parity; inclusion of non-binary and other designations
  - Career stage – with focus esp. on early career scientist (ECS) participation
  - Persons with disabilities – addressing equity in access



# History of DEI Measures in US CLIVAR

## Practices

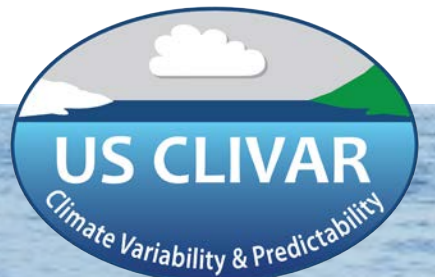
- Addressing diversity
  - In membership of organizational bodies (SSC, Panels, WGs, Workshop Org. Committees)
  - In speakers at US CLIVAR meetings and workshops
  - In recognition of ECS – leadership awards, poster presentation awards



# History of DEI Measures in US CLIVAR

## Practices

- Addressing diversity
  - In membership of organizational bodies (SSC, Panels, WGs, Workshop Org. Committees)
  - In speakers at US CLIVAR meetings and workshops
  - In recognition of ECS – leadership awards, poster presentation awards
- Addressing equity
  - Communicating opportunities for ECS
  - Reduced registration fees for ECS
  - Travel support for ECS, under-represented participants, and developing country participants
  - Travel and logistics needs for persons with disabilities
  - Training programs





# History of DEI Measures in US CLIVAR

## Practices

- Addressing diversity
  - In membership of organizational bodies (SSC, Panels, WGs, Workshop Org. Committees)
  - In speakers at US CLIVAR meetings and workshops
  - In recognition of ECS – leadership awards, poster presentation awards
- Addressing equity
  - Communicating opportunities for ECS
  - Reduced registration fees for ECS
  - Travel support for ECS, under-represented participants, and developing country participants
  - Travel and logistics needs for persons with disabilities
  - Training programs
- Promoting inclusion
  - Open calls for Panel members, WGs, and workshops
  - Open community workshops
  - Code of conduct for meetings and workshops
  - Targeted communication of opportunities to collaborating communities as well as women (MPOWIR) and ECS (YESS) organizational newsletters and elists



# Metrics to Measure Progress

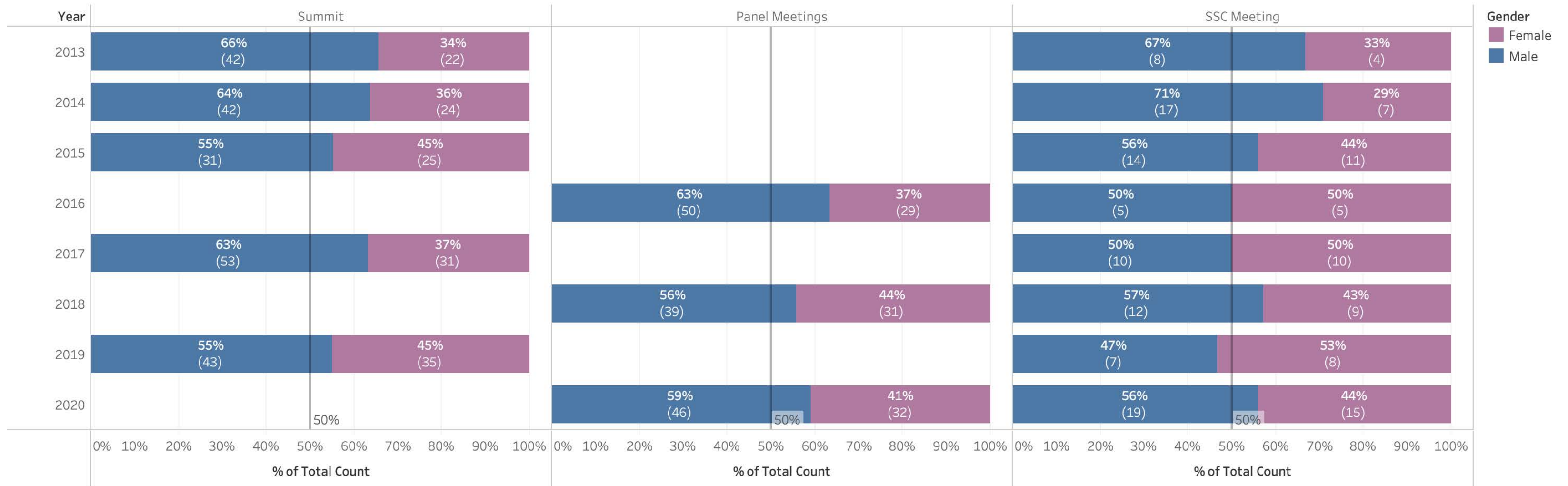
Gender breakdown by year (Panels and SSC)





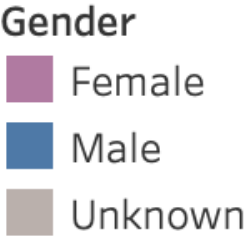
# Metrics to Measure Progress

Gender breakdown by year (all workshops/meetings)

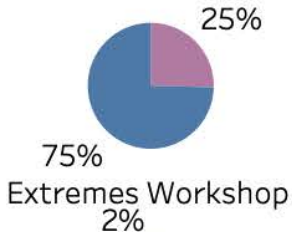




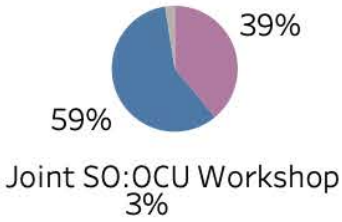
Gender breakdown by workshop/meeting



2013



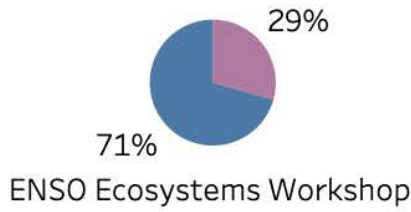
2014



2015



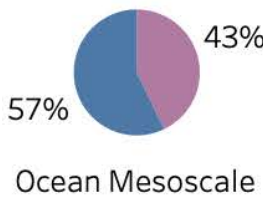
2016



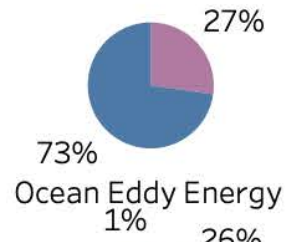
2017



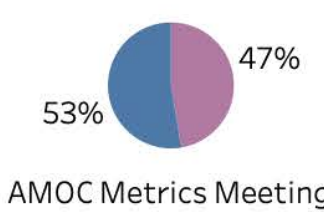
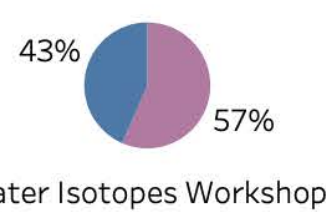
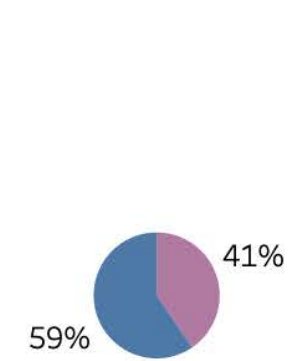
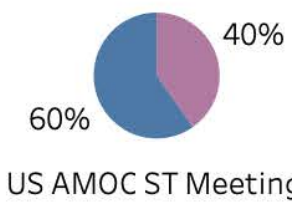
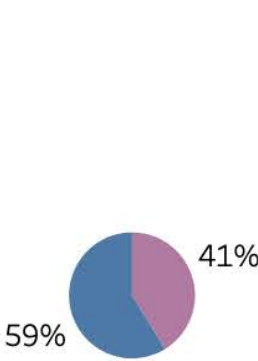
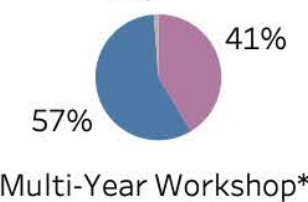
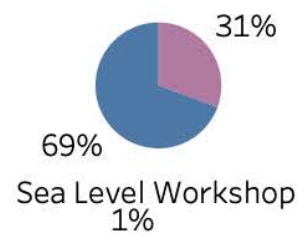
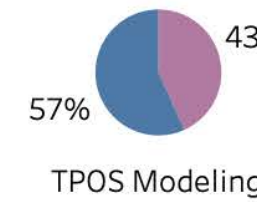
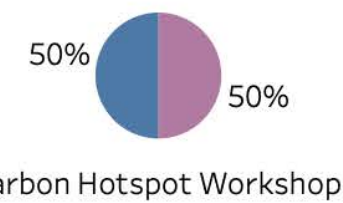
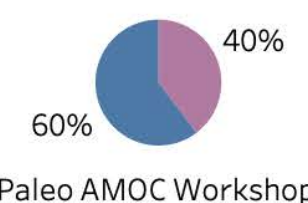
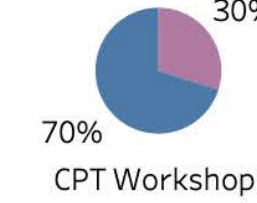
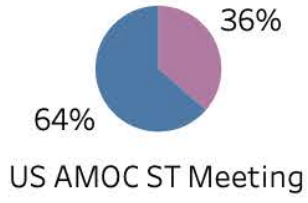
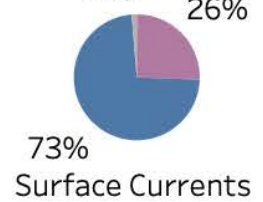
2018



2019

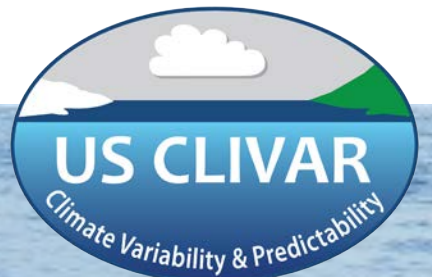


2020



# Expanding US CLIVAR's DEI Efforts

- Additional DEI factors to address
  - Race and ethnicity
    - Assessing and addressing lacking membership and participation
  - Persons with disabilities
    - Adding closed caption capability and screen readers for webcast events
  - Religious and cultural
    - Employing calendar of religious and culture holidays to inform meeting dates
  - LGBTQ+ and non-binary gender
    - Adding gender identification beyond binary; use of pronoun identification
  - Other factors: First generation, English as second language



## Expanding US CLIVAR's DEI Efforts

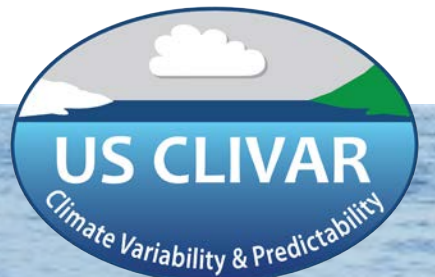
- Addressing DEI-related issues within ocean and climate science research
  - Impacts of climate variability and change on socially and economically marginalized and underserved populations
  - Engagement of indigenous knowledge and underserved communities in citizen science
  - Equity of access to scientific infrastructure, research community resources, and climate information
  - Capacity building, training, and community entrainment
  - Recruitment and retention of scientists who are demographically underrepresented, underserved, and/or minoritized
  - Code of conduct (policies and practices) in scientific research activities (e.g., observational and field campaigns)





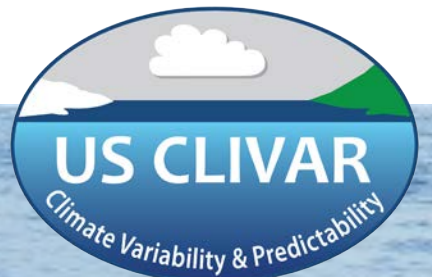
## Proposed Next Steps

- Organize session at 2022 Summit, involving discussion among all participants
- Establish team (by summer) to explore scope of issue and recommend actions
  - Assemble resources and explore other organizations' findings
  - Learn from listening to underserved or marginalized groups about needs, challenges
  - Develop understanding of the barriers to participation to inform actions
  - Identify and pilot fit-for-purpose interventions



## Proposed Next Steps

- Organize session at 2022 Summit, involving discussion among all participants
- Establish team (by summer) to explore scope of issue and recommend actions
  - Assemble resources and explore other organizations' findings
  - Learn from listening to underserved or marginalized groups about needs, challenges
  - Develop understanding of the barriers to participation to inform actions
  - Identify and pilot fit-for-purpose interventions
- Build deliberate connections to minority serving institutions (MSIs) and historically black colleges and universities (HBCUs)
  - Target communications and outreach for participation in US CLIVAR
  - Identify scientists' research interests and invite participation
  - Promote inclusion of MSI/HBCU scientists in SSC/Panels, WGs, workshop org committees



## Proposed Next Steps

- Organize session at 2022 Summit, involving discussion among all participants
- Establish team (by summer) to explore scope of issue and recommend actions
  - Assemble resources and explore other organizations' findings
  - Learn from listening to underserved or marginalized groups about needs, challenges
  - Develop understanding of the barriers to participation to inform actions
  - Identify and pilot fit-for-purpose interventions
- Build deliberate connections to minority serving institutions (MSIs) and historically black colleges and universities (HBCUs)
  - Target communications and outreach for participation in US CLIVAR
  - Identify scientists' research interests and invite participation
  - Promote inclusion of MSI/HBCU scientists in SSC/Panels, WGs, workshop org committees
- Partner and leverage
  - Other institutional, program, and society efforts (e.g., NASEM, AGU, AMS, UCAR, OCB)
  - New and evolving communities of practice among earth science organizations
  - Agency funding opportunities (e.g., NSF Geosciences Opportunities for Leadership in Diversity; NASA Increasing Participation of MSIs in NASA Earth Science Surface-Based Measurement Networks)



## Discussion to Inform Next Steps

- What is US CLIVAR's role to address DEI?
- What impediments exist for expanded participation of underrepresented and underserved scientists in US CLIVAR?
- What actions could and should US CLIVAR take to increase awareness, access, and participation of scientists from underrepresented groups?
- Beyond expanding program participation, what are the relevant and priority issues for improving engagement in ocean and climate research?
- What partnerships should we pursue to advance DEI in our community?
- How should we track our progress? What are our measures of success?

