Bridging the Gap: Communicating Earth System Science to Stakeholders, Communities, and Decision Makers

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CESM Workshop 2025 Plenary Session

Presentation Overview

- **Introduction**
- **Science Communication (SciComm)**
- **SciComm Tools for CESM**
- **Bridging the SciComm Gap**
  "Sample Example"
- **Conclusion**
- **Q and A**

Introduction

Setting the Stage: "Act Two"

- We're in the middle of this plenary

    From system predictability (Dr. Hansi Singh)

    → communication (Dr. Paula R. Buchanan)

    → human systems (Dr. Michael Barton)

- I am "the bridge": communicating science, SciComm, for CESM real-world impact

About Me

- "Pracademic"

- Disaster and emergency management (DEM)

- Socio-hydrology

- Science Communication (SciComm)

Let's Talk about Science Communication (SciComm)

What Is SciComm?

- Science communication = sharing knowledge

- Tell a personal story about science
    - clearly show outcomes, results, "so what"
    - biases, assumptions, and limits

- SciComm
    → Science policy of "so what"
    + actionable steps

SciComm: Why Should CESM Care?

- Without effective communication (SciComm), science fails to influence decisions (SciPolicy)

- The "so what": research used to better inform practice (public health, DEM, etc.)

- Stakeholders must understand CESM's scientific research to value and use it

Science Policy : Why Should CESM Care?

- What is SciPolicy?
  - connects science → "so what," actionable steps, government decisions

  - uses science to make public policy

  - supports science through laws and funding

CESM Science → SciComm → SciPolicy

- Communicating CESM findings supports stakeholder decision-making

- Translates complex models → clear, understandable, and actionable insights
  - ("so what" → action)

SciComm in Practice | Case Studies

- City of Atlanta
  - Urban/city environment
  - DWM's Safety Ambassador program
  - public education campaign: use "water data" to empower communities
  - Improve water system(s) by improving human impact/behavior

SciComm in Practice | Case Studies

- CESM
  - Regional
  - Translate model data → actionable insights for stakeholders
  - Climate projections used to mitigate urban heat issues + improve water resource management

SciComm Tools for CESM

SciComm Types and Tools

Media types

- Traditional/legacy media: print, radio, lectures, etc.
- Multimedia: podcasts, photography, illustrations, **video!!!** (more later)

Some tools to have in your toolbox

- Cross-functional teams
- Know your audience
- Storytelling

Cross-Functional Teams

- Like disaster and emergency management, earth science deals with "wicked problems"

- Teams: scientists,project managers, modelers, practitioners, communicators, community members

- See wicked problems through different lenses/perspectives

- Collaboration = stronger science + SciComm

Know Your Audience

- How to effectively communicate with decision-makers: funders, policymakers, communities, etc.

- Know the culture. Fosters trust. Trust is key.
  - Dr. Raj Pandya: "Show up, ***shut up***, and bring good snacks."
  - Sample example: a challenge coin

- Builds credibility with you and in the science

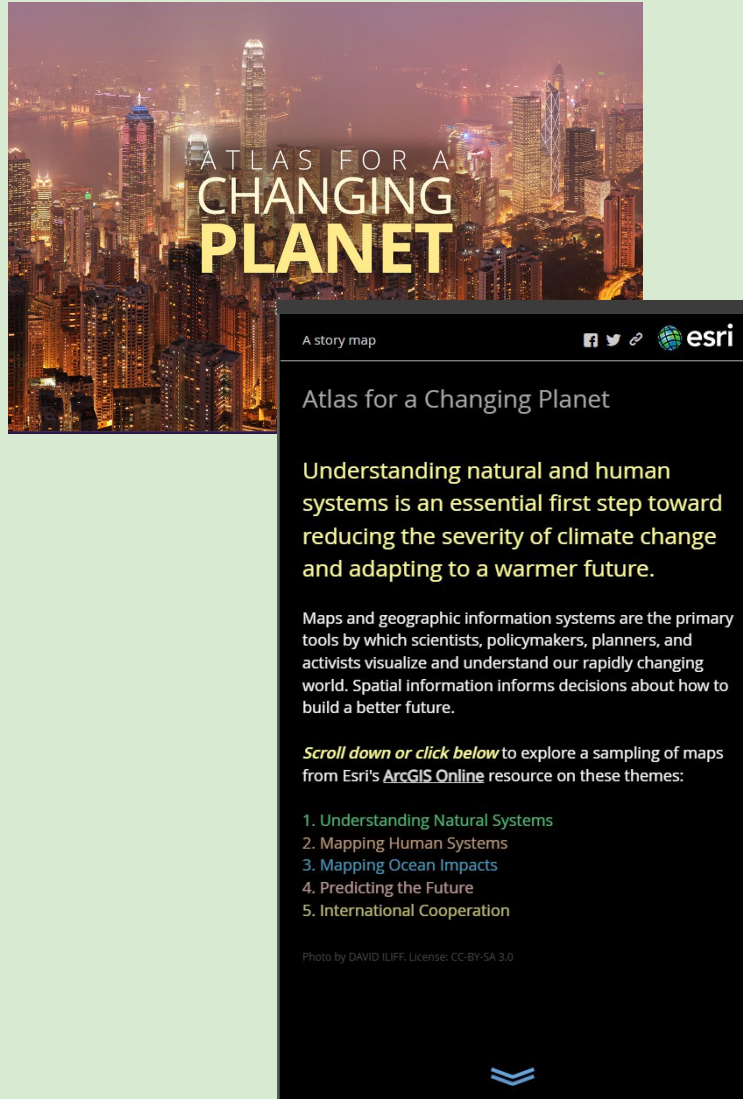- SciComm must resonate with audience, not just inform (more later)

Storytelling...

- Storytelling: "Tell me a story"

- Sample example: ESRI Story Maps, River of Resilience

https://storymaps.esri.com/stories/2018/anacostia

- Mixed methods data (qual and quant)

- Visual elements: images, maps
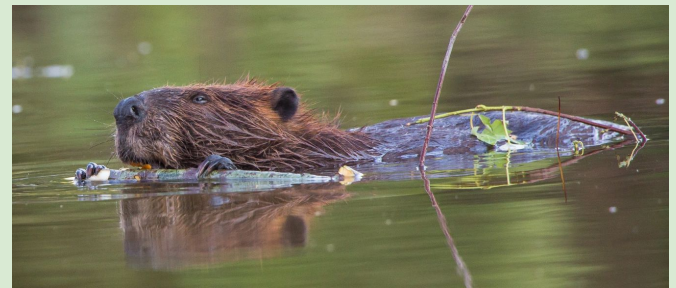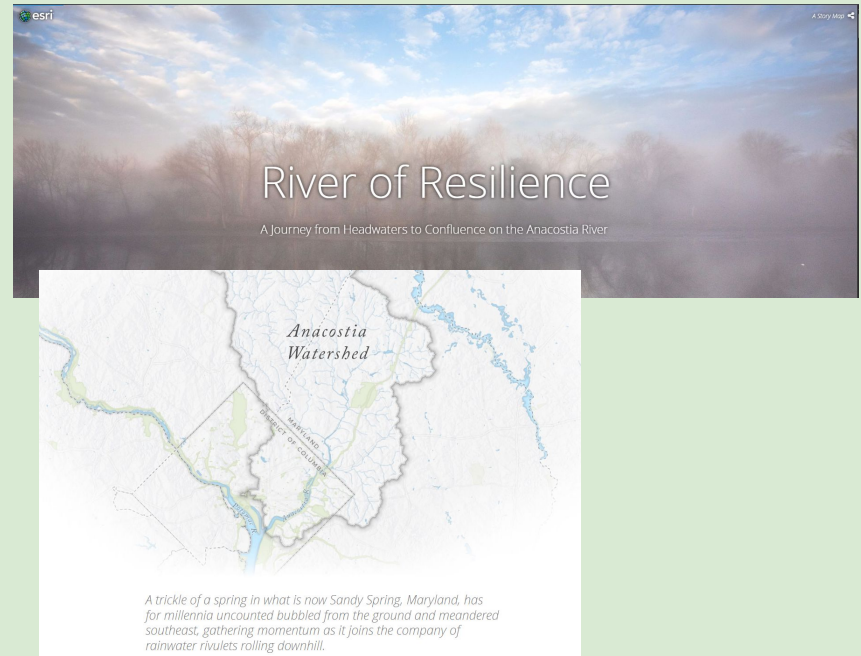
…Storytelling

- NCAR's Community Climate System Model (CESM's predecessor)

- Large-scale climate model outputs ☐ public-facing storytelling

https://storymaps.esri.com/stories/2015/atlas-for-a-changing-planet

- Let's make a **CESM Story Map**!

Bridging the SciComm Gap: A SciComm to SciPolicy "Sample Example"

SciComm → SciPolicy

Attack of the Evil Fatbergs!
= a SciComm product
(animated short film)

that impacts and informs
SciPolicy
(drinking water infrastructure)

Attack of the Evil Fatbergs!
An Animated Short Film

Scan me

OR

use link below:

bit.ly/3CUC25o

Attack of the Evil Fatbergs!
An Animated Short Film

Recap: End of "Act Two"

- From system predictability (Dr. Hansi Singh)

    → communication (me!)

    → human systems (Dr. Michael Barton)

- Science (and CESM science) is important

- So is science communication

- Effective science communication (SciComm) is essential to translate CESM data into action

Conclusion

Conclusion: Questions to Ask to Bridge the Communication Gap

- Who is the intended audience?

- What barriers do you face in CESM communication?

- How to measure SciComm success?

- What's the best way to tell your CESM story?

- How can CESM's SciComm strategies support science through stakeholder engagement?

Thank You for Your Time!

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