Effective Communication

through

Digital Storytelling

presented for the NOAA Science Council
on July 13, 2021

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NOAA CHEMICAL SCIENCES LABORATORY

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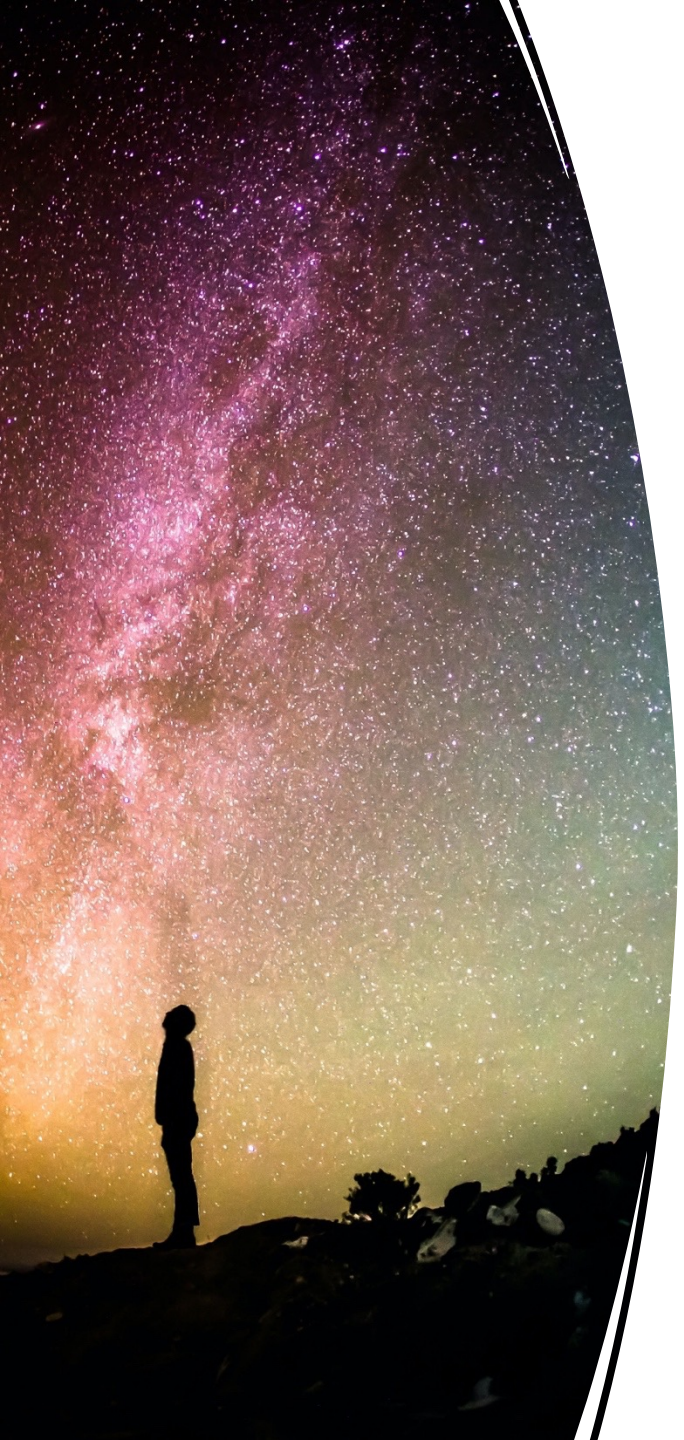
NOAA CHEMICAL SCIENCES LABORATORY



First, some context for this presentation

CSL held its 5-year Science Review on February 23-25

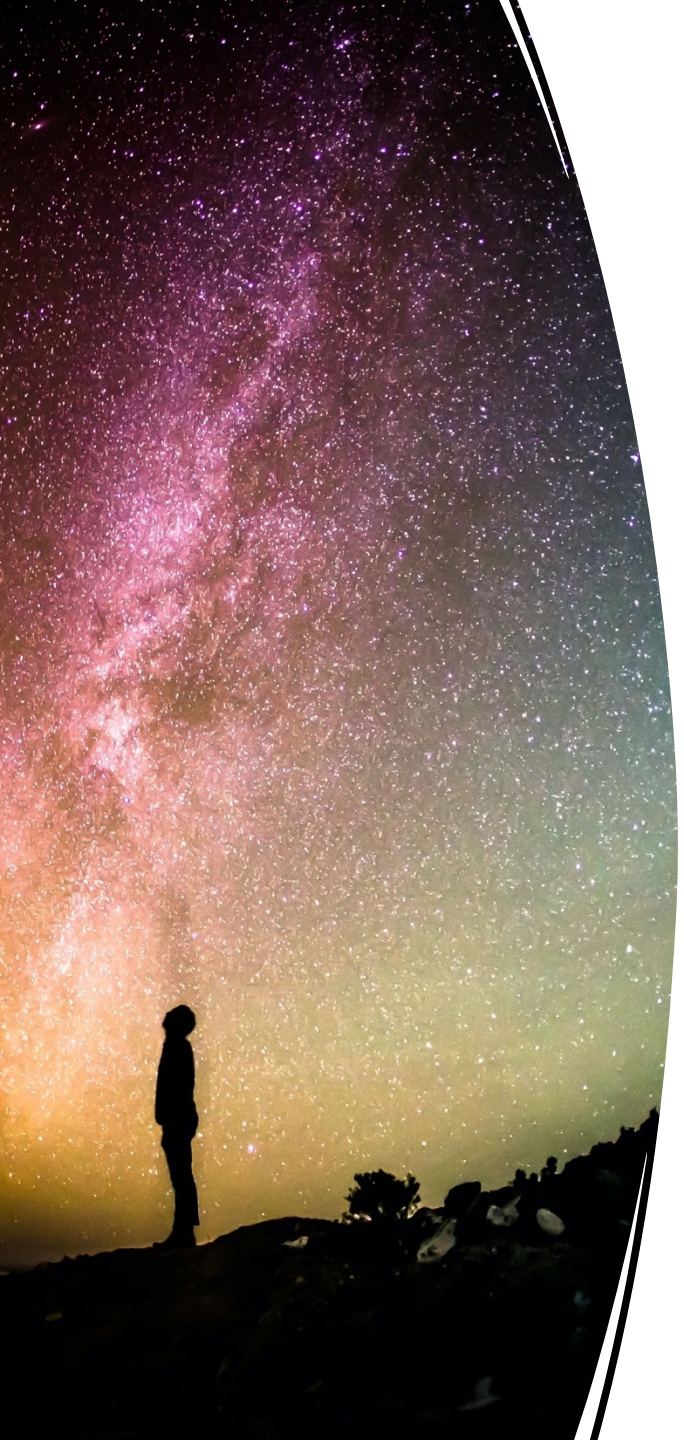
Due to COVID-19, we could not hold a traditional, in-person review with PowerPoint presentations and posters

Instead, we had to develop a new, virtual format to communicate our science

We relied almost exclusively on digital storytelling using Esri StoryMaps for presenting our research.

This approach received very positive feedback from reviewers and stakeholders

This is CSL's first use of StoryMaps as a communications tool. Other NOAA Labs/Programs/Offices have used StoryMaps with much success. Our use is the first, to our knowledge, on the large scale of a Science Review.



The Challenge

We had to design an all-virtual Science Review that met the following objectives and criteria:

1. Present a very large body of complex research on a wide range of topics autonomously *(without a presenter to explain or answer questions)*
2. Communicate complex research in a way that is ***accessible*** to range of audiences *(incl. experts, non-experts, non-scientists, administrators)*
3. Communicate complex research in a way that is ***engaging*** to a range of audiences *(no death by PowerPoint or PDF)*
4. ***Impress*** our audience by what we have done and ***create excitement*** for what is to come
5. Added benefit: create valuable resources and content that can be used beyond the Review

These are the same challenges confronted in all science communication and outreach.

*The response to all of these challenges was heavy use of visual and interactive content through **digital storytelling**.*

So, what is *digital storytelling*?

Digital storytelling refers to the use of digital multimedia to tell a compelling and emotionally engaging story.

Digital stories combine a variety of communication and media elements, often within a **narrative structure**, and are typically interactive *(through scrolling and/or clicking)*

- Photos, Graphics, Imagery
- Videos
- Animations
- Maps
- Charts, Graphs, and other Data Visualizations
- Links and/or Embedded Web Content

The **effectiveness** of digital storytelling for communication has been recognized by mass media in recent years, leading to growing popularity of interactive web content
(see *The Upshot* section of the New York Times)

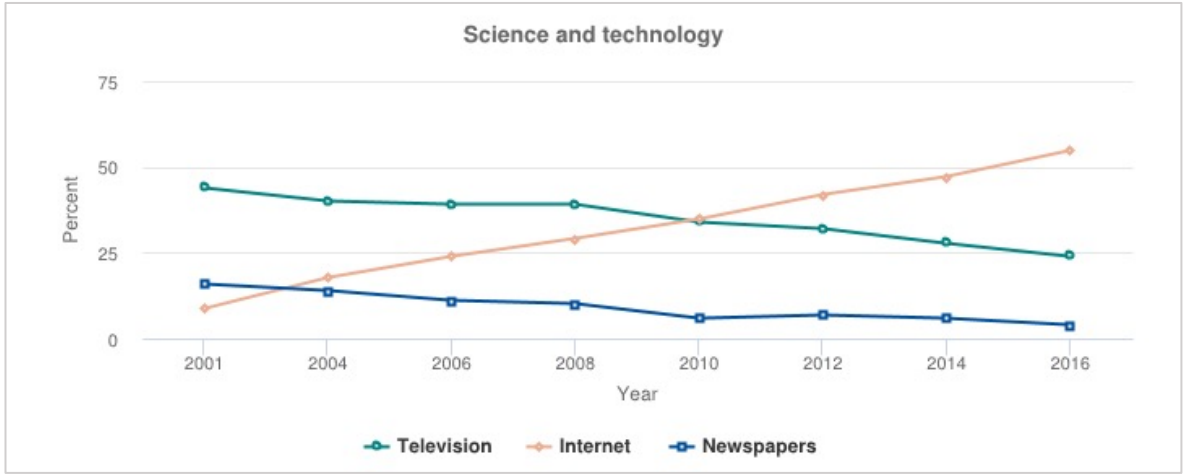
Trends in journalism & mass media can help to inform our own communication strategies

Changing trends in information consumption (esp. science)

NSF Science & Engineering Indicators Report:

In 2018, 57% of Americans cited the Internet as their primary source of Science and Technology information; this has risen steadily from 9% in 2001.

(Only 3% said Government Sources)



Reuters 2019 Digital News Report:

Consumers are becoming increasingly conscious of the time they are wasting online…predict more people leaving social networks and focus on 'meaningful' and higher quality content.

*"Organizations that consider the **user experience** will have more success."*

Reuters/Oxford Journalism, Media, and Technology Trends for 2021:

Survey respondents point to the need to **focus more on interaction and visual design**.

*"Newsrooms will need to **innovate in new digital formats** if they are to successfully engage audiences on the platforms where they choose to consume news."*

Benefits of digital storytelling for science communication

1. Accessible to wider and more diverse audiences
   - ***"Something for everyone"*** – different audiences prefer different content types and learn differently
   - ***"Choose your own adventure"*** – Viewer can quickly gain insight on key takeaways ***OR*** can dive deeper into different topics by watching videos, clicking links, exploring maps, etc.

2. Engages people through multiple pathways simultaneously (text, visual, audio, interactive content)
   - increases learning and information retention
   - *example of meeting someone at party*

3. Ideal for narrative communication

   Growing body of research showing that narrative communication (i.e., storytelling) is more effective for than logical-expository communication for science

   - Narrative communication connects information with emotion – increases engagement and interest

Expository (neutral)	*vs.*	*Narrative*
"The queen died and then the king died."		"The queen died and then the king died of grief."

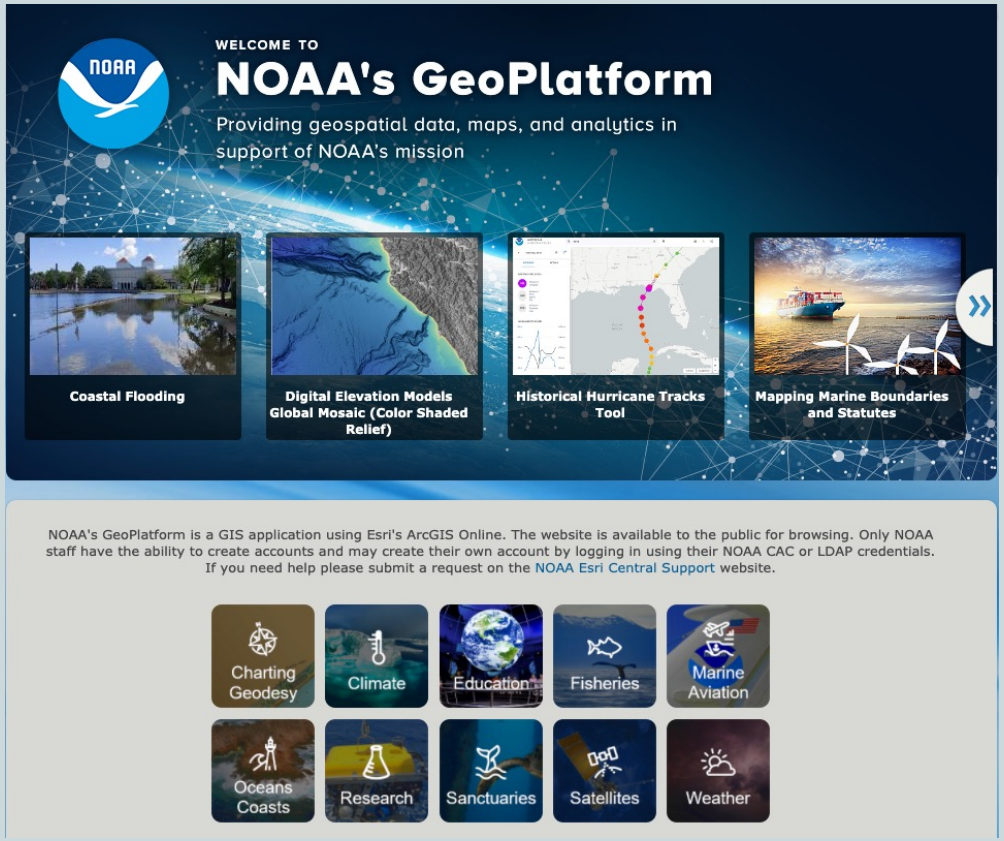
   - Narratives "humanize" the content, which in turn builds trust.
   - Narrative format is the *default cognition pathway* for learning new information and storing to memory.

Our tool for the Science Review: Esri StoryMaps

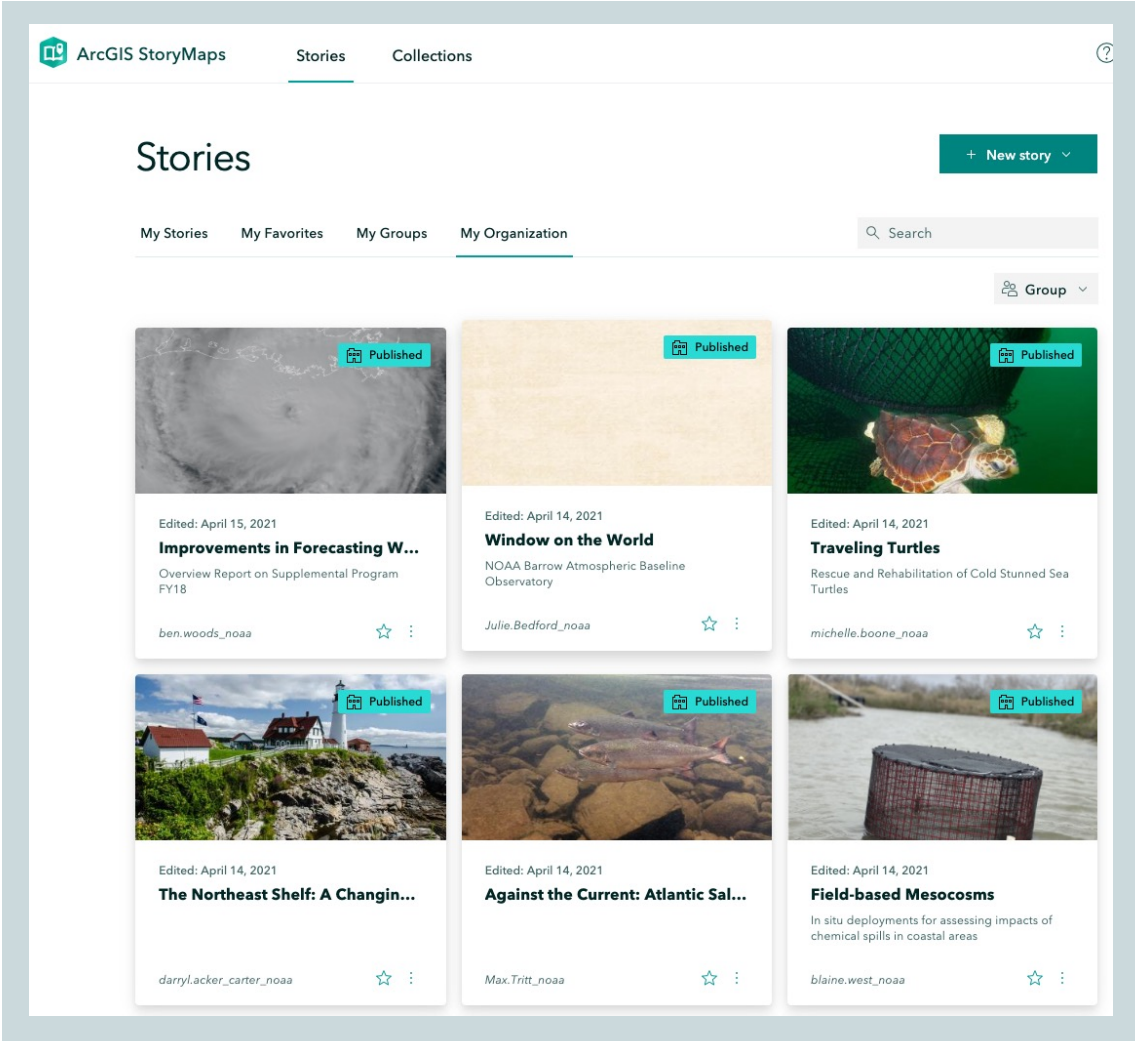
StoryMaps is a web-based tool from Esri for digital storytelling

StoryMaps is accessed through NOAA's GeoPlatform on Esri (noaa.maps.arcgis.com)

Login using your NOAA credentials



In StoryMaps, you can view all NOAA-produced content under the "My Organization" tab.

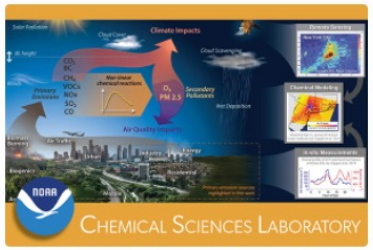


CSL Science Review

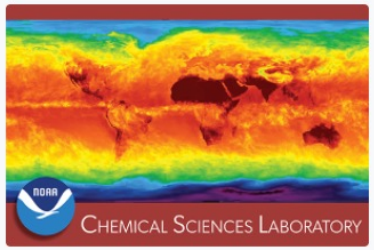
csl.noaa.gov/reviews/2021/

- 14 StoryMaps in total, each created by a team of 3-4 researchers
- Guidance on structure and content by Chelsea & Megan
- Content review/editing by Megan
- Technical support and video coordination by Chelsea

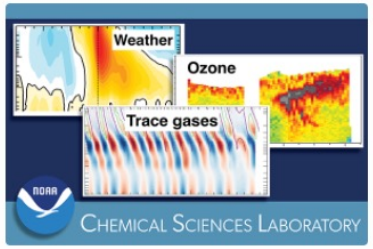
1. Research Theme: Air Quality



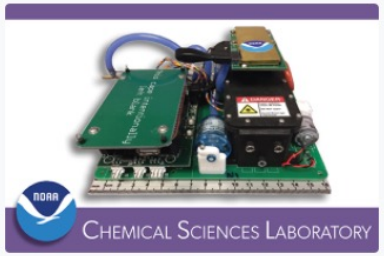
2. Research Theme: Climate



3. Research Theme: Stratosphere



4. Research Strategies



5. Leadership & Contributions

StoryMap Example

Wild and Prescribed Fires

Esri StoryMaps software

Pros

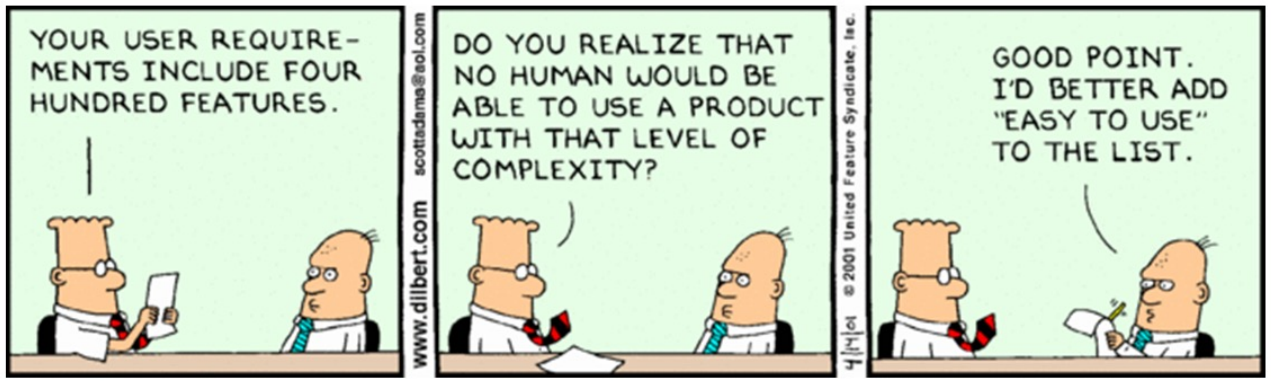
- NOAA-wide Enterprise account (GeoPlatform)
  - Free & accessible to all employees
  - Easy to collaborate across Labs, Programs, and Line Offices
  - Content ownership stays with NOAA, not lost to an employee's personal account on an external program
- Easy-to-learn graphical user interface (does not require any advanced computer skills or progamming)
- Relatively flexible software; StoryMaps can be as simple or as complex as you want
- Integrates with Esri's traditional ArcGIS mapping capabilities

Cons

- Software limitations
  - Does not (yet?) support any custom coding; Have to work within the StoryMap builder
  - StoryMaps is not as established as the ArcGIS side of Esri, so there are still some minor bugs and quirks.
  - …but, Esri is regularly adding new features and fixes (updates announced usually every few months)
- One-size-fits-all that doesn't make everybody happy
- They take more time to produce, generally, then a standard webstory or article *(but time ∝ complexity)*

Esri StoryMaps is not the only digital storytelling software, but it does a good job balancing usability vs. features

Easy to Use ⟷ *Feature-Rich*



Using StoryMaps for communications

When to use StoryMaps

- To communicate multi-faceted topics, concepts, projects
- To communicate more complex topics where visuals are needed to add clarity and understanding
- To reach a larger range of audiences (incl. younger audiences)
- For more "evergreen" topics that span multiple projects and/or multiple Line Offices (e.g., hurricanes, climate, drought)
  - State of the Science Fact Sheet topics would work very well for StoryMaps
- For topics in which we have a lot of visual assets

When NOT to use StoryMaps

- Quick news highlights
- Individual, stand-alone publications

StoryMaps do not take the place of social media posts or NOAA Research webstories

Leveraging StoryMaps for Outreach

A few ideas:

- Educational StoryMaps about NOAA research topics or field campaigns, with embedded photos, videos, scientist interviews, etc.
  - *Boulder Outreach Coordination Committee is working on several for new outreach webpage*
- Virtual lab tours (see AOML's example)
- Storytelling competitions using NOAA data (see UN SDGs 2020 Competition and National Geographic "Restoring Our Oceans" 2021 Competition)
  - general public or student learning activity
  - ***creating*** StoryMaps is also an effective learning tool;
    - *"teach students to be story tellers, not just story readers"*
- "Crowdsourced" StoryMaps

Conclusions

StoryMaps have a lot of potential to be an effective and engaging tool for both our Communications and Outreach.

Interactive multimedia approach makes StoryMaps accessible to a wide range of diverse audiences.

Narrative communication creates an emotional connection to the content, which increases information retention.

Creating StoryMaps can be more time-consuming, and so are not appropriate for everything, but the extra time can be worth it.