

Storytelling with data at NASA's Earth Information Center

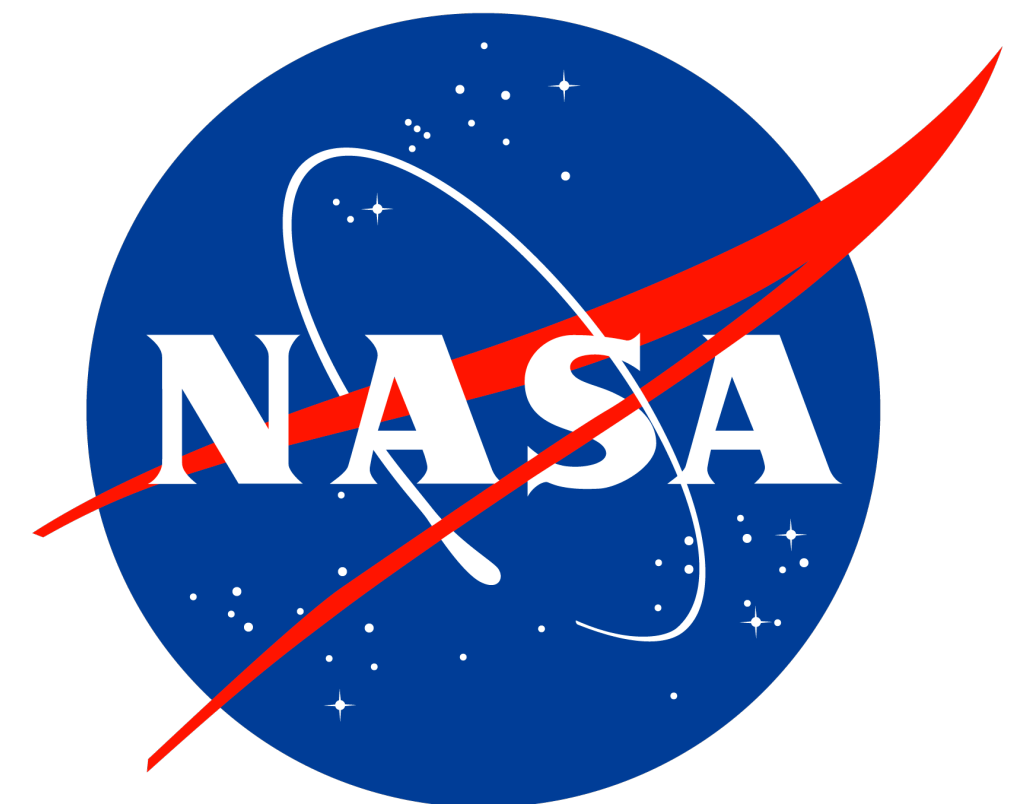
And how we use it to communicate the ways NASA's mission extends beyond space exploration to study the Earth.

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Storytelling with data is a **focused and intentional** way to **communicate key features** in data.

Exploratory vs. explanatory visualization

- Exploratory visualizations are the **tools we use for discovery**, are frequently **rougher and more complicated**, and are **not always well-suited** for explaining the final result.

The time spent doesn't reflect the impact

- The **amount of time spent** on data processing and analysis often dwarfs the amount of time spent **preparing the data for presentation**. However, all anyone else sees is the final plot; we do **ourselves and our audience a disservice** to not spend the time optimizing the presentation.

Very little is 'self-evident' from a basic plot of the data

- Data science empowers decision makers to **make more informed decisions**. Our role as data scientists is to **act as interpreters** by efficiently and clearly **communicating the story** the data can't tell by itself.



storytelling  WITH data®



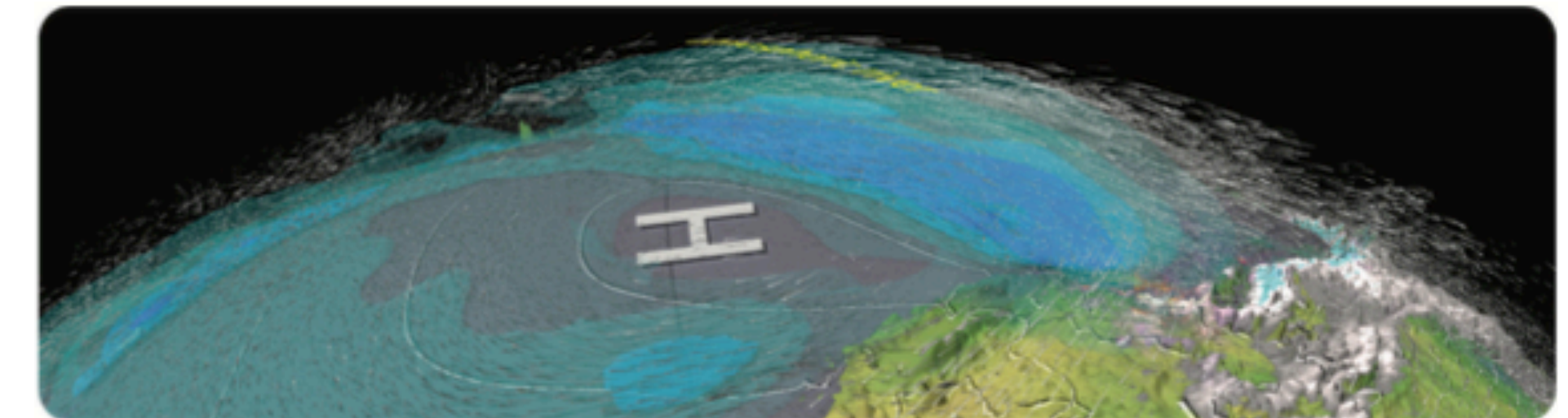
The mission of NASA's **Earth Information Center** is to put the vast quantities of available Earth data **directly into the hands of decision makers.**

The EIC has two components:

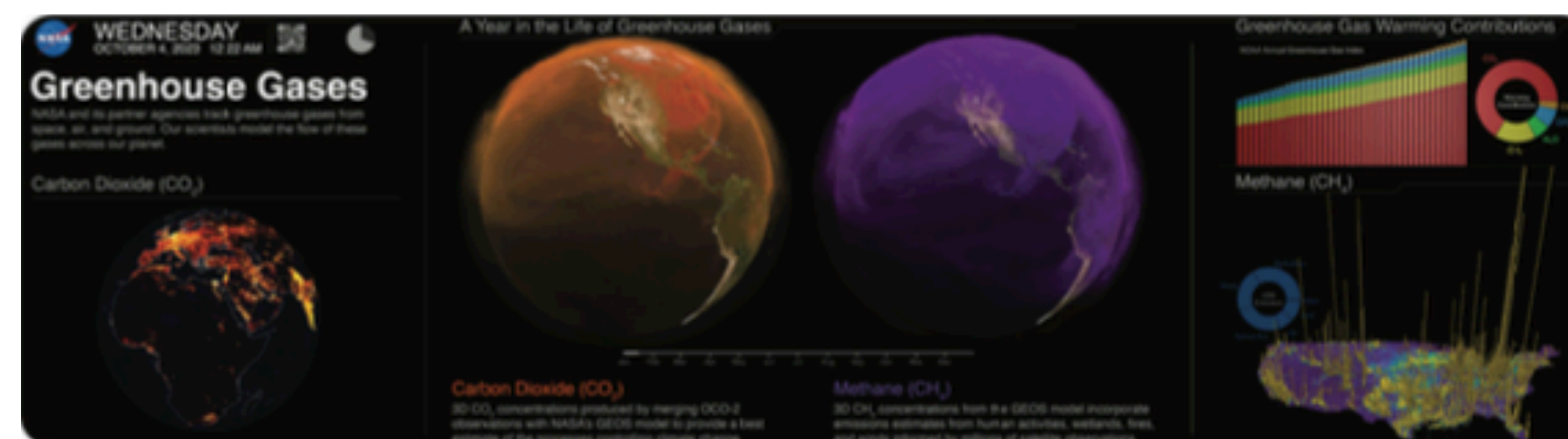
1. a **physical exhibit** showcasing the scope of available data at NASA HQ in Washington, D.C.
2. a **gateway website** that connects users to applications powered by NASA data go.nasa.gov/EIC

Where does storytelling come in?

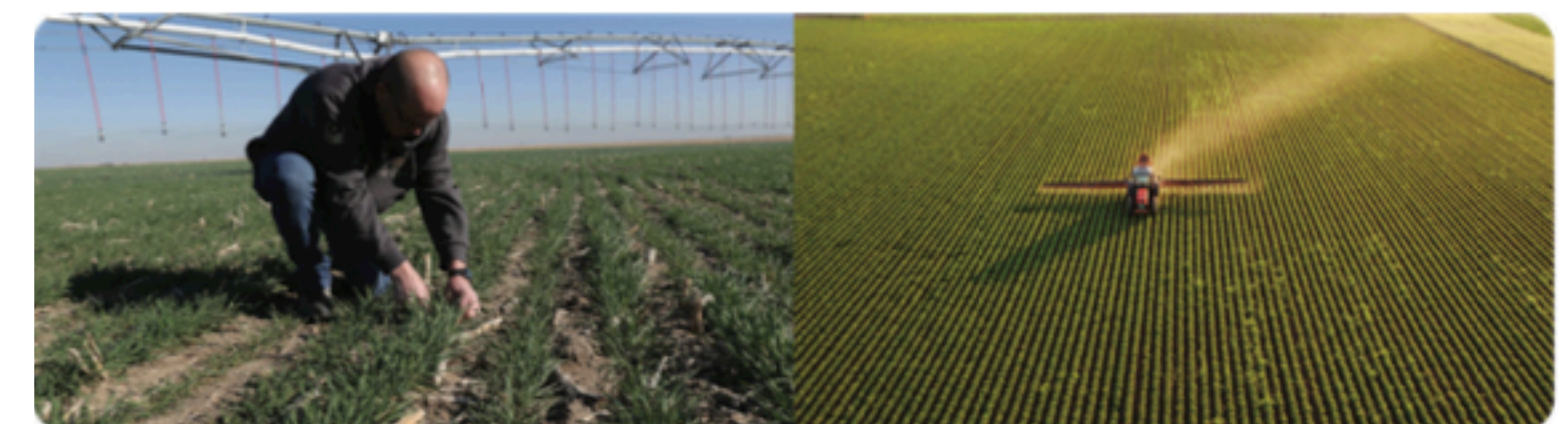
Including elements of storytelling in our dashboards, beauty pieces, and narrated content helps us **convey the impact** of NASA data in a memorable and compelling way.



VIS_02: Atmospheric rivers, a 3D view of an atmospheric river from an Earth system model.



GHG_03: A year in the life of greenhouse gases



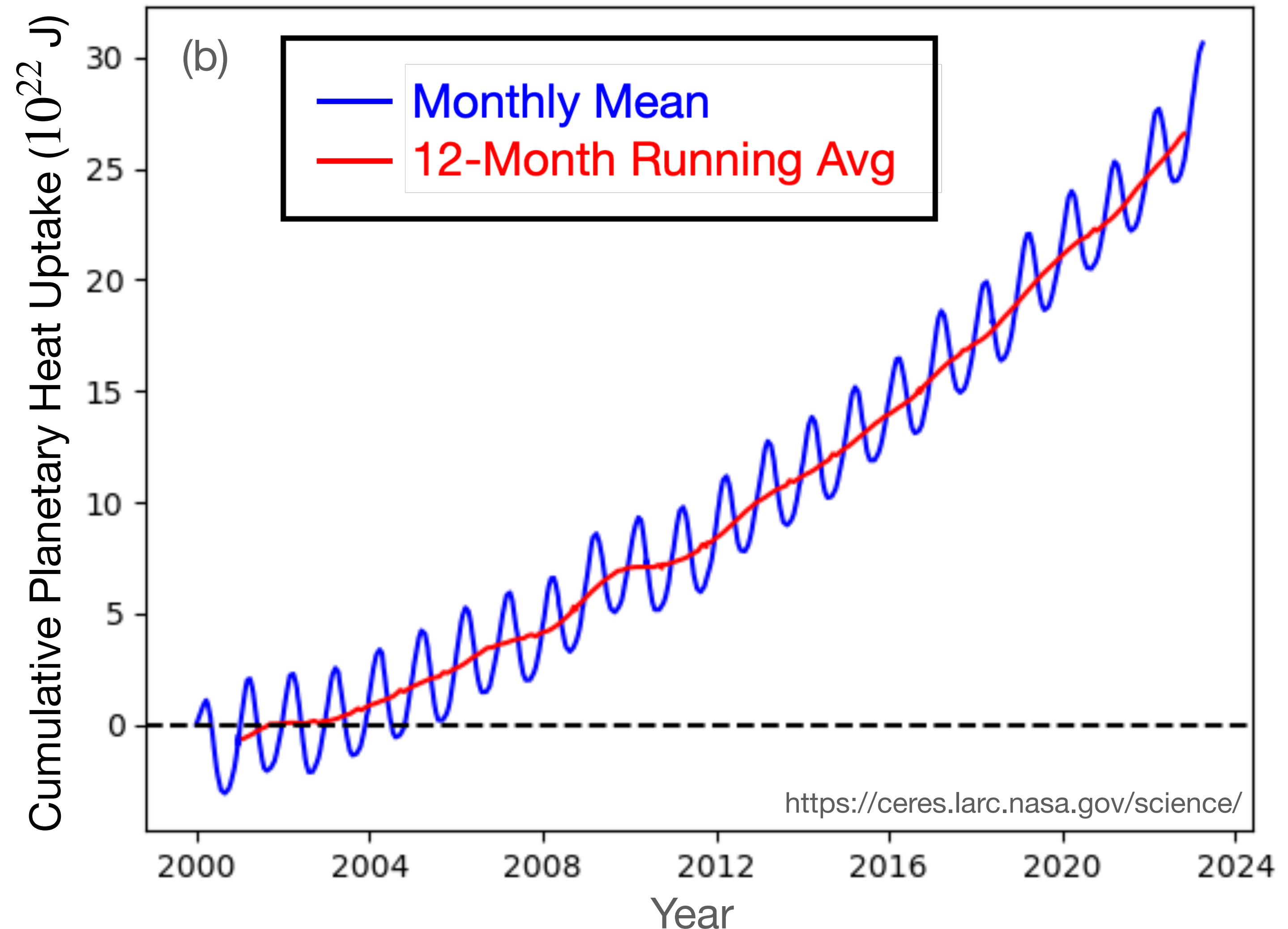
VS_03: Agriculture video

Unfocused visualization can make readers **confused** as they **attempt to figure out** what's being plotted.

Why doesn't this visualization work?

- Self-referential titles, obtrusive legends, and unnecessary axis labels **can be redundant** and/or **add visual noise**.
- Unintuitive units adds **additional layers of abstraction** to get across the magnitude of the effect.
- If the reader is doing work to understand the plot **they're not focusing on the takeaway** you want them to have.

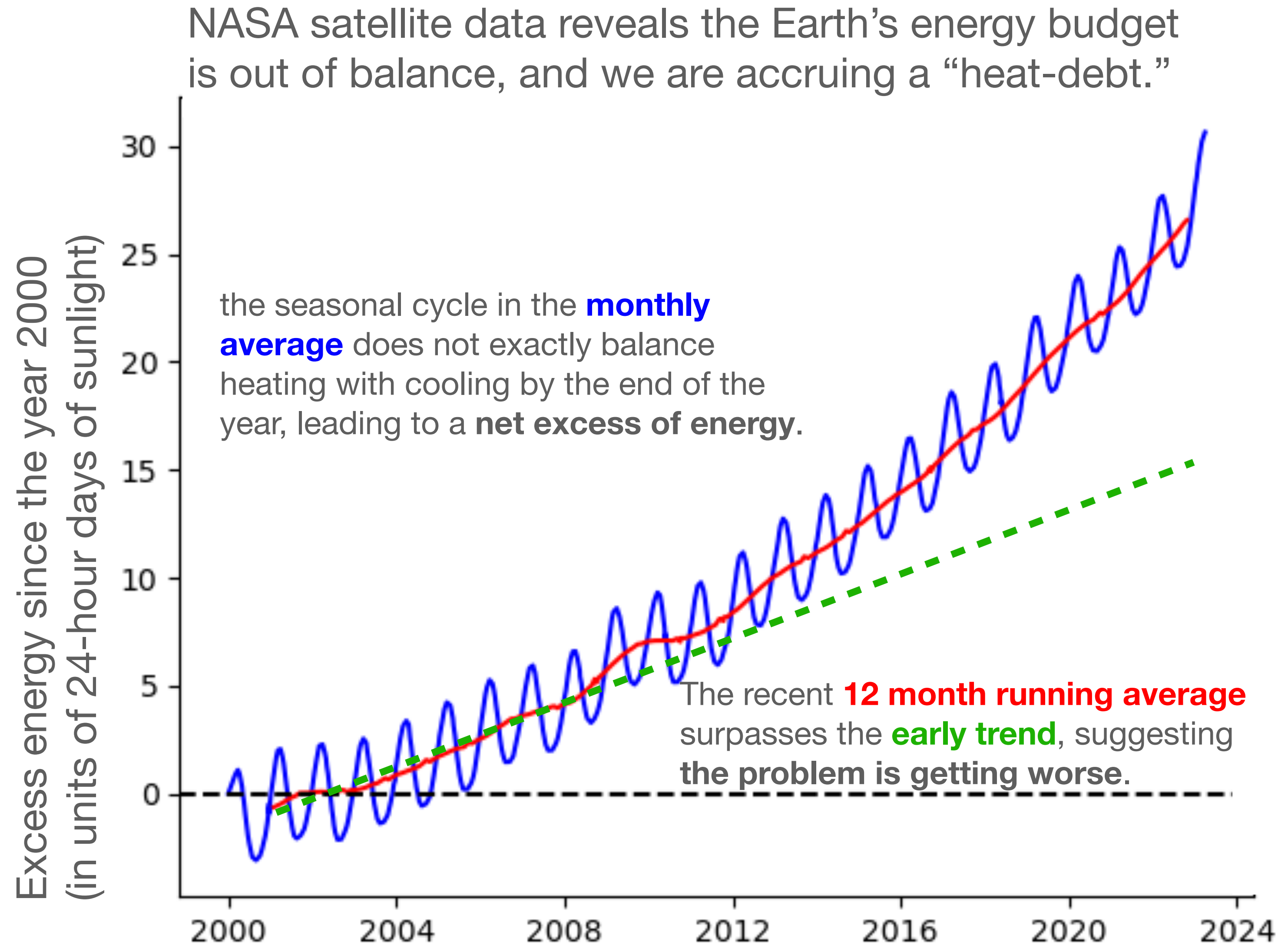
CERES measurements of planetary heat uptake



Focused visualization **tells a compelling story**,
and **directs a reader's attention** to where you want it.

What's better about this visualization?

- Descriptive text can be used to **highlight key features** and **guide the eye** through the graph.
- Intentional use of color can be used to **encode additional information** and **provide emphasis**.
- Leading with the conclusion helps the reader to **look for the supporting evidence** they are interested in.



If you want to **learn more**, there are lots of online resources.

Cole Nussbaumer Knaflic's book, podcast, youtube channel, ...

- Cole has built an entire business around teaching people how to do this, **she is a literal pro**.
<https://www.storytellingwithdata.com/>

Albert Rapp's Twitter & newsletter

- Albert does a great job providing **concrete examples in R** using ggplot.
<https://albert-rapp.de/>

Jim Vallandingham's gallery of scrollytelling examples

- Jim has **compiled an excellent list** of different types of scrollytelling from all over the web.
https://vallandingham.me/scroll_talk/examples/

Yan Holtz' *From Data to Viz* and graph galleries

- Yan has a **bunch of great tutorials** and inspirational entries in his galleries that I highly recommend.
<https://www.yan-holtz.com/#website>