

THE SCIENCE COMMUNICATION CHALLENGE

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National Environmental Monitoring Conference 2017

AUGUST 8 2017



UC SANTA BARBARA

STRATEGIC ENVIRONMENTAL COMMUNICATION & MEDIA



Why science communication?



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Photo credit: Lake Superior State University



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Photo credit: United Nations



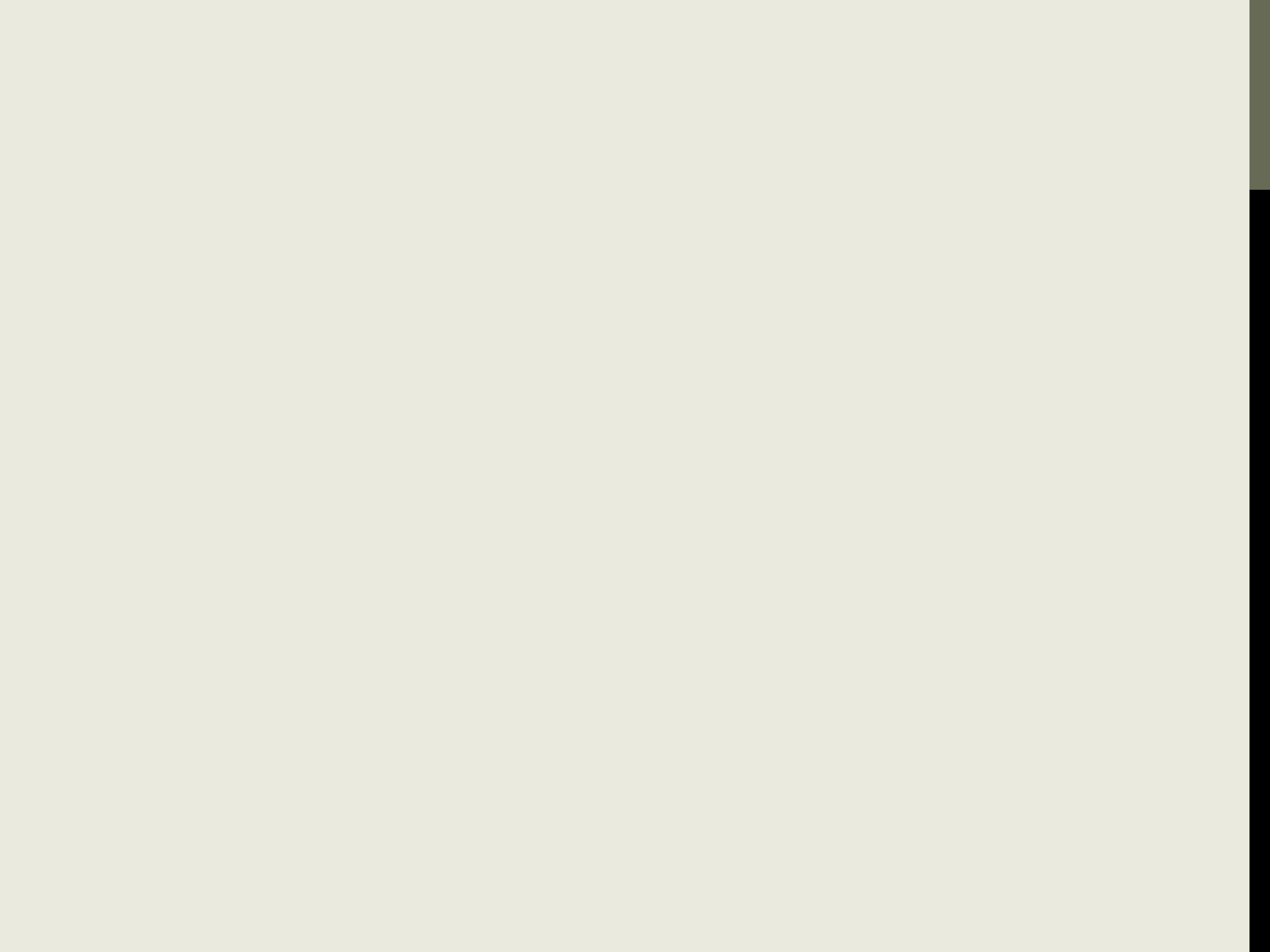
Photo credit: Wikipedia

REFLECTIONS

Science may have a seat at the table, but it isn't always heard.

We must understand the context in which our messages propagate.

Is there a “formula” for effective communication?



BASIC CHALLENGES

Distant in time and space.

Usually not personally relevant.

Uncertainty is tough to explain.

Not everyone cares about the environment.

Science has become politicized.

Pattern recognition is a challenge.

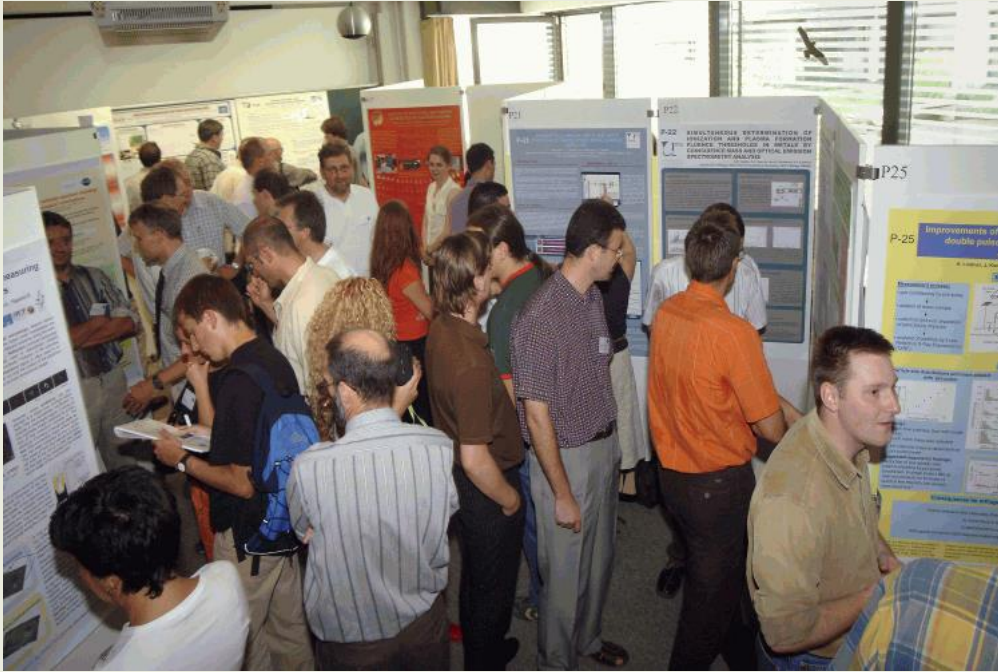


Photo credit: Economics Doctoral Circle



Photo credit: Popular Science



CONTEXTUAL CHALLENGES

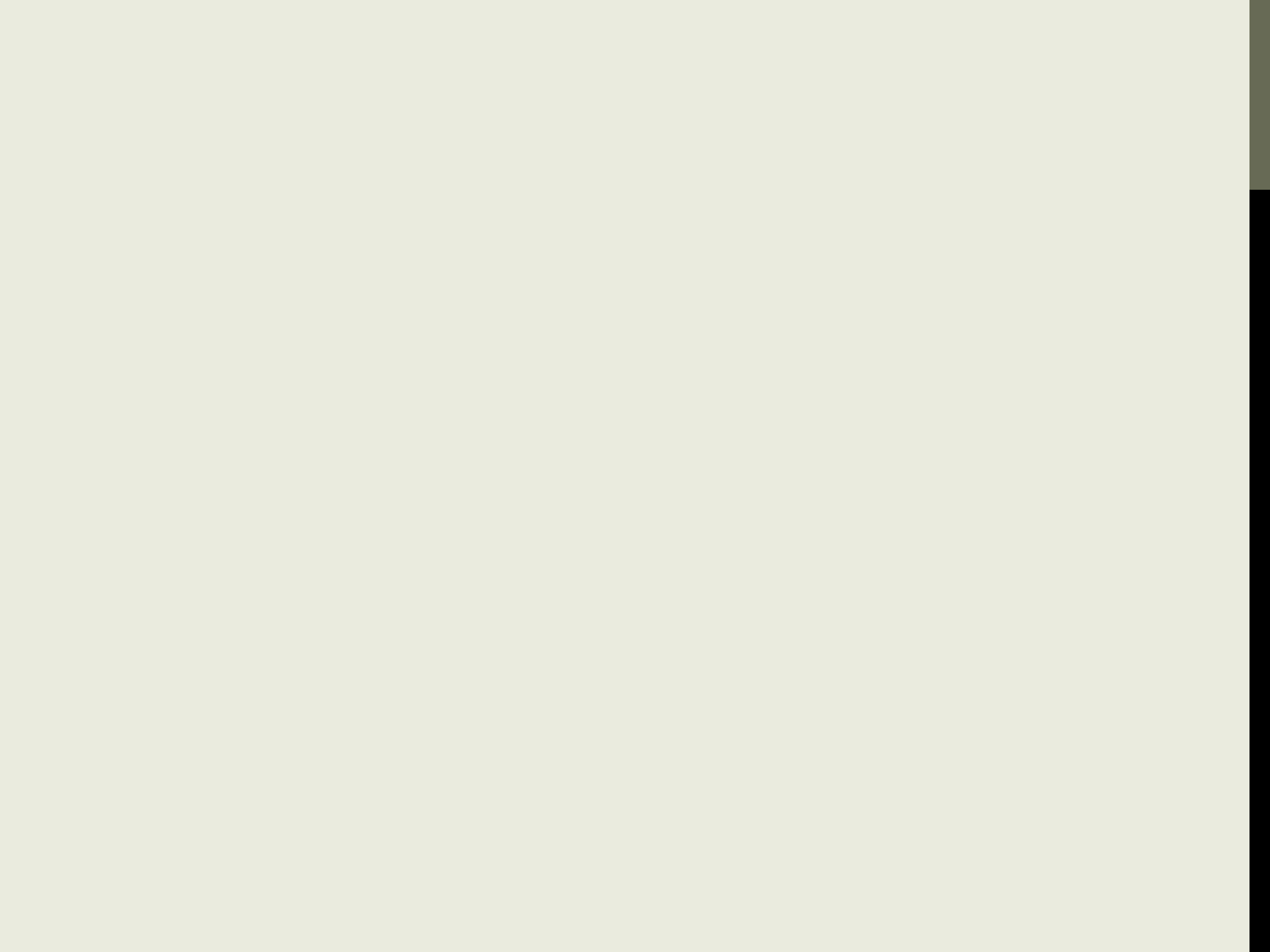
Assessment of Factual Knowledge:

- The sun revolves around the earth: 24%
- Continents do not drift: 18%
- Antibiotics kill viruses: 45%
- Humans did not evolve from other species: 51%

Rather stable since 1992







*How a Handful of Scientists
Obscured the Truth on
Issues from Tobacco
Smoke to Global
Warming*

Merchants of DOUBT

Naomi Oreskes
& Erik M. Conway

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prop • a • gan • da

prā-p e-gan-d e noun 1. Derogatory information, especially of a biased or misleading nature, used to promote or publicize a particular political cause or point of view.

MERCHANTS OF DOUBT

A FILM BY ROBERT KENNER

A SONY PICTURES CLASSICS RELEASE



OFFICIAL SELECTION
TELLURIDE
FILM FESTIVAL

OFFICIAL SELECTION
TORONTO
FILM FESTIVAL

OFFICIAL SELECTION
NEW YORK
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The Deficit Model

... debunked!

Instead:

- Personal ideologies & values
- Group identification
- Social networks & influence
- Narrative & emotion



WHAT WORKS...

Clear goal and purpose

Know your audience

Make your message personally meaningful

Avoid fear appeals

Don't overuse hope!

Problems + effective solutions

Avoid jargon

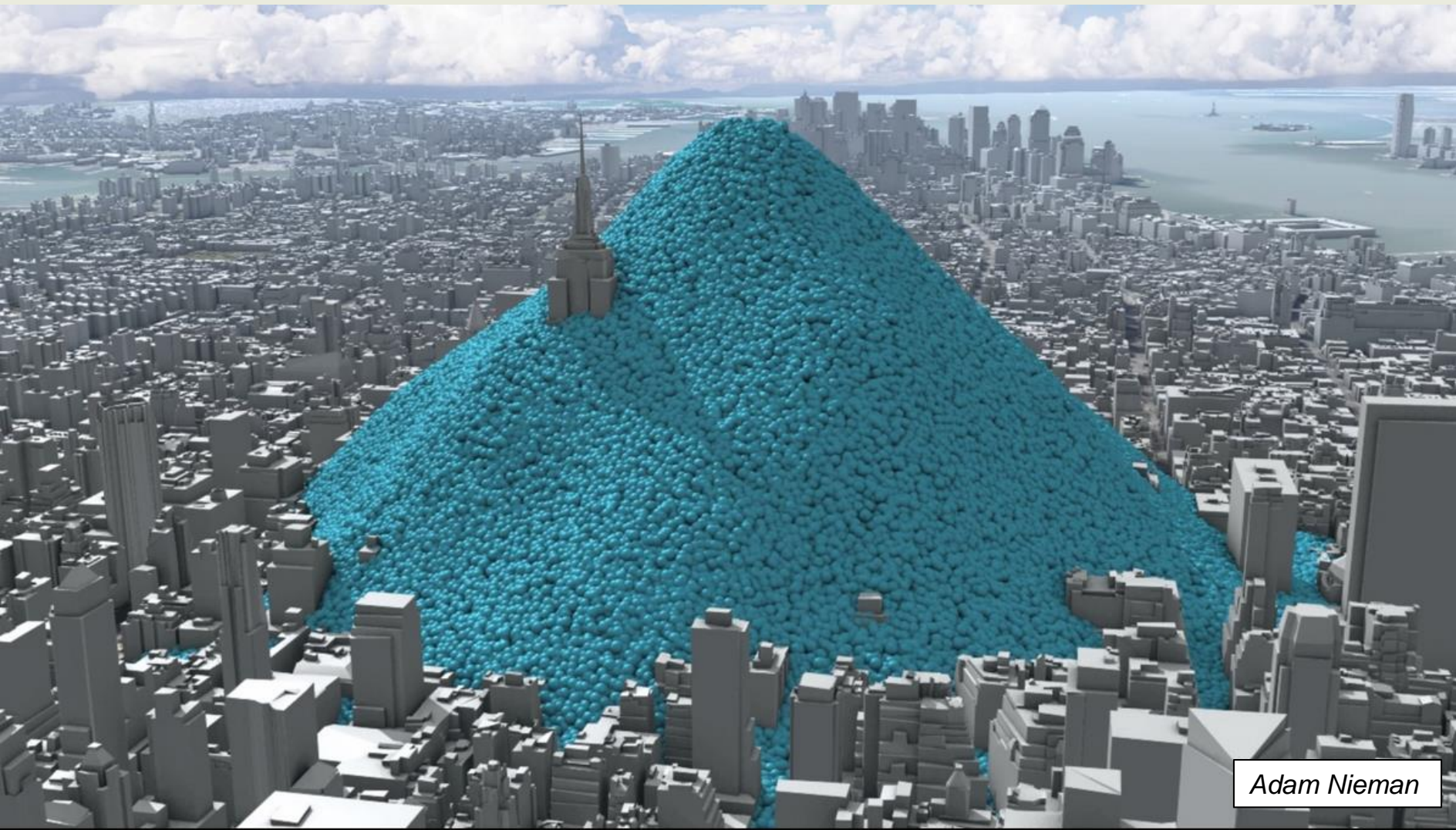
Group membership considerations

Narrative structures

Humanize it!

Make it visual

Data Visualization



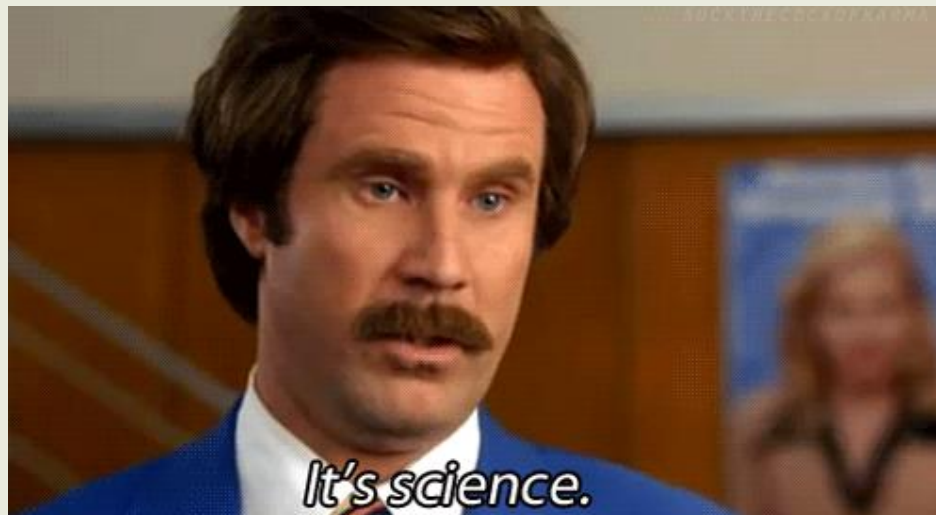
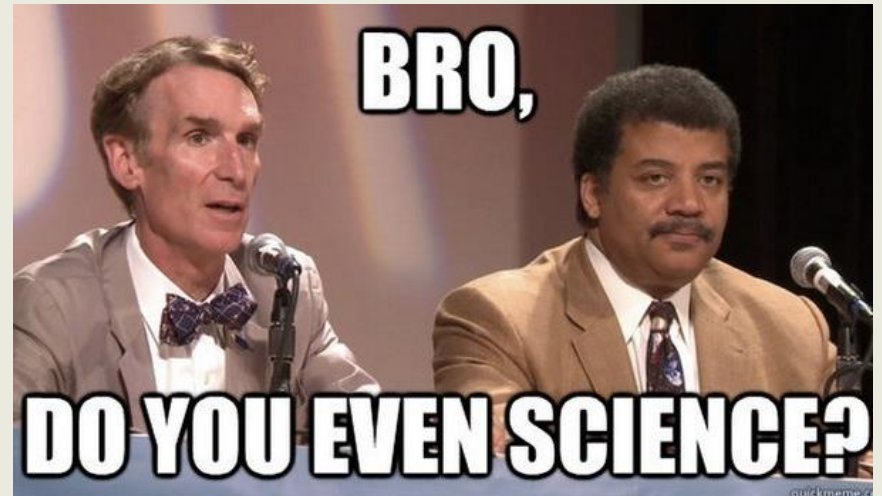
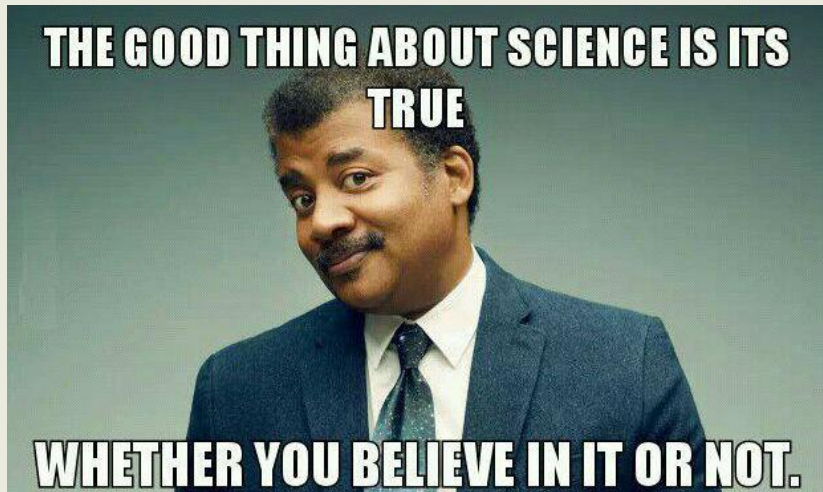
Adam Nieman

New York City carbon emissions, 2010

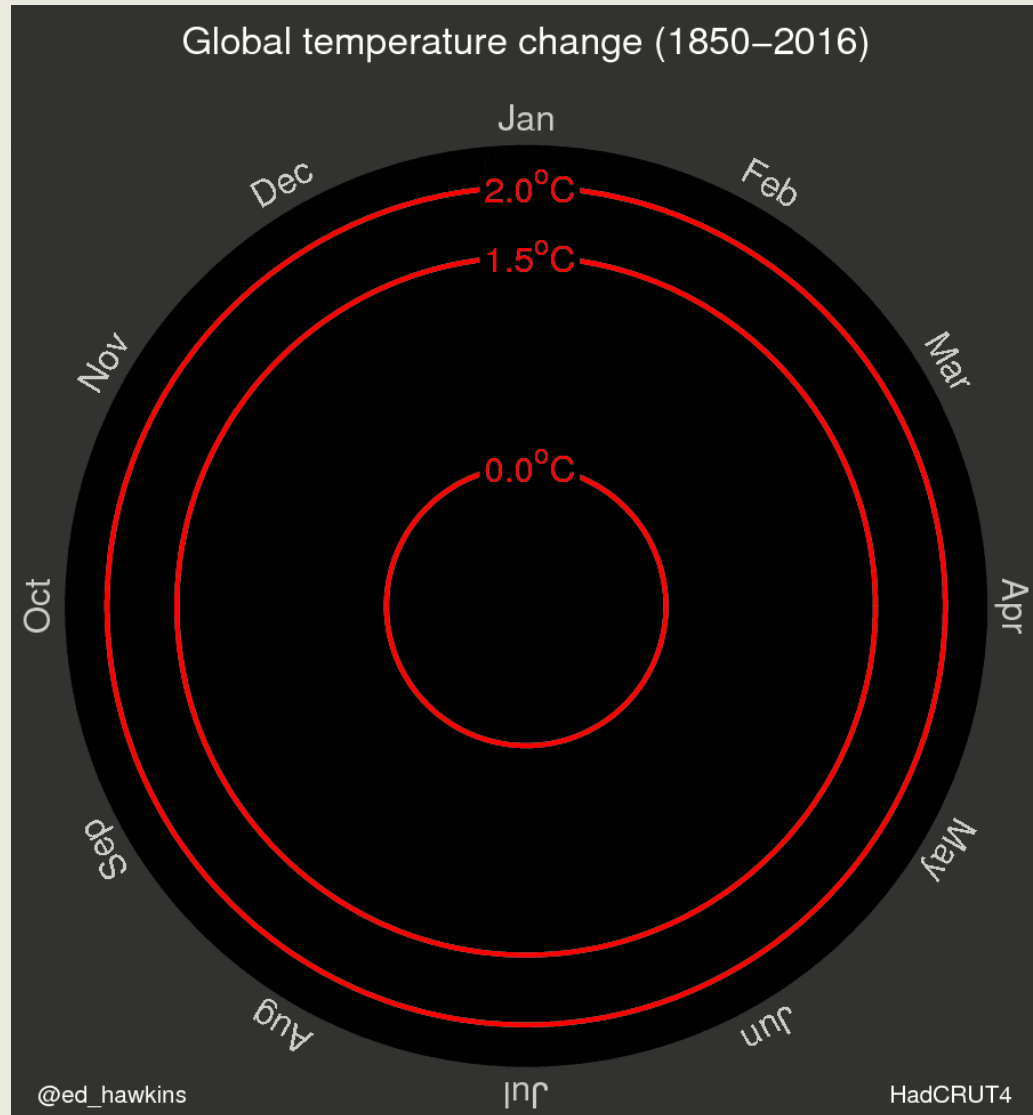
54 million metric tons CO₂



RISE OF THE MEME + GIFS



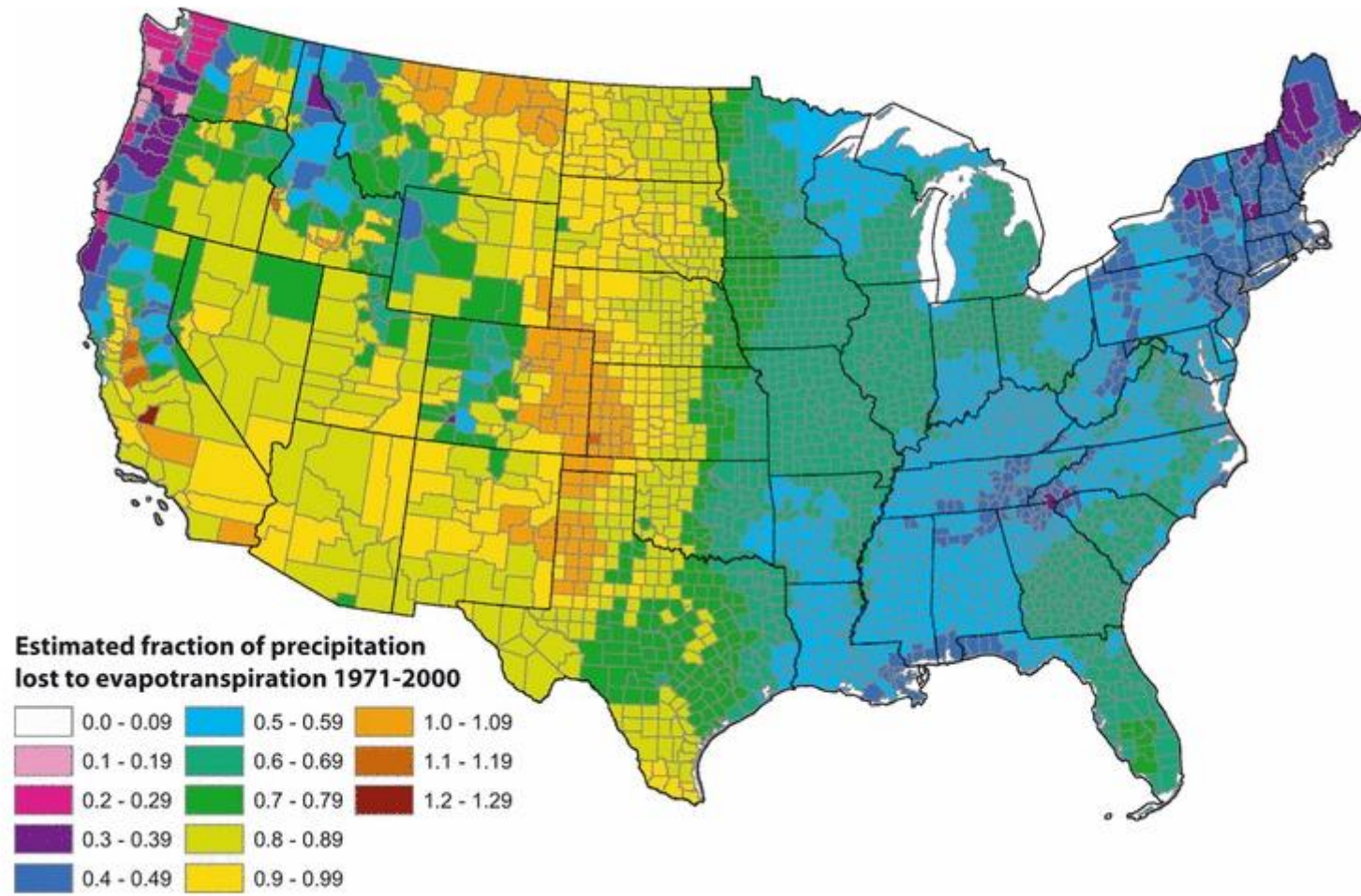
HISTORICAL DATA

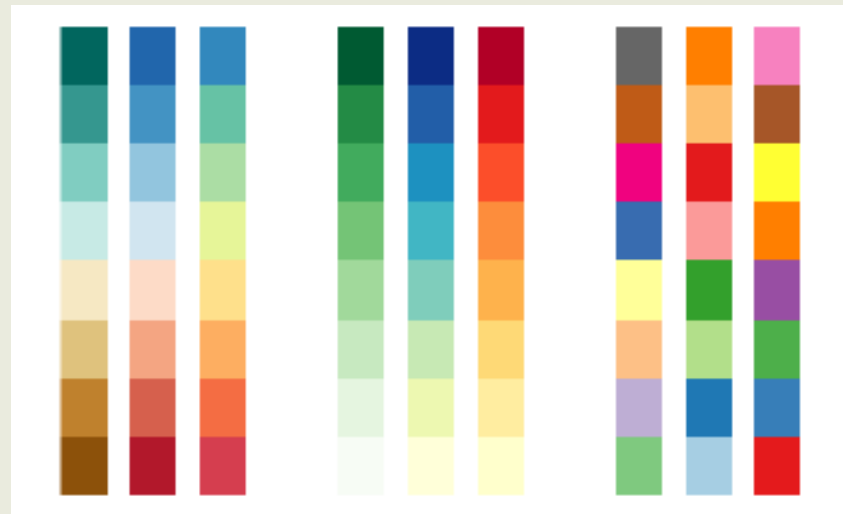


Ed Hawkin, PhD
Climate Lab Book
2016

Pre-attentive features

COLOR CHOICE IS KEY



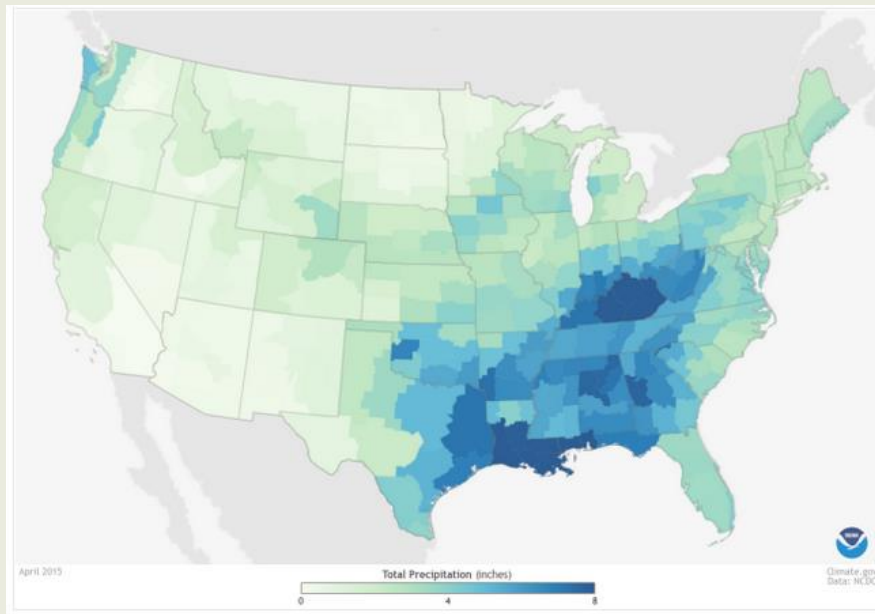


colorbrewer2.org

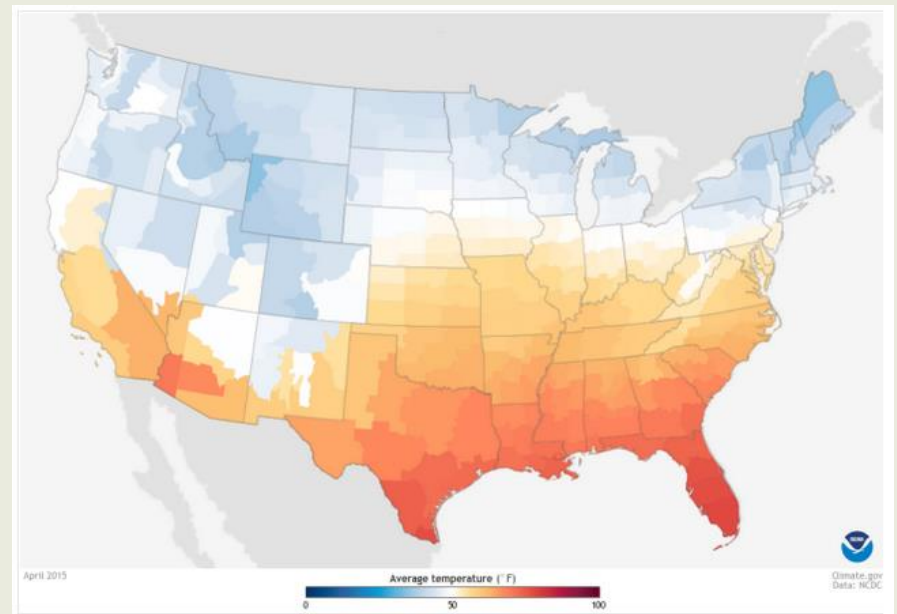
diverging

sequential

categorical



total precipitation



average temperature

Number of data classes: how to use | updates | downloads | credits

Nature of your data: sequential diverging qualitative

Pick a color scheme:

Multi-hue:

Single hue:

Only show: colorblind safe print friendly photocopy safe

Context: roads cities borders

Background: solid color terrain

color transparency

3-class BuGn

HEX

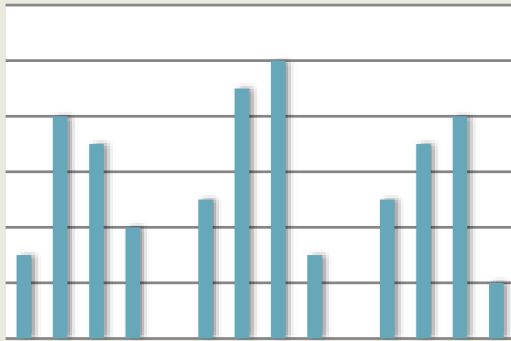
EXPORT

COLORBREWER 2.0
color advice for cartography

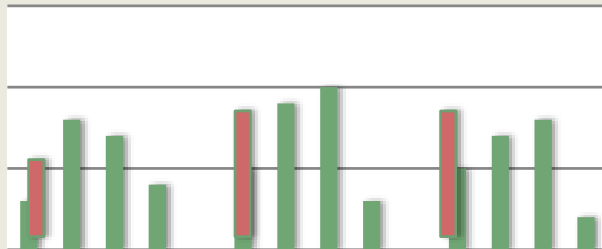
Gestalt Principles For Design

GESTALT TIPS

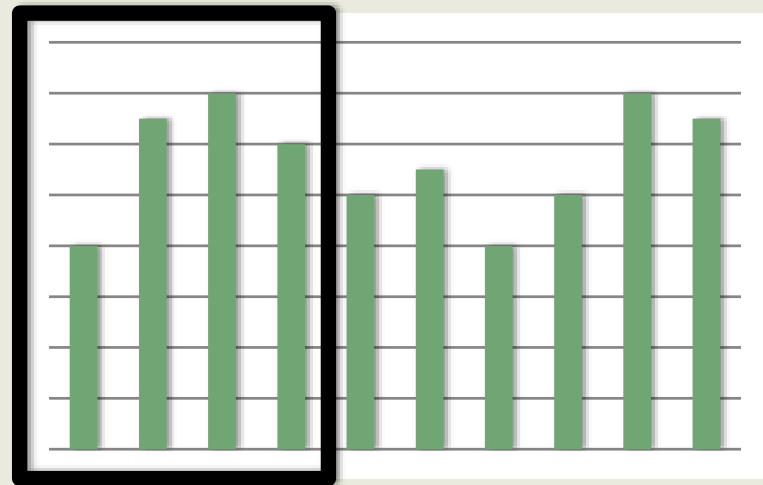
proximity



similarity

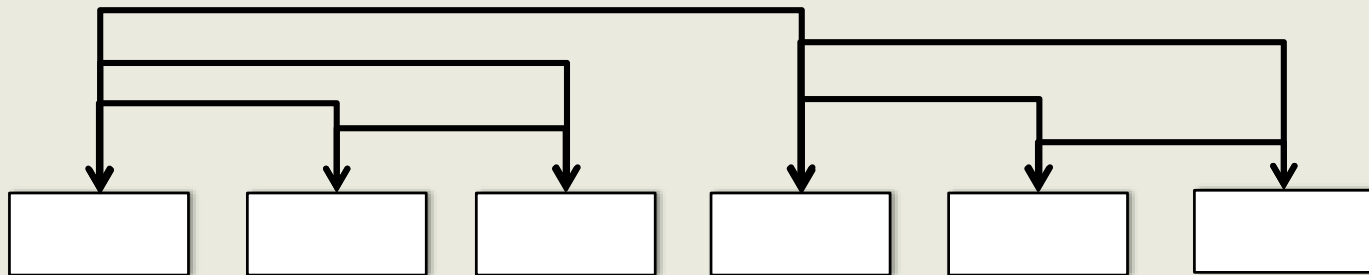
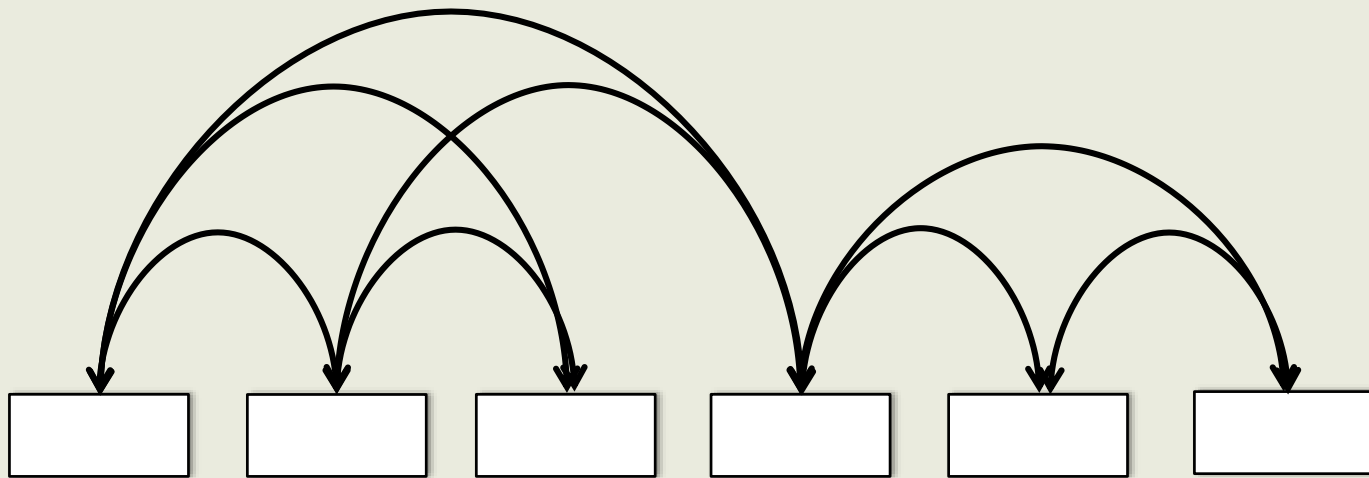


closure



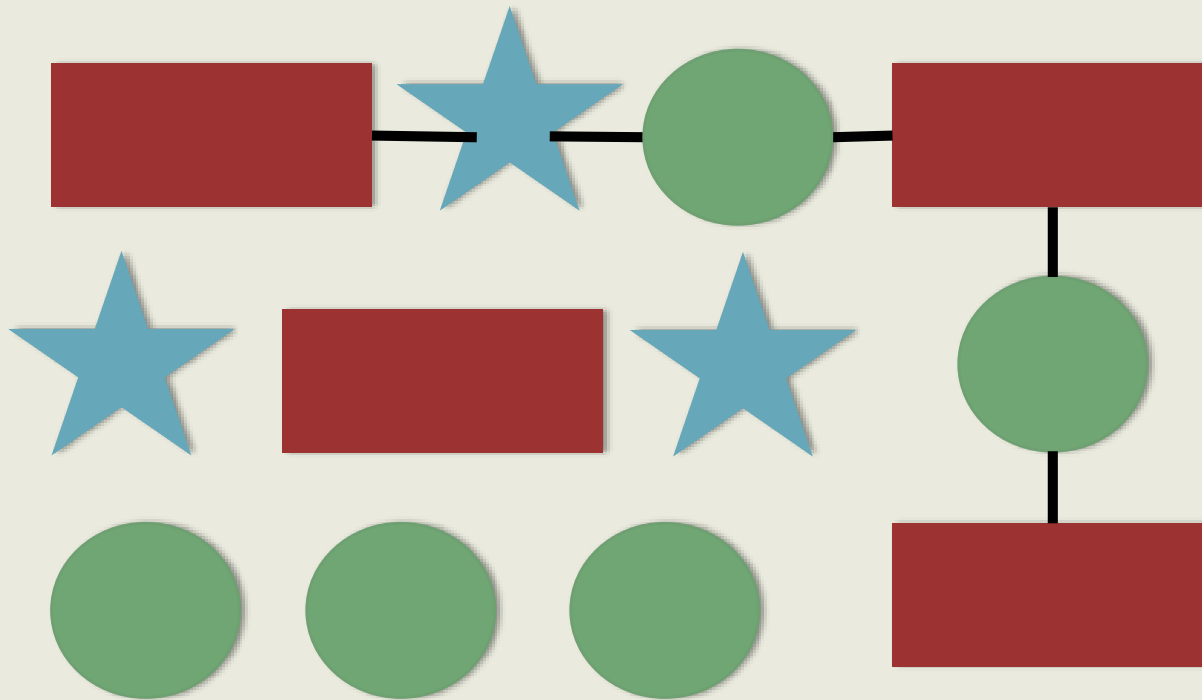
GESTALT TIPS

continuity

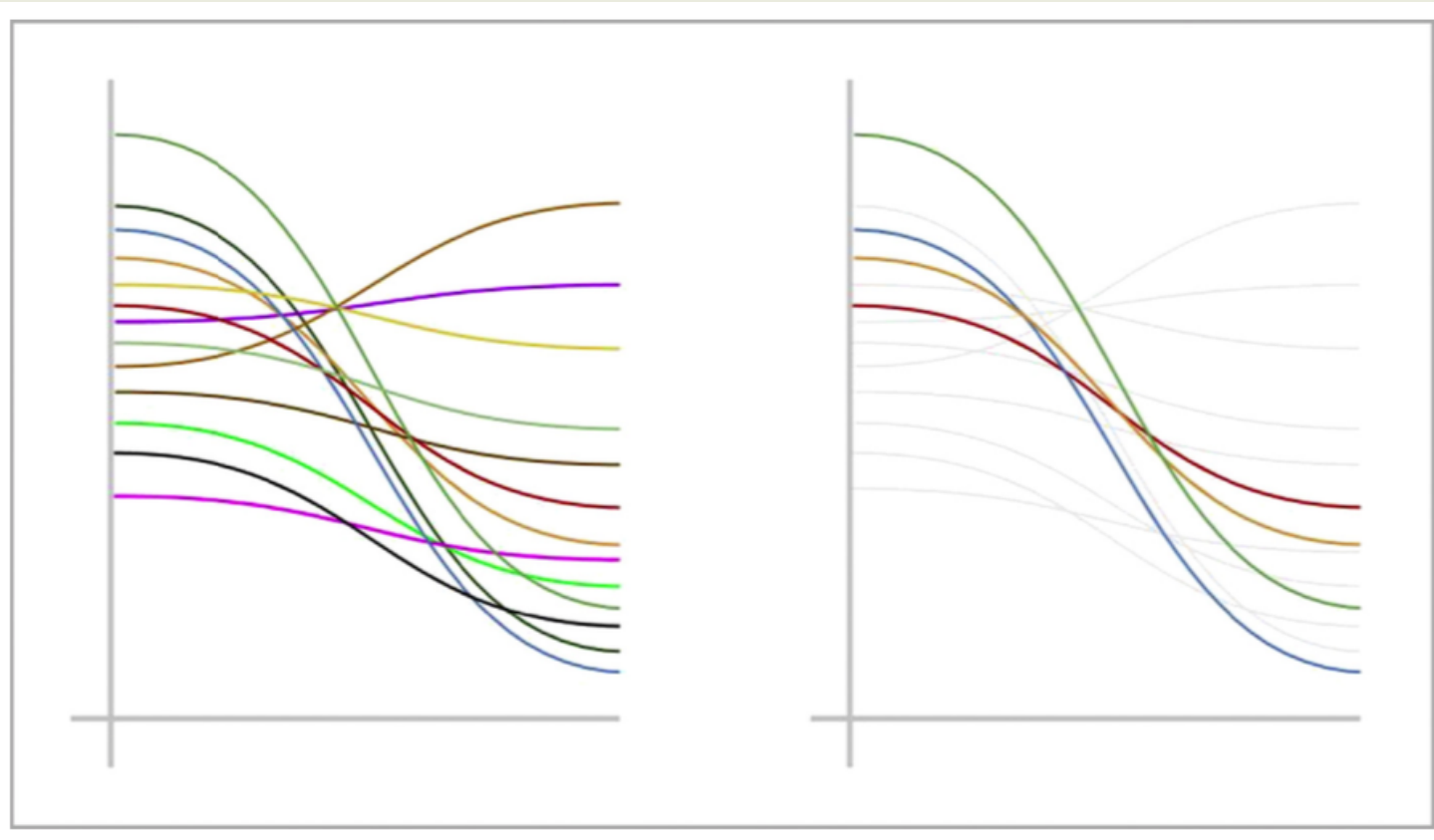


GESTALT TIPS

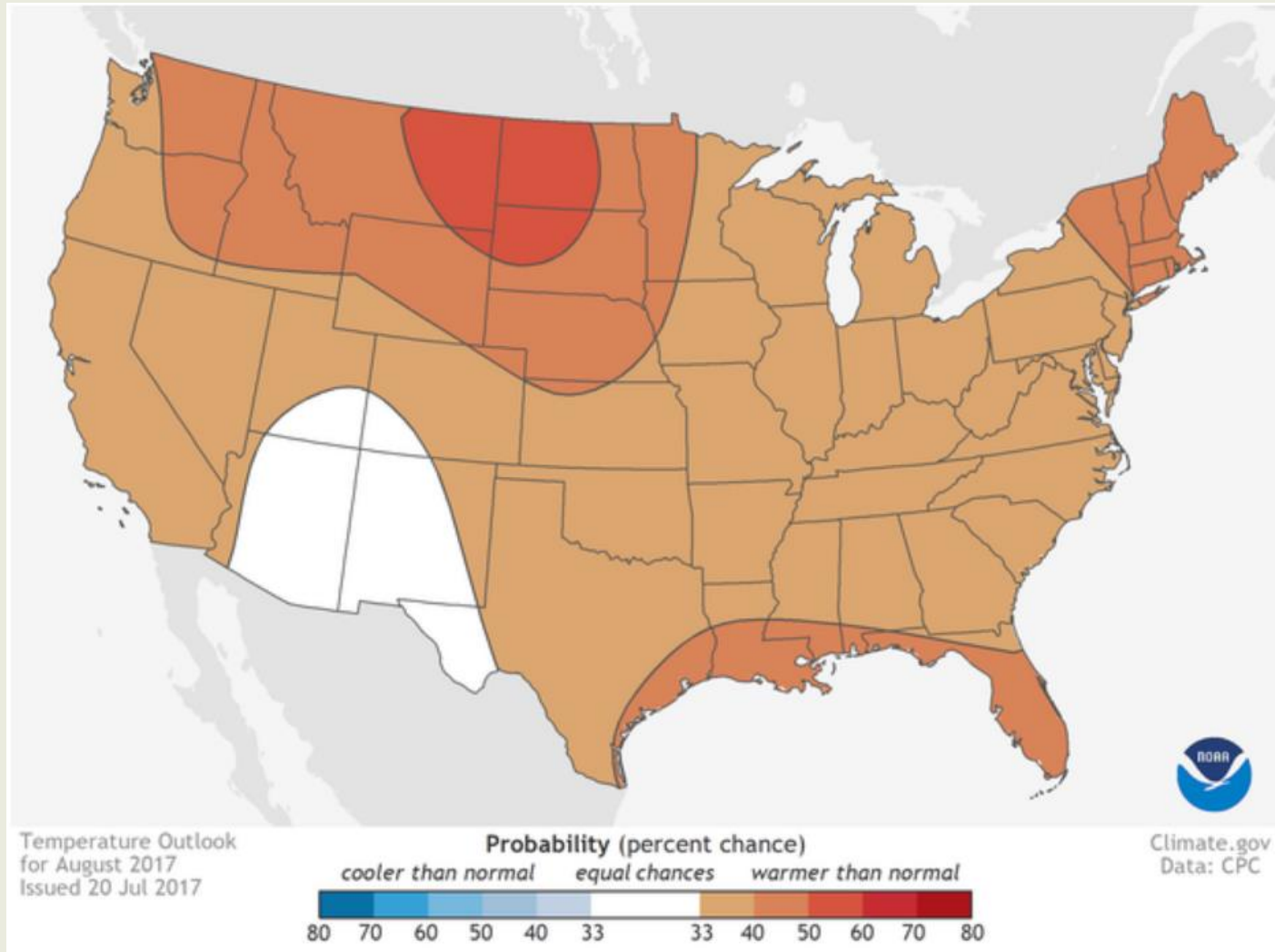
connectedness



SIMPLICITY & CLARITY



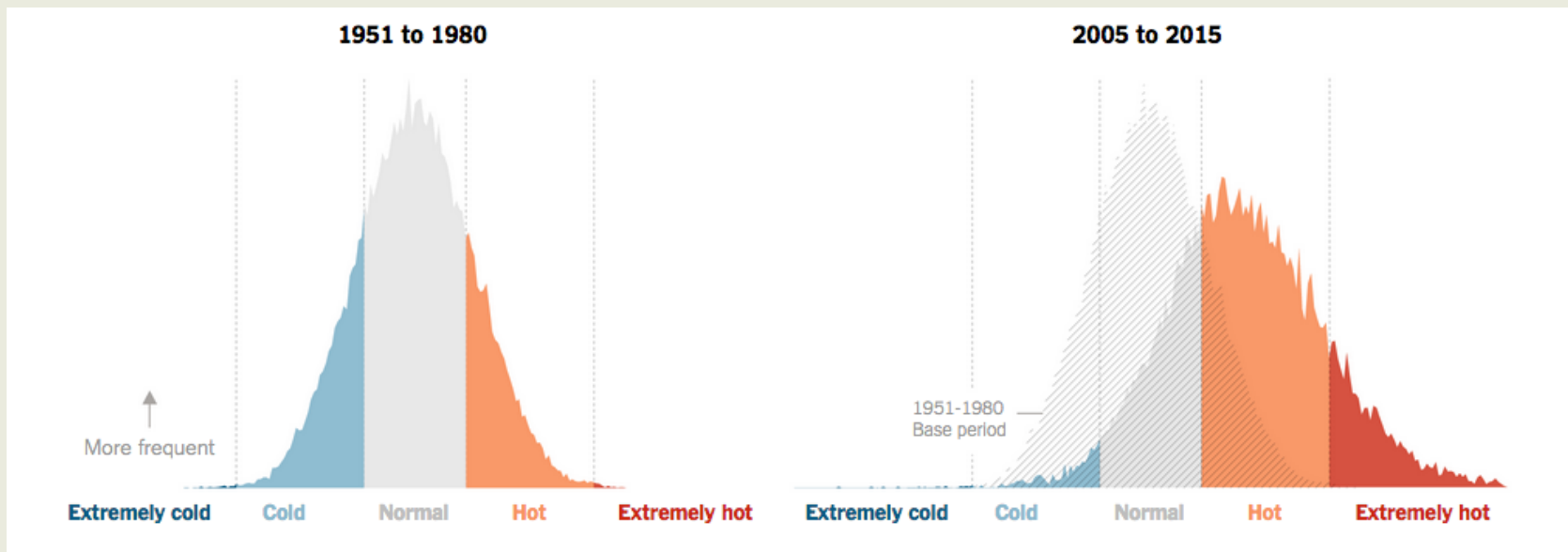
VISUALIZING UNCERTAINTY



VISUALIZING UNCERTAINTY

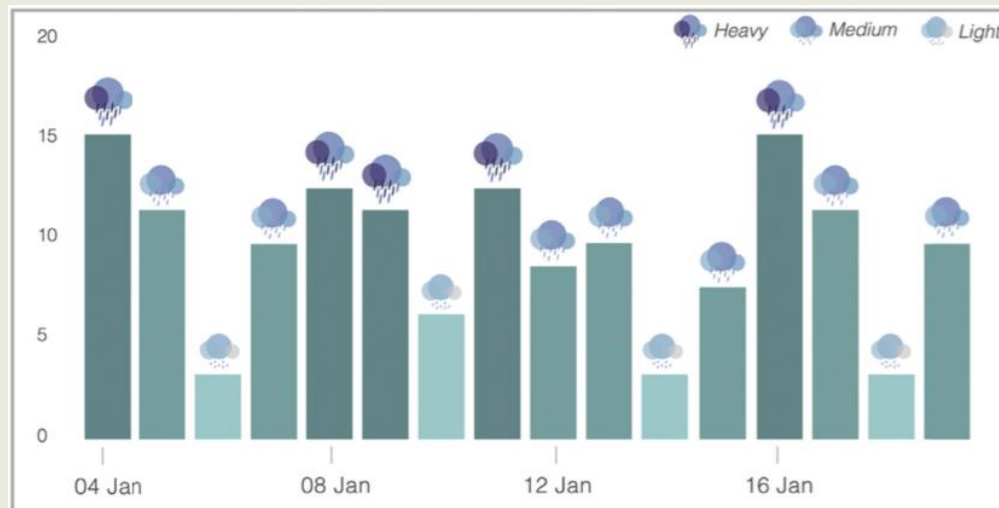
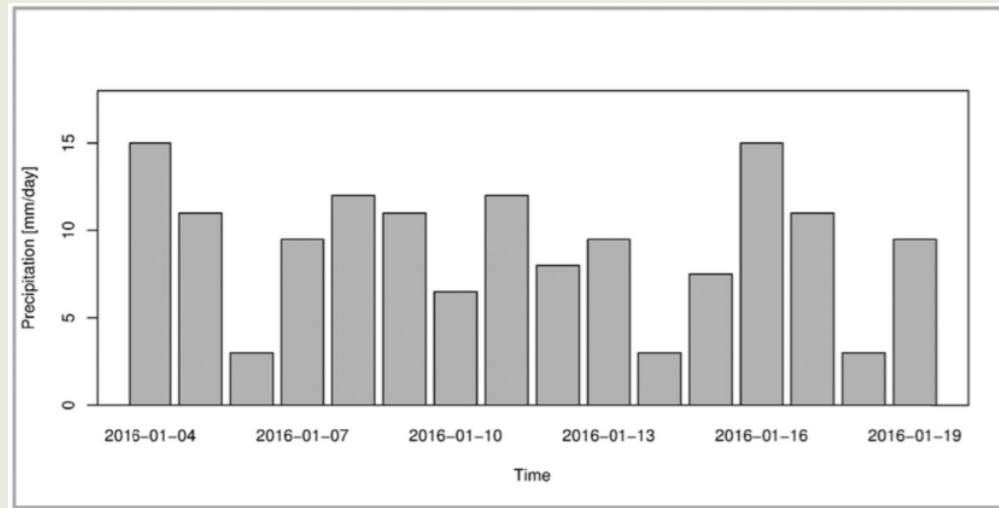
It's Not Your Imagination. Summers Are Getting Hotter.

By NADJA POPOVICH and ADAM PEARCE JULY 28, 2017



The New York Times

MULTIPLE VISUAL CUES



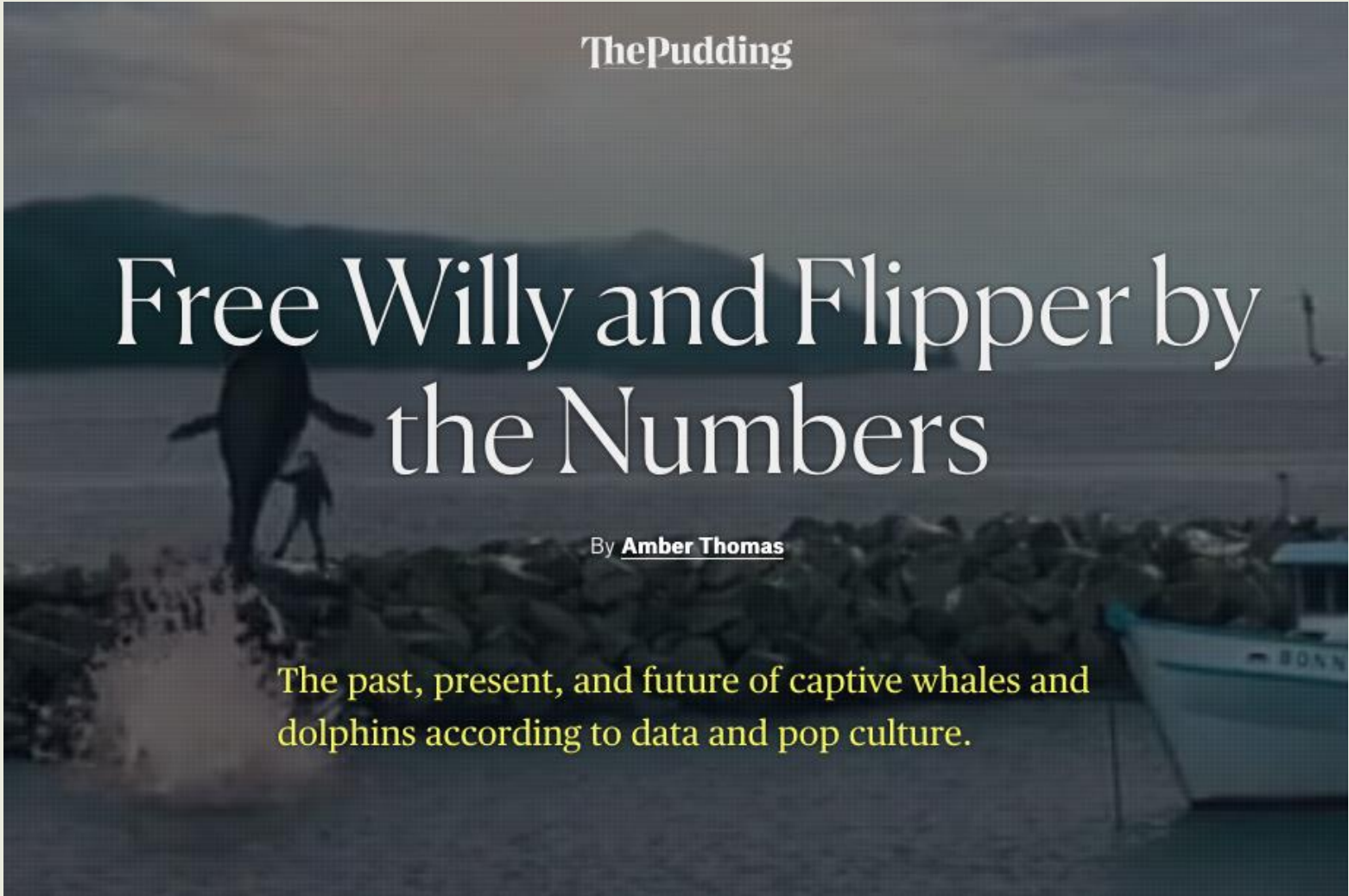
DATA JOURNALISM

ThePudding

Free Willy and Flipper by the Numbers

By Amber Thomas

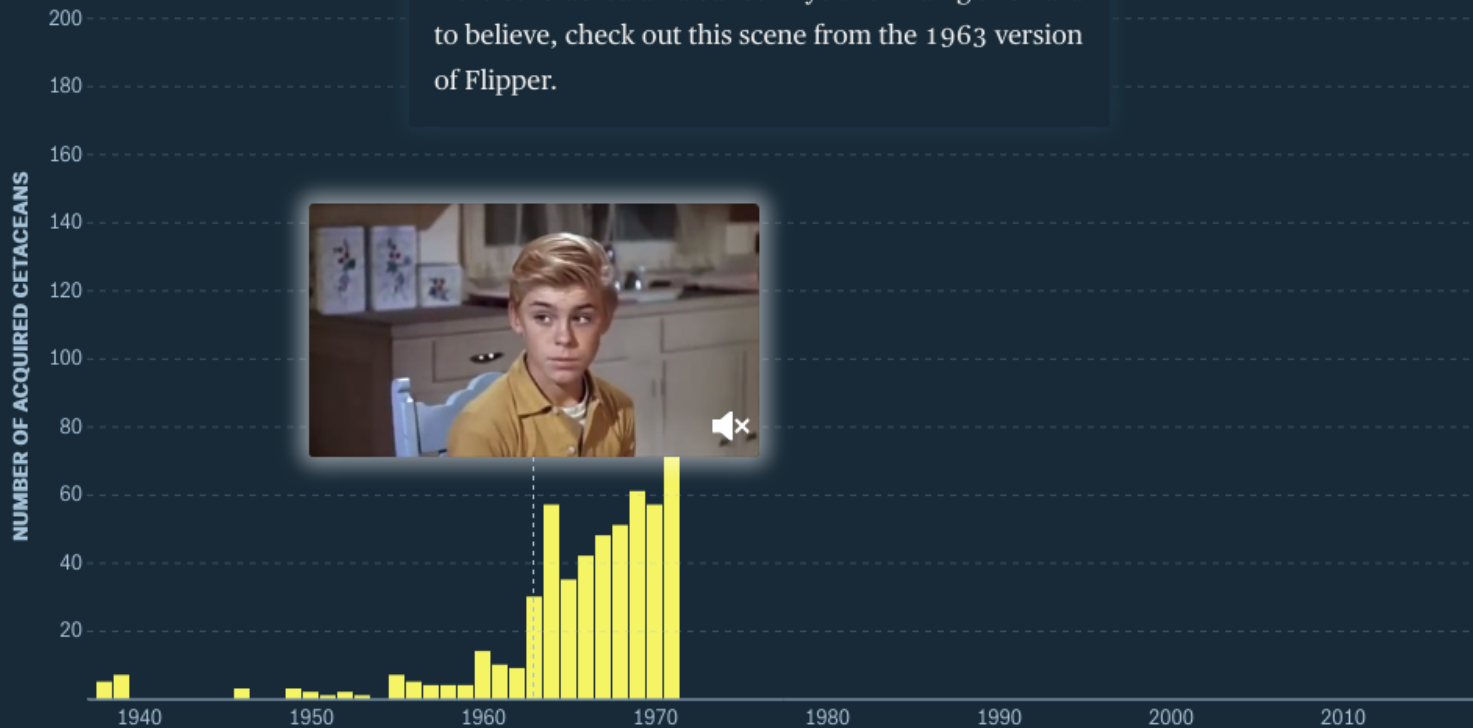
The past, present, and future of captive whales and dolphins according to data and pop culture.



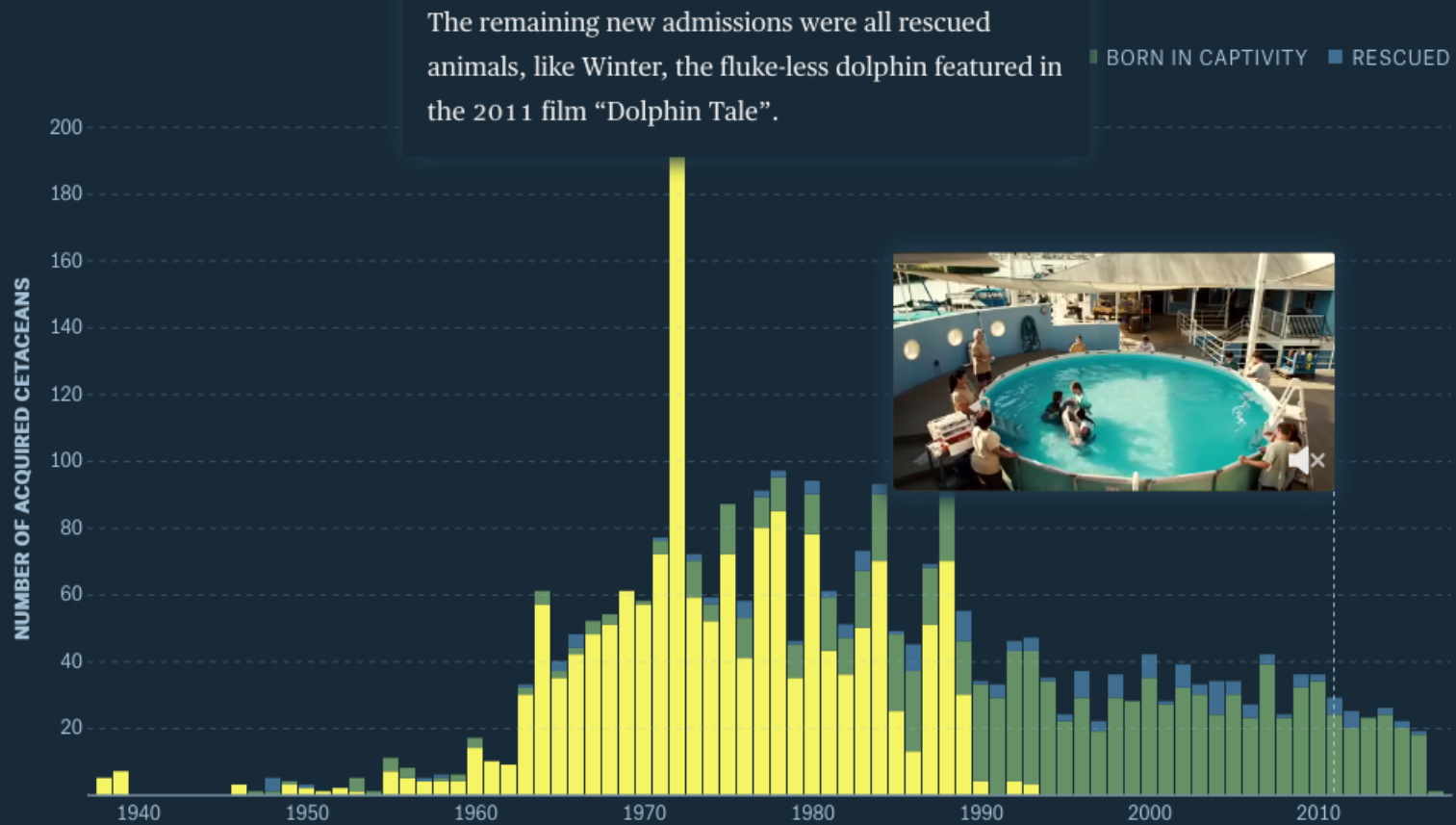
Reveal data in a stepwise manner

And at the time, this wasn't shocking. We knew almost nothing about these animals, and often they were considered a nuisance. If you're finding this hard to believe, check out this scene from the 1963 version of Flipper.

■ BORN IN CAPTIVITY ■ RESCUED



Reveal nuance & complexity slowly

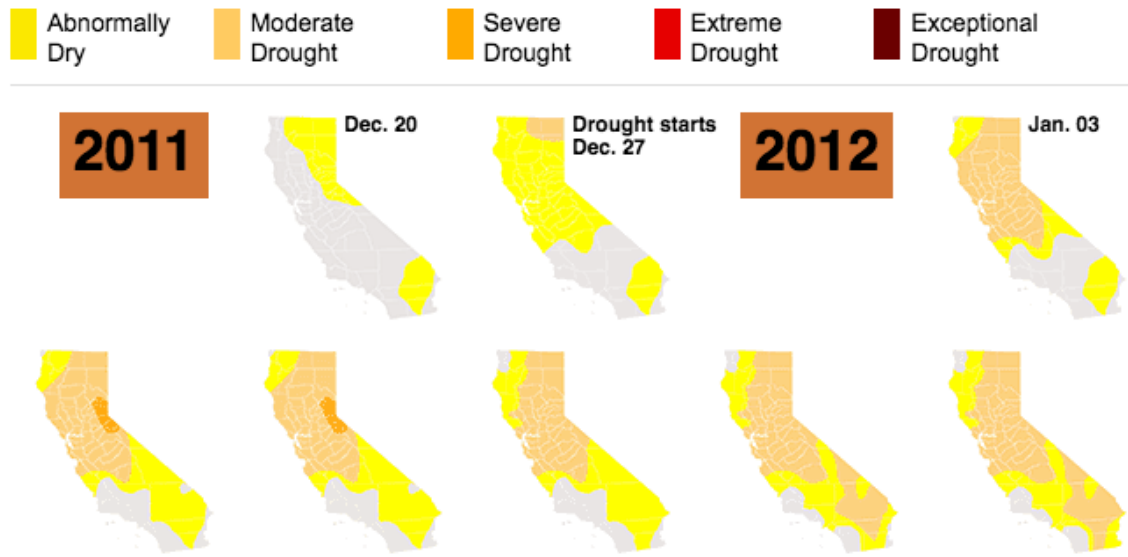


NARRATIVE GRIDS

275 California drought maps show deep drought and recovery

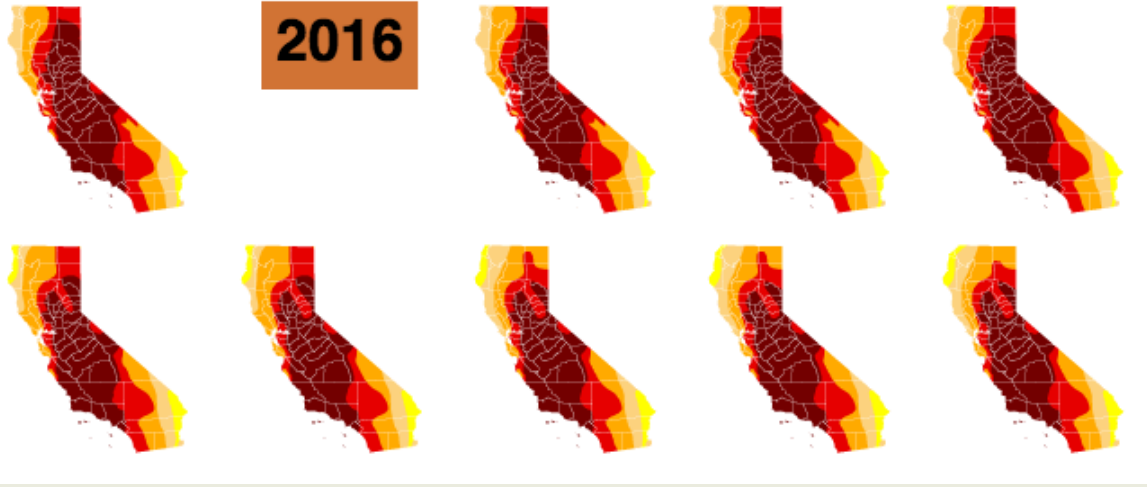
By **Kyle Kim and Thomas Suh Lauder**
Contact Reporters

APRIL 7, 2017



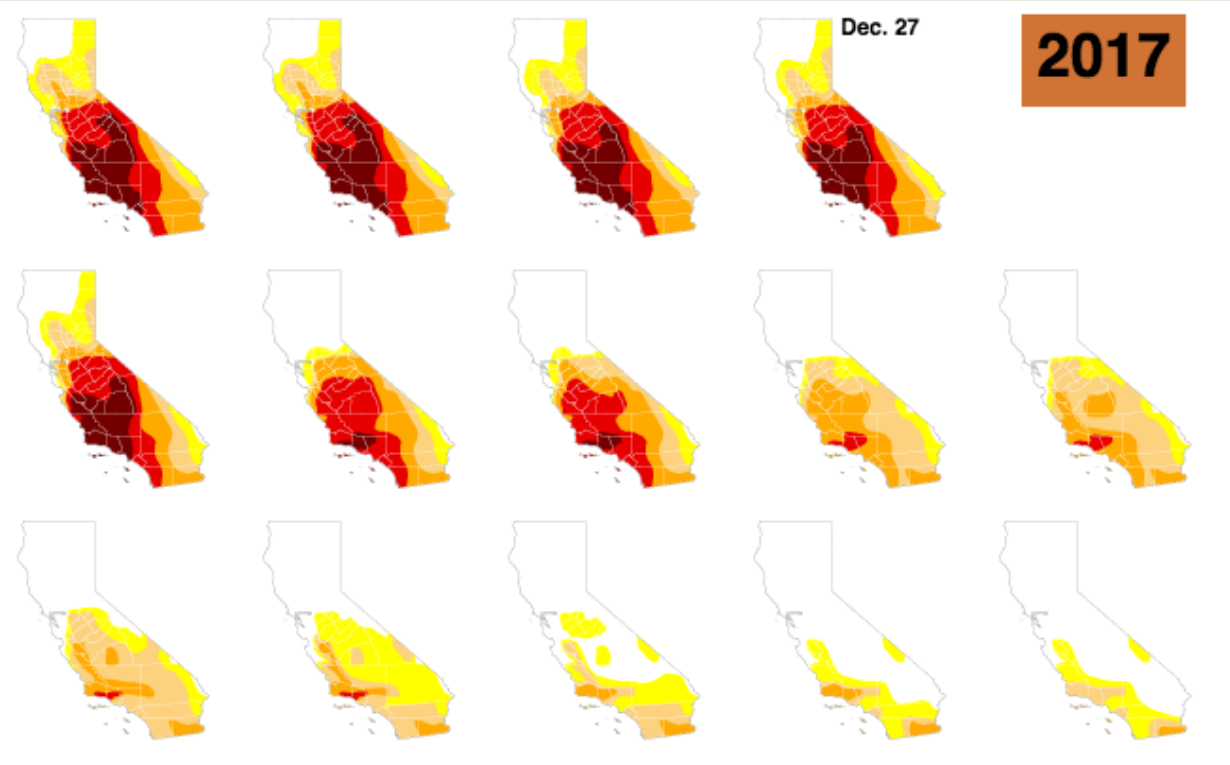
Los Angeles Times

2016



Dec. 27

2017



USER-CENTERED DESIGN



Plan

Define user requirement & analyze competition

Design

Design wireframes, interaction sequences & navigation

Proto type

Develop & test dynamic prototypes for usability

Review

Review wireframe designs with customer



Thank you!