

# Outreach: Spatial Data Visualization for Researchers

Laura Kurtzberg

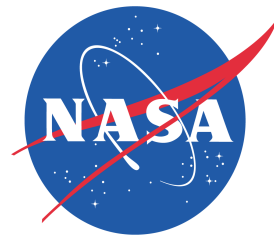
UA/NASA Space Grant

Nirav Merchant

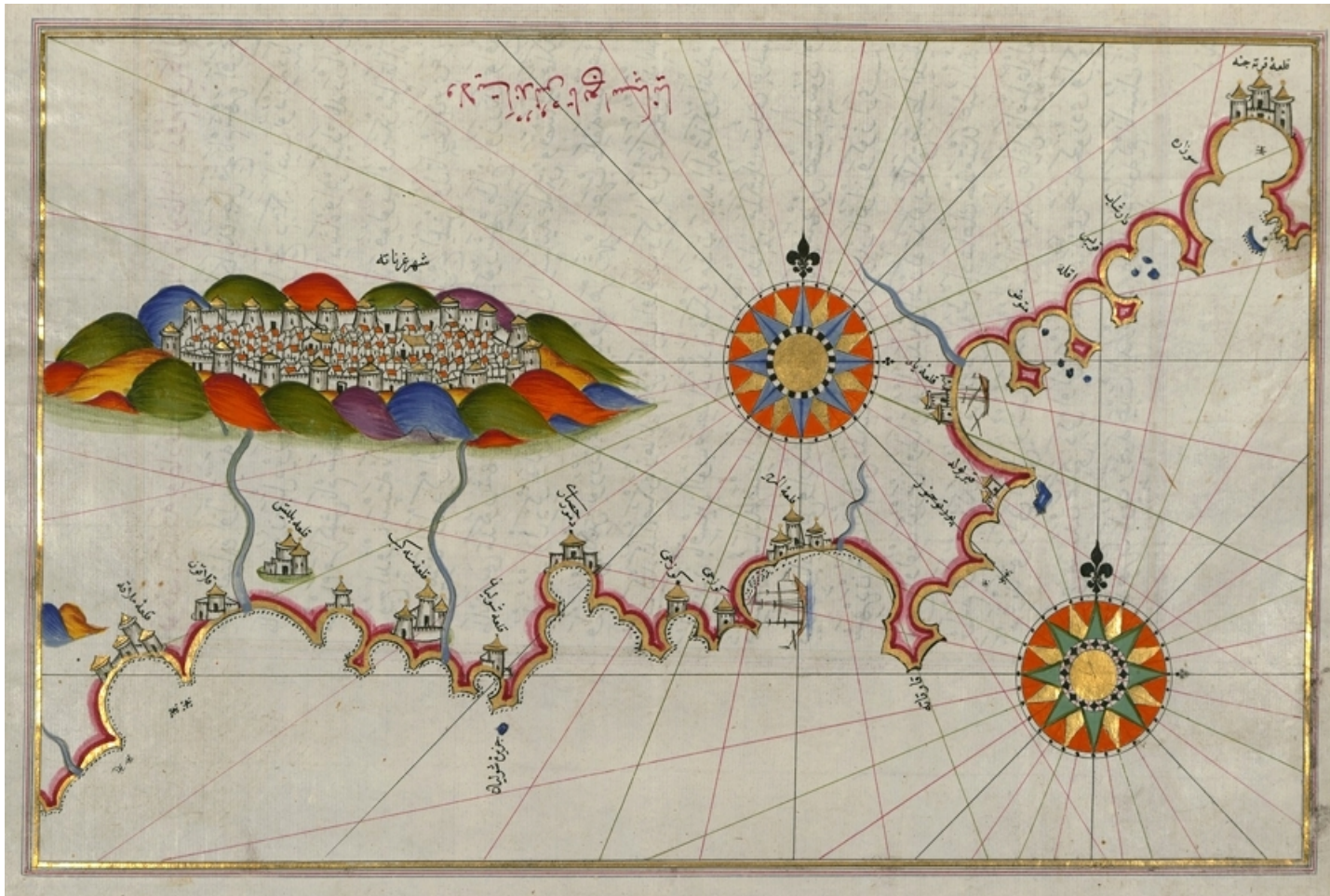
Bio-Computing Facility,

Arizona Environmental Grid Infrastructure Service (AEGIS) project

April 2015



# Maps: Information + Art



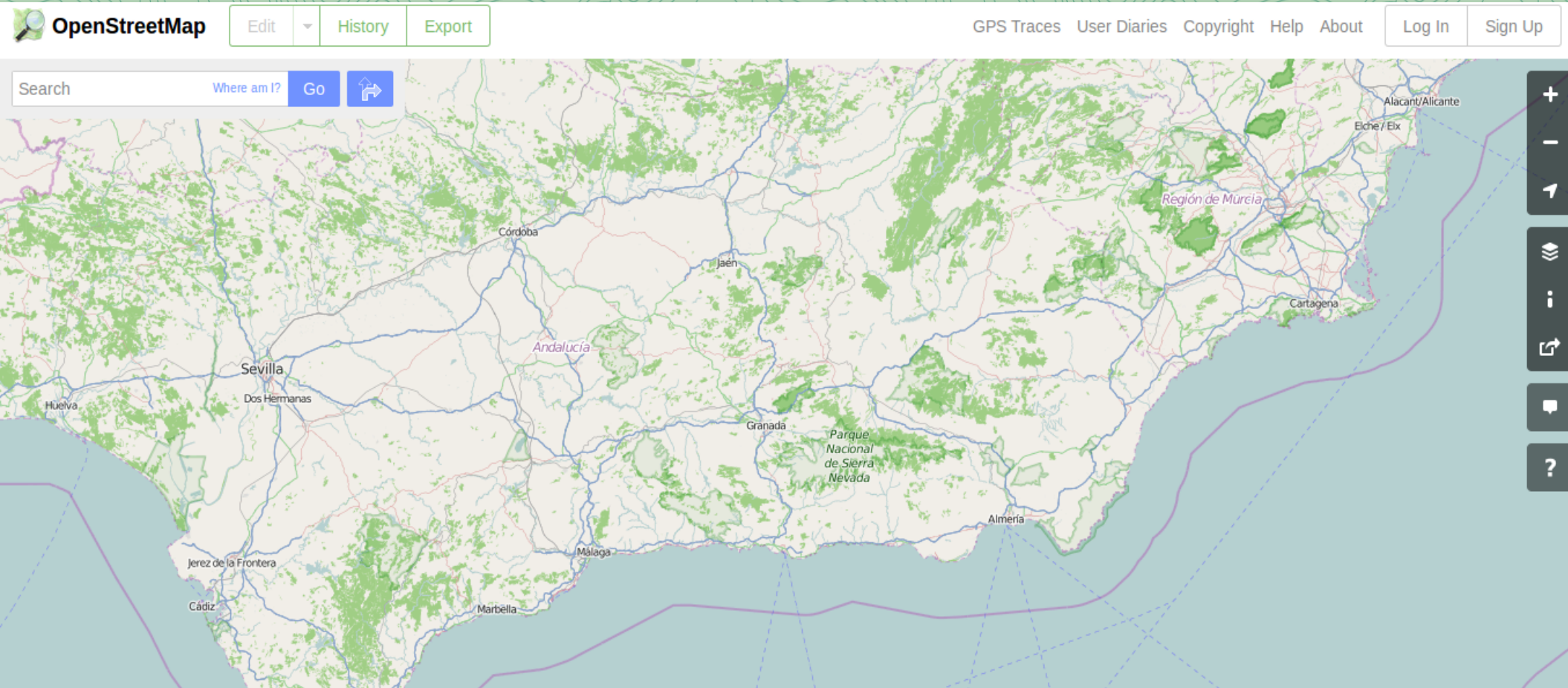
Piri Reis

Book of Navigation  
Map of the Coast of Andalusia  
with the City of Grenada  
16th century

[The Walters Art Museum](#)



# Maps: Information + Art



OpenStreetMap: Map of the Coast of Andalusia - 21st Century

# Maps: Why are they important?

**nature**

International weekly journal of science

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NATURE | TOOLBOX

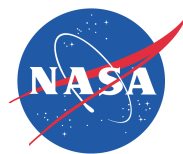


## Data visualization: Science on the map

Easy-to-use mapping tools give researchers the power to create beautiful visualizations of geographic data.

**Mark Zastrow**

04 March 2015





# Maps for Research



John Snow

On the Mode of  
Communication of Cholera  
London, England, 1854

Cholera Outbreaks along  
Broad Street

Map 1. Published by C.F. Cheffins, Lith,  
Southampton Buildings, London,  
England, 1854 in Snow, John. On the  
Mode of Communication of Cholera, 2nd  
Ed, John Churchill, New Burlington Street,  
London, England, 1855. (yellow shading  
by RRF).

# Maps for Research

Mapping *Cholera* Chapters ▾

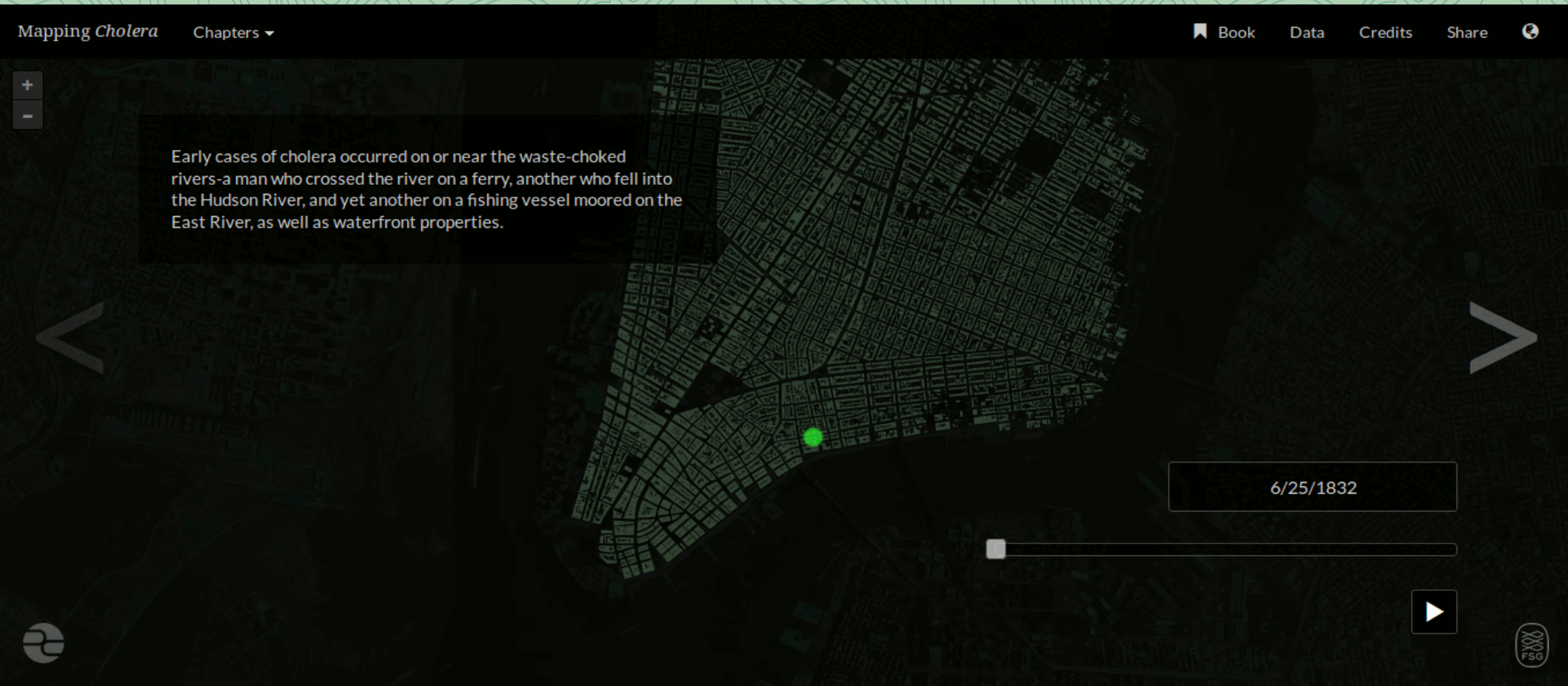
Book Data Credits Share

+

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Early cases of cholera occurred on or near the waste-choked rivers-a man who crossed the river on a ferry, another who fell into the Hudson River, and yet another on a fishing vessel moored on the East River, as well as waterfront properties.

6/25/1832

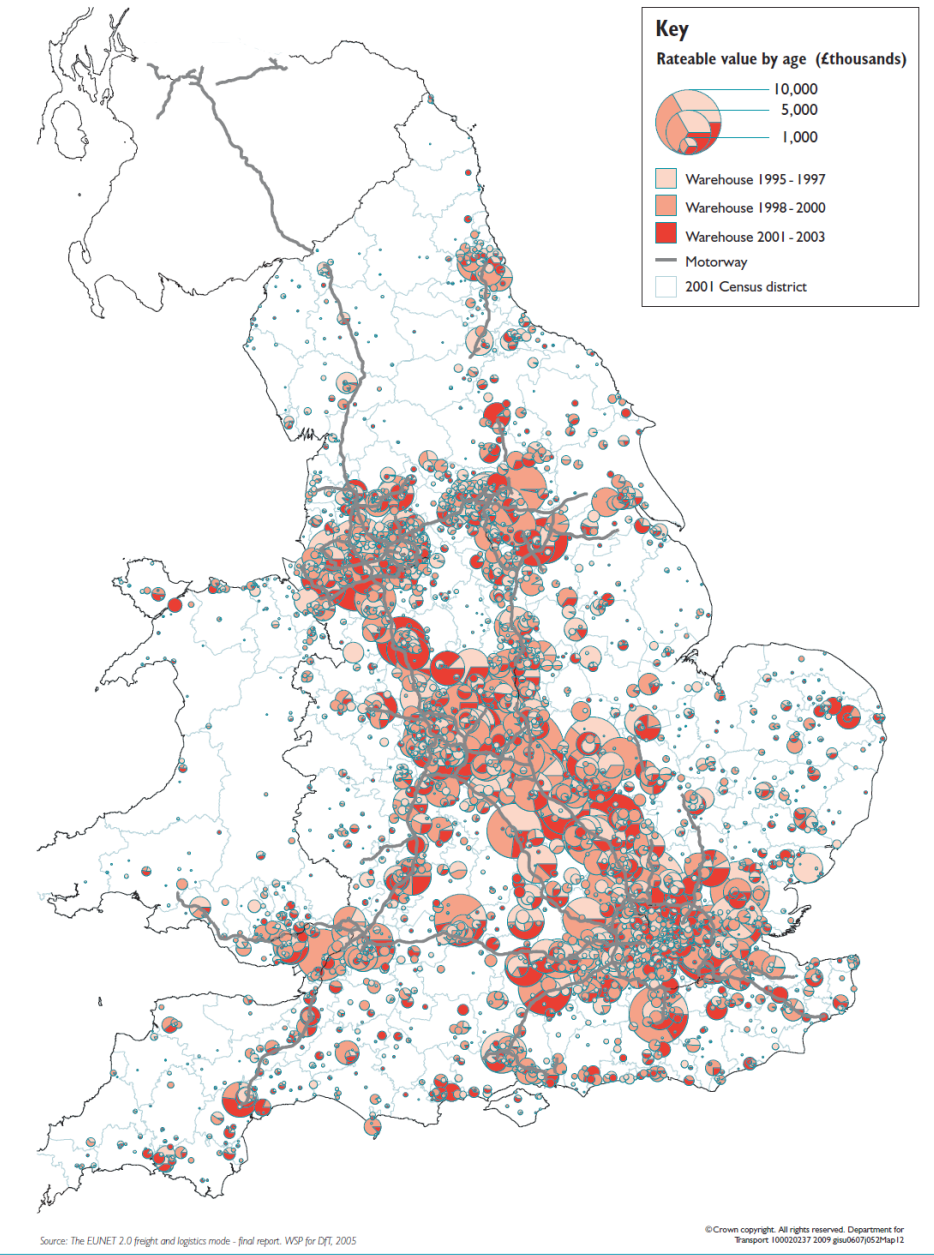


Sonia Shah and Dan McCarey: Mapping Cholera in 1832 New York City



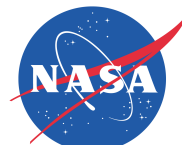


Figure I.17: Location of new warehouses with concentrations at motorway intersections, 1995-2003



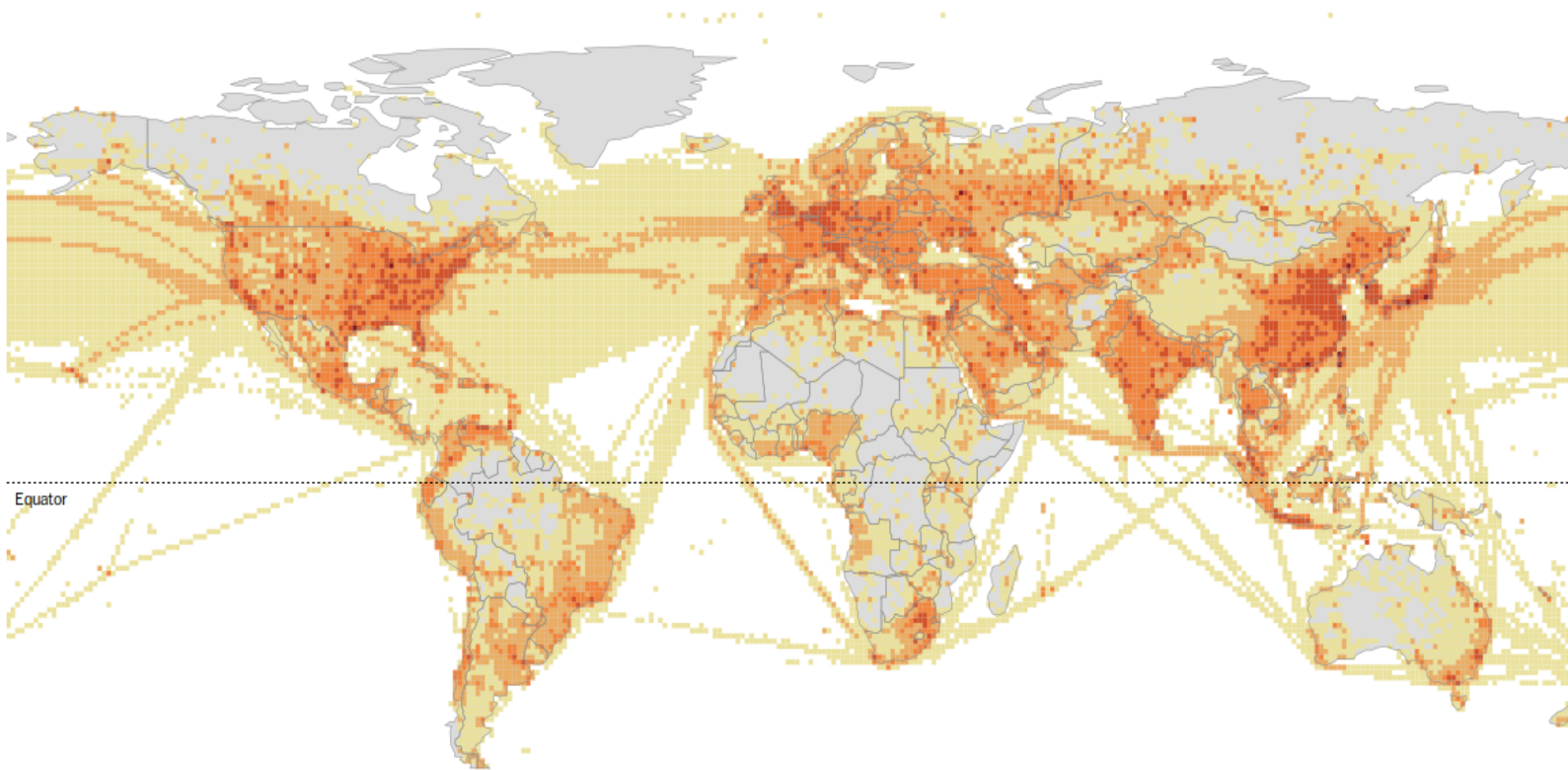
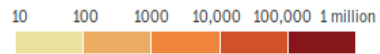
# Why should we care about good design?

- Maps can help us make discoveries
- Communicate those discoveries to others
- However, we care about making maps well
- Otherwise they won't be effective, or they can be misleading
- Good mapmaking goes hand in hand with good science



# Good Design

Fossil fuel emissions, 2001-2012 mean, grams of carbon dioxide



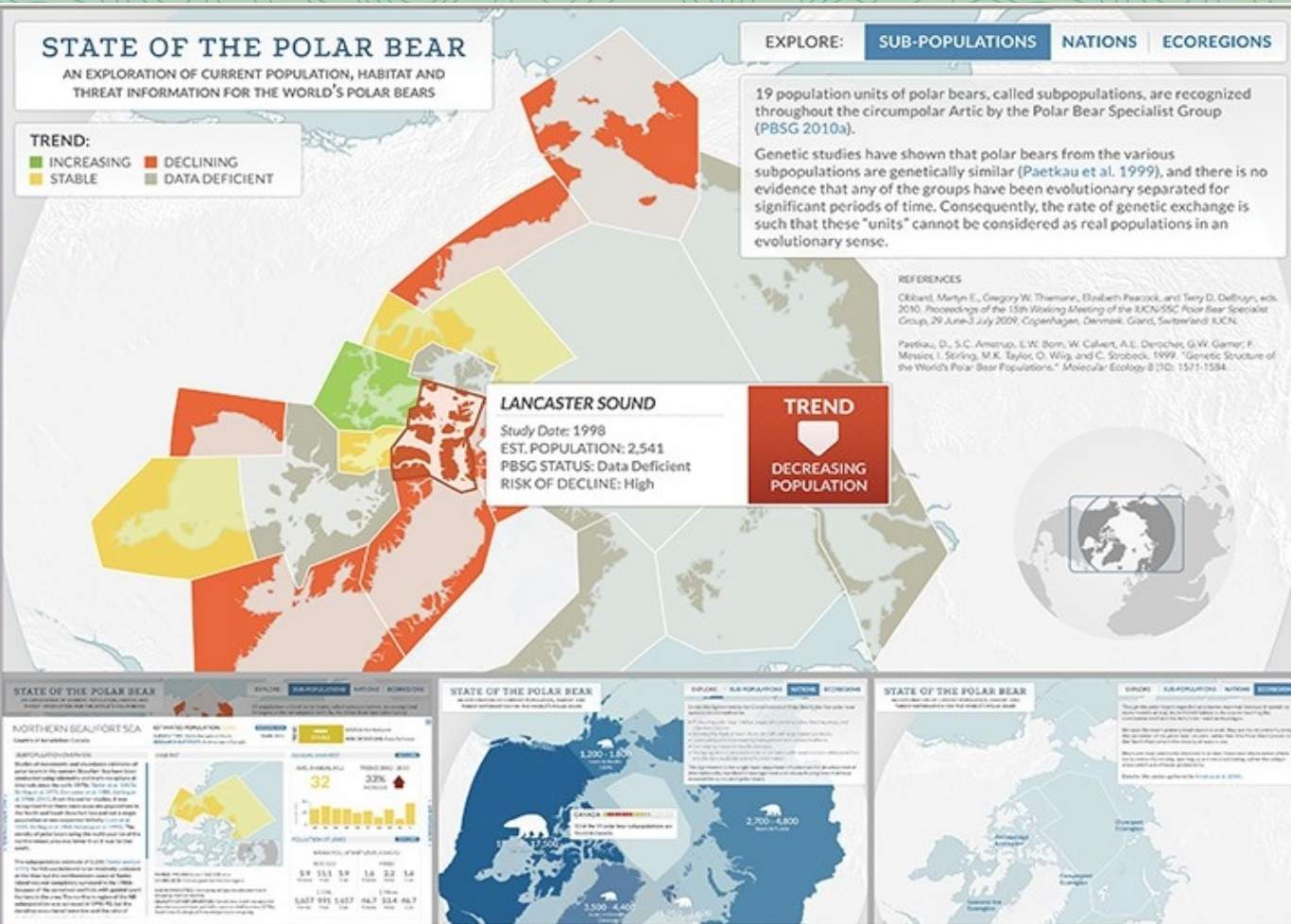
Kennedy Elliott

Fossil fuel emissions,  
2001-2012 mean,  
grams of carbon  
dioxide

<http://www.washingtonpost.com/graphics/national/carbon-emissions-2015/>



# Good Design



Designed by members of Perisopic data visualization firm

State of the Polar Bear

<http://pbsg.npolar.no/en/dynamic/app>

Citraro, Dino, Kim Rees, Jacob O'Brien, Brett Johnson, Domanique Alicia, and Andrew Winterman. 2013. *State of the Polar Bear*. Portland, OR. Courtesy of Perisopic. In "9th Iteration (2013): Science Maps Showing Trends and Dynamics," *Places & Spaces: Mapping Science*, edited by Katy Börner and Todd N. Theriault. <http://scimaps.org>

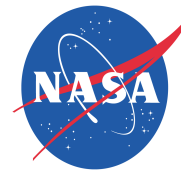
# The Spatial Data Bootcamp

- 1 day intensive “Bootcamp” in May
- UofA, ASU & NAU
- Use iPlant to share and store geographic data
- Perform spatial data analysis with NetCDF data using open source tools
- Create beautiful visualizations and share them on the web

Peter Desmet, Bart Aelterman, Kevin Azijn (LifeWatch INBO), based on data released by ENRAM.

A week of bird migration across Belgium/ the Netherlands in April 2013

<http://enram.github.io/bird-migration-flow-visualization/viz/>





# Thank You!

Nirav Merchant

Susan Miller

Amit Juneja

Nathan Casler

Daniel Guaderrama

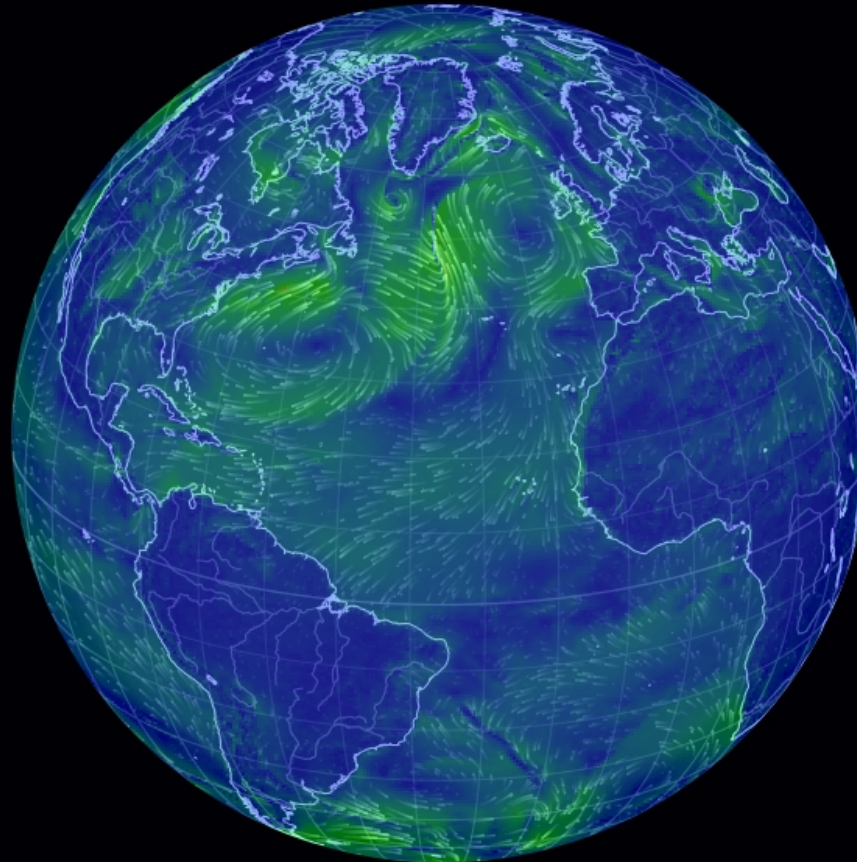
Susan Brew

Timothy Swindle

Erica Hernandez

Chandra Collins

Everyone at AzSGC



earth

<http://earth.nullschool.net/>

Cameron Beccario: Real time wind and temperature patterns, several projections

