

Toward a *Digital* Resilience

Dawn Wright, Ph.D., GISP, Esri Chief Scientist



Coastal GeoTools, N. Charleston, SC, March 31, 2015

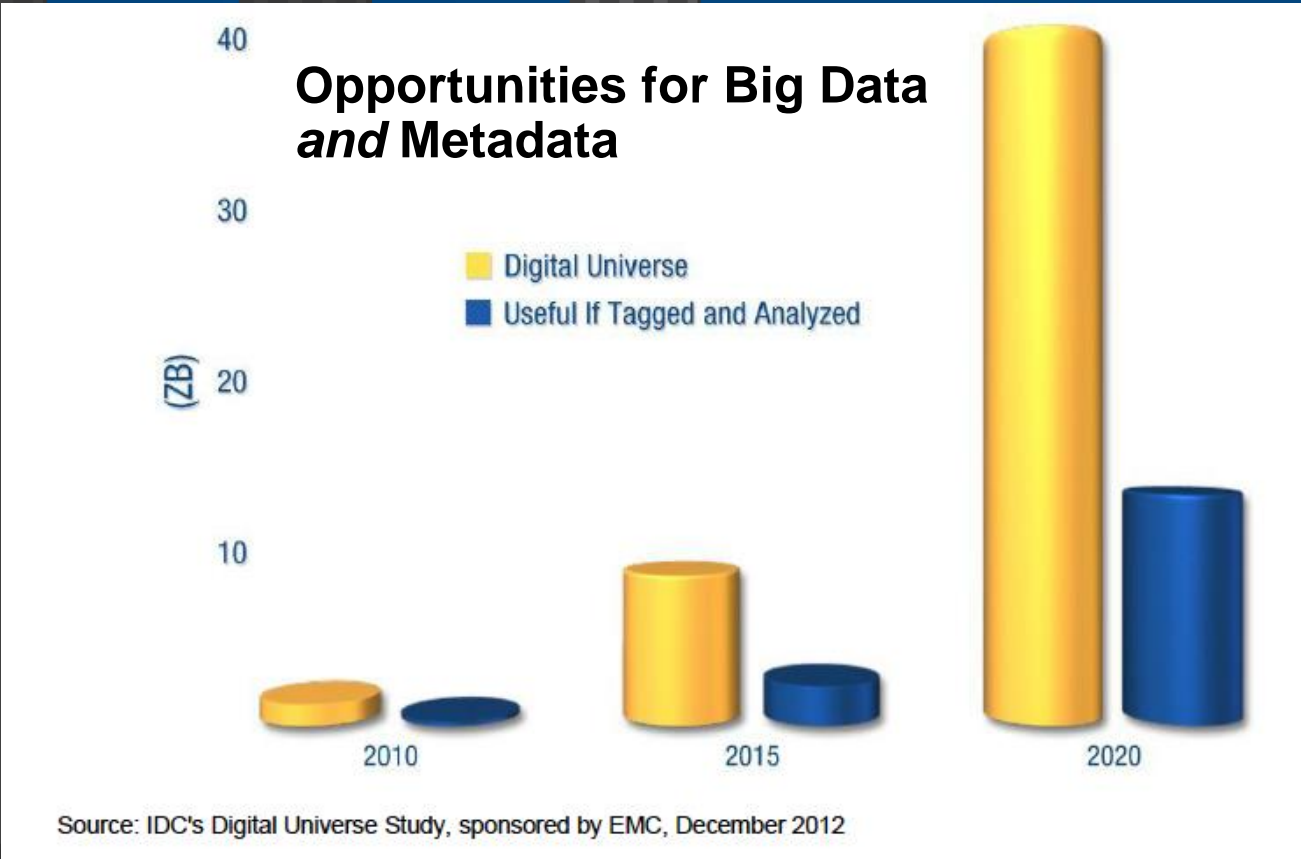
THE FUTURE OF GOVERNANCE

EXECUTIVE

LEGISLATURE

JUDICIARY

INFORMATION



An aerial night view of a city, likely Seattle, showing a large stadium (Safeco Field) illuminated in the center, surrounded by dense urban development and a waterfront area with lights reflecting on the water. The sky is dark blue, and distant hills are visible in the background.

GeoTools

Making *Communities* More Resilient

Leveraging Community Knowledge . . .
Sharing Innovation and Best Practices

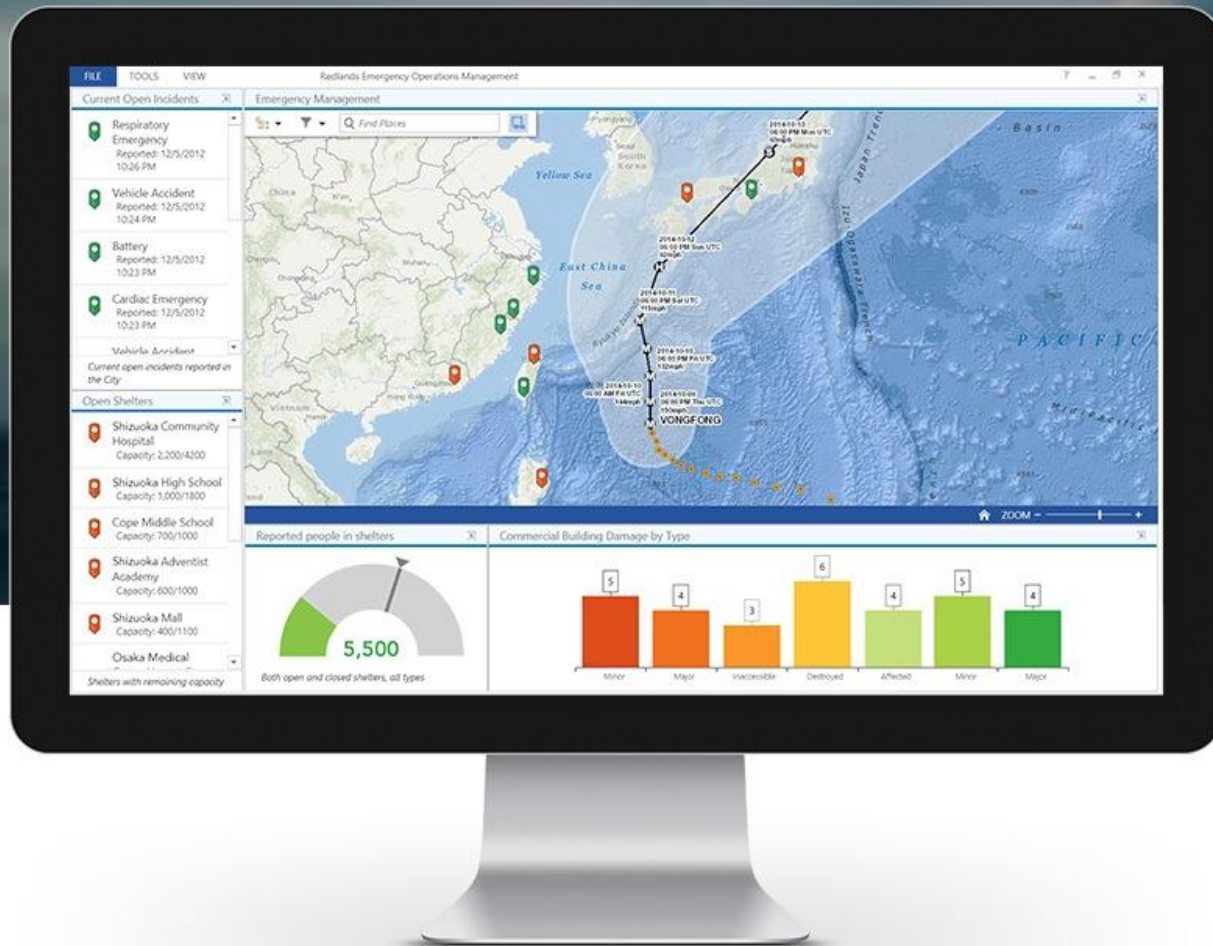
GeoTools

Building a Resilient *Platform*

Digital Resilience





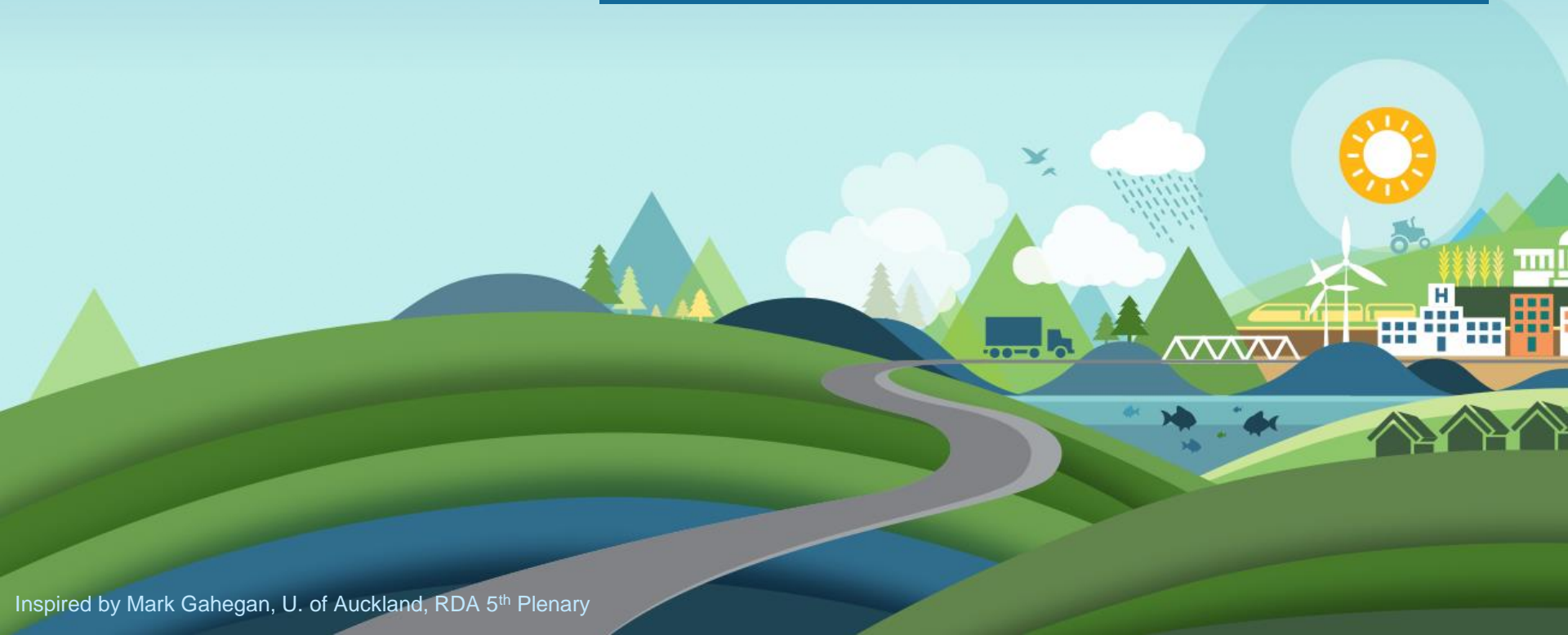


**Tools for the informed user who can develop
... their own products
... for multiple audiences**

Digital Resilience

Just Making Data & Code “Available” Not Good Enough

We need to be more open about what we do WITH them.



Interoperability/Crosswalking

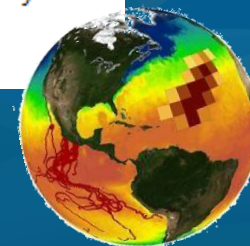
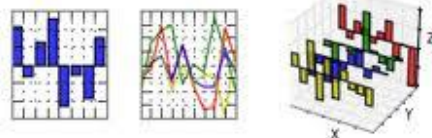
Out of the Box



Simple Integration



- Marine Geospatial Ecology Tools
 - Connectivity Analysis
 - Conversion
 - Data Management
 - Data Products
 - Fishery Analysis
 - Oceanographic Analysis
 - Spatial Analysis
 - Statistics



Sharing of Workflows, Use Cases

ArcGIS FEATURES PLANS GALLERY MAP SCENE GROUPS MY CONTENT

Dawn ▾



Scientific Data Workflows



Code Sample by RasterDevTeam

Last Modified: March 27, 2015

★★★★★ (1 rating, 34 downloads)

Facebook Twitter

OPEN ▾

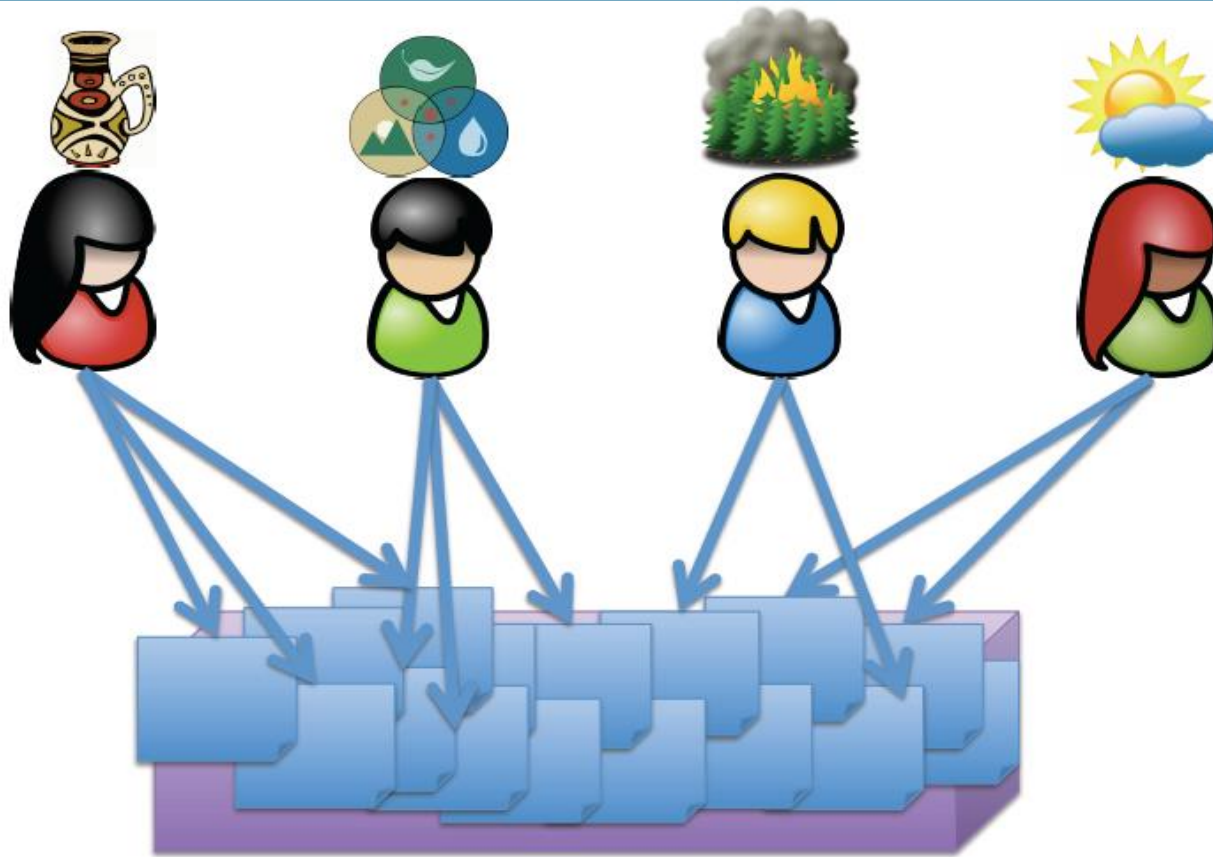
SHARE

esriurl.com/workflows

Description

Here you'll find examples to help you get started in working with scientific datasets, also known as multidimensional datasets. Inside of the download package is a Scientific Data Workflows.docx file that goes through a number of general examples. Feel free to substitute your own data, and if you run into any issues or have questions, please comment here, or better yet, [on our blog](#). If you're interested in customizing these workflows, you should probably [check out this page](#). It's dedicated to all things related to custom image analysis and processing.

Sharing of Workflows, Use Cases



Sharing of Workflows, Use Cases

– climate scientist (δ_0)

Scores for two real datasets in DataONE

I'm a climate scientist looking for data in region X



Precipitation raster

$\langle \dots, \alpha_1 \rangle$

0.022



NetCDF

$\langle \dots, \alpha_2 \rangle$

0.634



Sharing of Workflows, Use Cases

- climate scientist (δ_0)
- vegetation dynamics (β_0)

I'm also interested in vegetation dynamics



Precipitation raster

$\langle \dots, \alpha_1 \rangle$

0.585



NetCDF

$\langle \dots, \alpha_2 \rangle$

0.325



Global Ecological Land Units Map



A story map

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Explore a Tapestry of World Ecosystems

The United States Geological Survey has published a new global ecosystems map of unprecedented detail.

The map was produced by a team led by Roger Sayre, Ph.D., Senior Scientist for Ecosystems at the USGS Land Change Science Program. It is a mosaic of almost 4,000 unique ecological areas called **Ecological Land Units (ELUs)** based on four factors that are key in determining the makeup of ecosystems. Three of these—bioclimate, landforms, soils, and vegetation—are the primary factors used to define ELUs.

16:30
31:45
46:60
61:75

POWERED BY esri

Esri, GEBCO, DeLorme | Source: USG...

Global Ecological Land Units Map

Landscape Ecologists

Public

Resource Managers

Geodesign Planners

AGOL

Workflows
Use Cases

Data

Tools

Authoritative
Classifications

Updated
Classifications

esriurl.com/landscape

Digital Resilience

Communication Skills Still Paramount

“Why America’s Obsession with STEM Education is Dangerous”

-- Fareed Zakaria, CNN Global Public Square & Washington Post column



Read deeply ...

Write compellingly...

Analyze ideas...



**Organize your thoughts,
Organize your code.**

**“Training not for your first
job, but for the *sixth*...”**



**Still no formal, accredited
academic degree or curricula
in coastal/ocean data management?**

UNESCO IOC IODE OceanTeacher, iode.org





DATA SCIENCE

NOAA Digital Coast

edcommunity.esri.com

learn.arcgis.com

Ocean Solutions, Earth Solutions

Once upon a time...



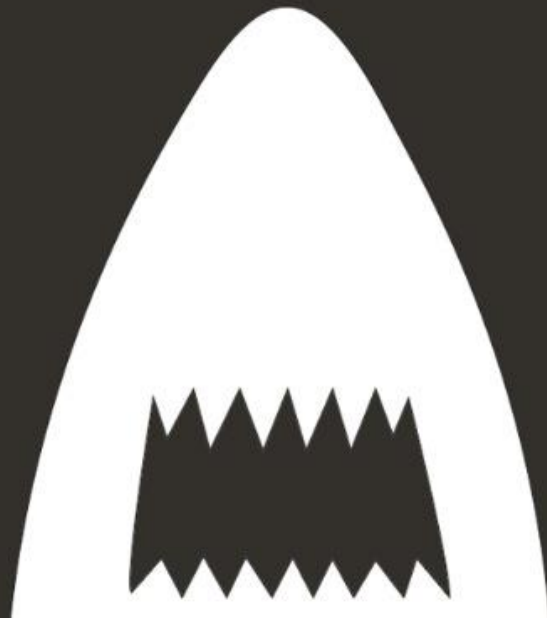
Story Maps: A New Medium

esriurl.com/ocnstories

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gram

presents

SHARK GIS



A story map



esri

SharkGIS

Human fascination with sharks dates back ages—long before *Jaws* or *Sharknado*. What is it about these mysterious creatures of the deep that sparks so much interest across time and cultures? In honor of Shark Week, we're taking a closer look at sharks using media and maps to better understand the ocean's fiercest predator.



Story Maps: A New Medium

esriurl.com/ocnstories



A story map



SharkGIS

Ferocious Man-Eater?

Let's cut to the chase. The great white is probably the world's most notorious shark. While *Jaws* didn't do any favors for the white shark's reputation, nature filmmakers and shark advocates are trying to change public perception. In reality, *National Geographic* reports that humans are not the preferred prey of the great whites. Just try not to look like a seal the next time you go to the beach.

One Misunderstood Fish: The Great



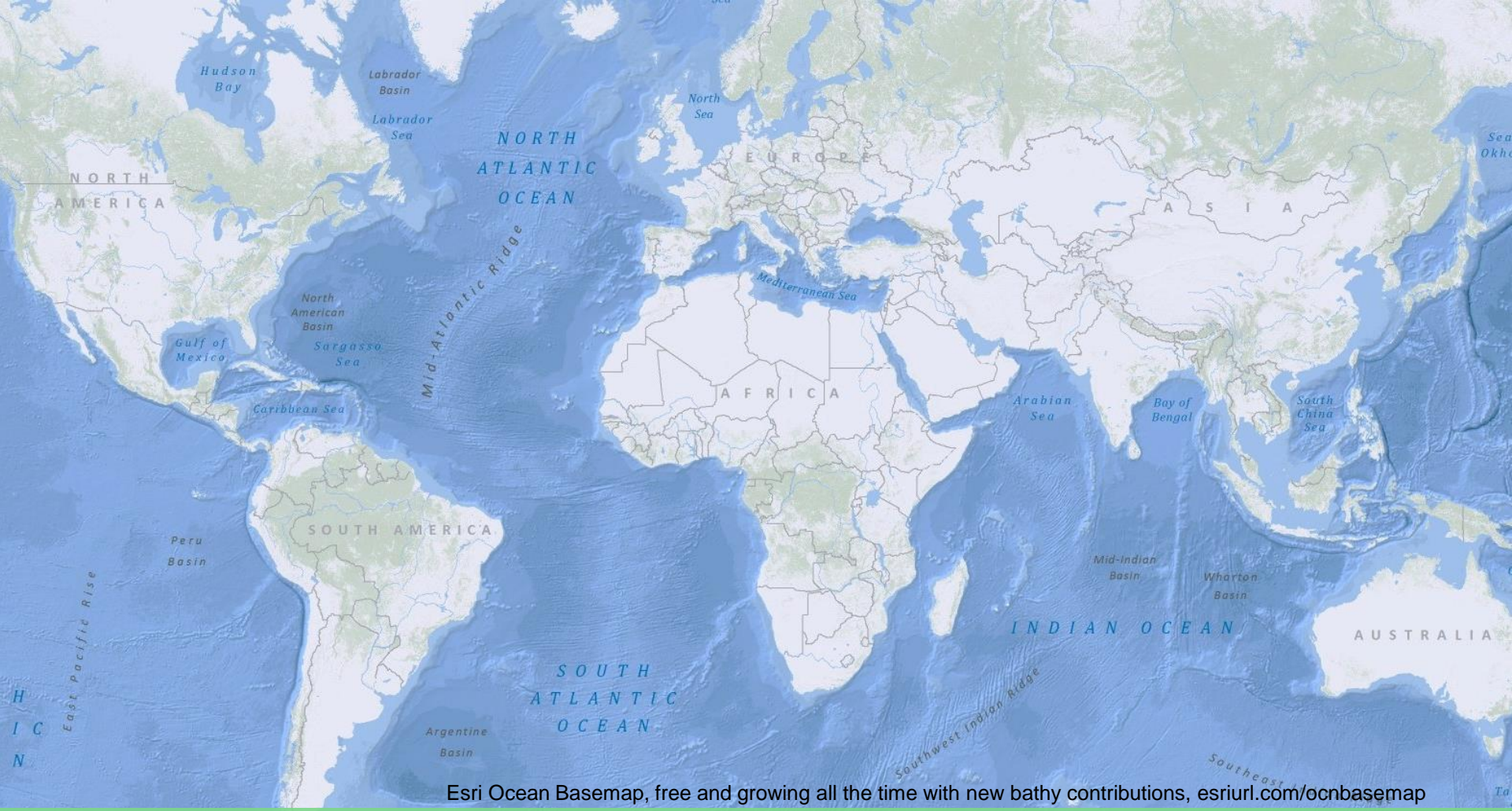
Video: [Endless Ocean](#)

Photo: Lwp Kommunikáció [via Flickr](#)

Digital Resilience

New Modes of Public-Private Partnerships





Toward a *Digital Resilience*

Share data, tools, code,
but also *workflows, use cases*

Be willing to tell stories; to write good prose, as
well as good code.

Be continually open to new kinds of
partnerships.



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esriurl.com/ocnres



Understanding our world.