A World of ECCO Visualizations

Thanks to powerful supercomputers, NASA now offers a large suite of visualizations that you can customize in a few easy steps. This page is designed to help you navigate among hundreds of videos and images that have been pre-computed using a 14-month global simulation of the ocean (September 2011 to November 2012).

## Visualizations of the ECCO Project's 1/48° MITgcm Simulation

- **Visit this URL:** https://data.nas.nasa.gov/viz/vizdata/llc4320/index.html

- Choose a **series** - 5 options

- Choose a **measurement type** (a.k.a. "Scalar") – 21 options

- Choose a **depth** (a.k.a. "Level") – 90 options for 3D scalars & 1 option for 2D scalars

- Click on an **image** to reveal a table with options for your custom **visualized data**

Series

The series – *Global*, *8 Regions*, *128 Regions, Arctic* – offer 2 or 3 options for pixel resolution (in km), each of which corresponds to a specific animation size (in pixels).

Overview	Ranges of Pixel Spatial Resolution / Animation Sizes for each Series		
Global	43 km / 1000 x 600	22 km / 2000 x 1200	12 km / 3600 x 2160
8 Regions	22 km / 800 x 600	11 km / 1600 x 1200	6 km / 2880 x 2160
128 Regions	5.4 km / 800 x 600	2.7 km / 1600 x 1200	
Arctic – 1 region	12 km / 1200 x 1080	6 km / 2400 x 2160	*Click here to learn more about Arctic grid projections*
Arctic – 30 regions	3.7 km / 800 x 600	1.8 km / 1600 x 1200	

8 Regions

128 Regions

Arctic
1 region
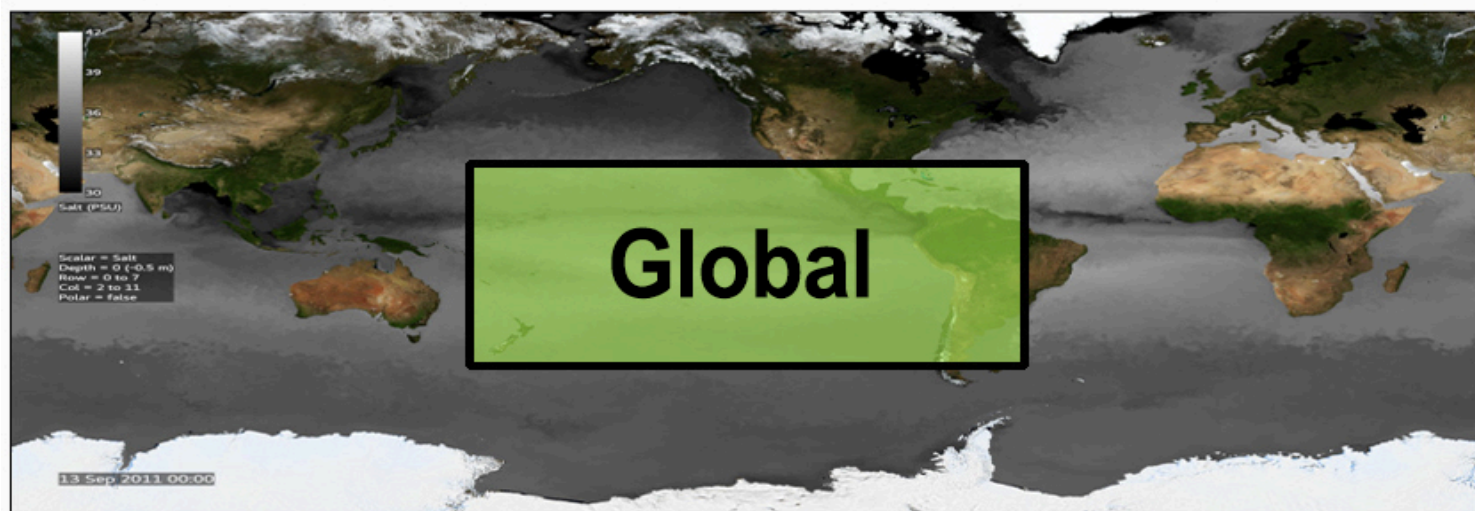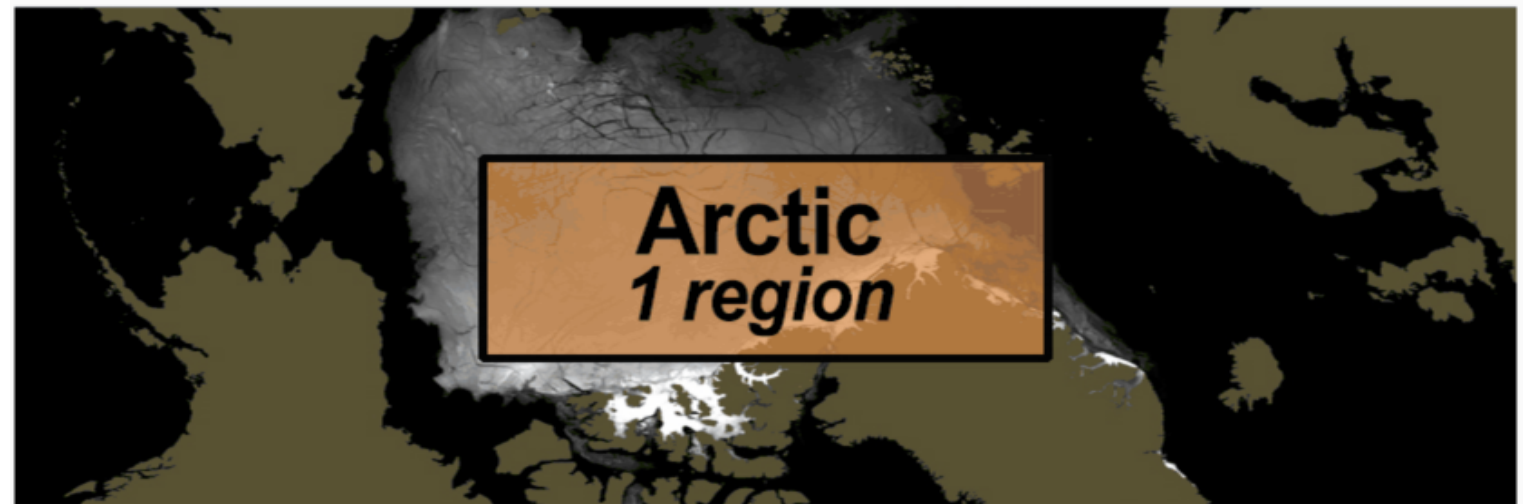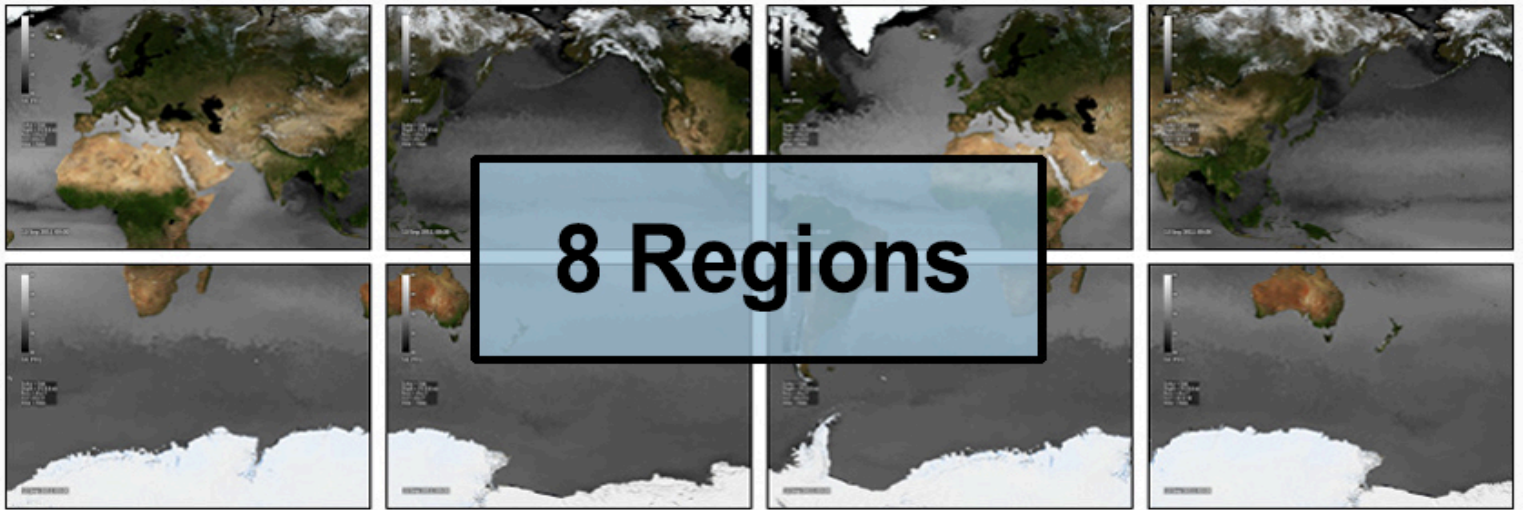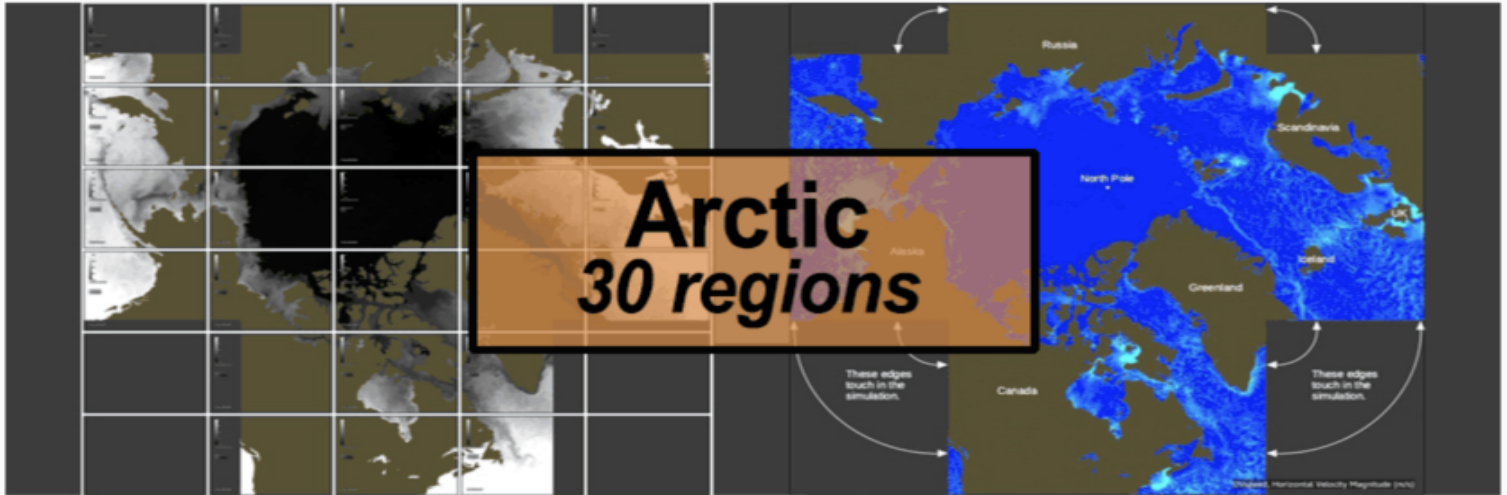
Measurement Type & Depth

Some measurement types produce more colorful maps than others, as shown below. Measurements are parsed between **3D** and **2D** options. **3D** have 90 ocean depth options. **2D** have ocean surface data only (e.g., air-sea fluxes, surface winds).

3D
Choose one of 90 Levels: 0.5 m to 6301 m depth

- Temperature (Theta)
- Salt
- East-West Velocity (U)
- North-South Velocity (V)
- Vertical Velocity (W)

- Vertical Vorticity (UVvort)
  Not available for Arctic regions; only every fourth level is available for other regions

- Horizontal Speed (UVspeed)
  Only every fourth level is available for the 1-, 8-, and 128-region series
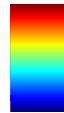
2D
One Level only: 0.5 meters depth

- Net Upward Shortwave Radiation (oceQsw)
- Net Upward Surface Heat Flux (oceQnet)
- Effective Snow Thickness (SIhsnow)
- Sea-Ice Salinity (SIhsalt)
- Effective Ice Thickness (SIheff)
- Fractional Ice-covered Area (SIarea)
- Ocean Bottom Pressure (PhiBot)

- Net Upward Salt Flux (oceSflux)
- Net Upward Freshwater Flux (oceFWflx)
- Sea Surface Height (Eta)

- Mixing Layer Depth (KPPhbl)

- Surface Wind Speed (oceTAUspeed)

- Surface Wind Vorticity (oceTAUvort)
  Not available for Arctic regions

Visualized Data

After completing the previous steps, a map will appear comprised of 1 (global or Arctic), 8, 30, or 128 images. Clicking on any image will reveal a table with several options.

Click a button to designate the **Timestep** (row) and **Animation Pixel Resolution and File Size** (column). Purple arrows below show the general trends in file sizes… specific file size information will be listed in each cell of the table.

Timestep	Animation Pixel Resolution and File Size					
	Spatial resolution (km) / File sizes (pixels)			Spatial resolution (km) / File sizes (pixels)		
1 hour	# MB	Play Video	Download Video	Image*	# MB Play Video	Download Video	Image*
3 hours	# MB	Play Video	Download Video	Image*	# MB Play Video	Download Video	Image*
6 hours	# MB	Play Video	Download Video	Image*	# MB Play Video	Download Video	Image*
12 hours	# MB	Play Video	Download Video	Image*	# MB Play Video	Download Video	Image*
24 hours	# MB	Play Video	Download Video	Image*	# MB Play Video	Download Video	Image*

Image is the first scene from the visualization (i.e., 13 Sep 2011)

Smaller time step

Larger file size

Higher spatial resolution

Larger file size