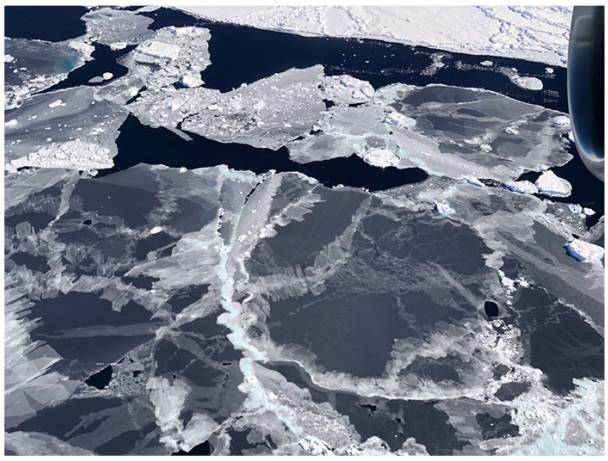
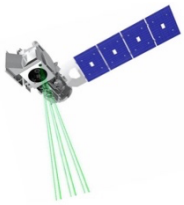
SEA ICE TOWERS

Did you know that there are frozen parts of the ocean at the North pole and the south pole called sea ice?



Photos courtesy NASA (left), USGS, Mike Lockhart (right)



NASA Satellites like ICESat-2 and Landsat see the seasonal changes of sea ice.

Construct your own graph of sea ice changes over 40 years.

You will need

- A flat surface like a tabletop or bare floor
- Data sheet on Page 2 (print out or copy on paper)
- Blocks (unifix cubes, dominoes, or anything that will stack in a vertical tower) *Note: You will need 31 blocks.*

Instructions

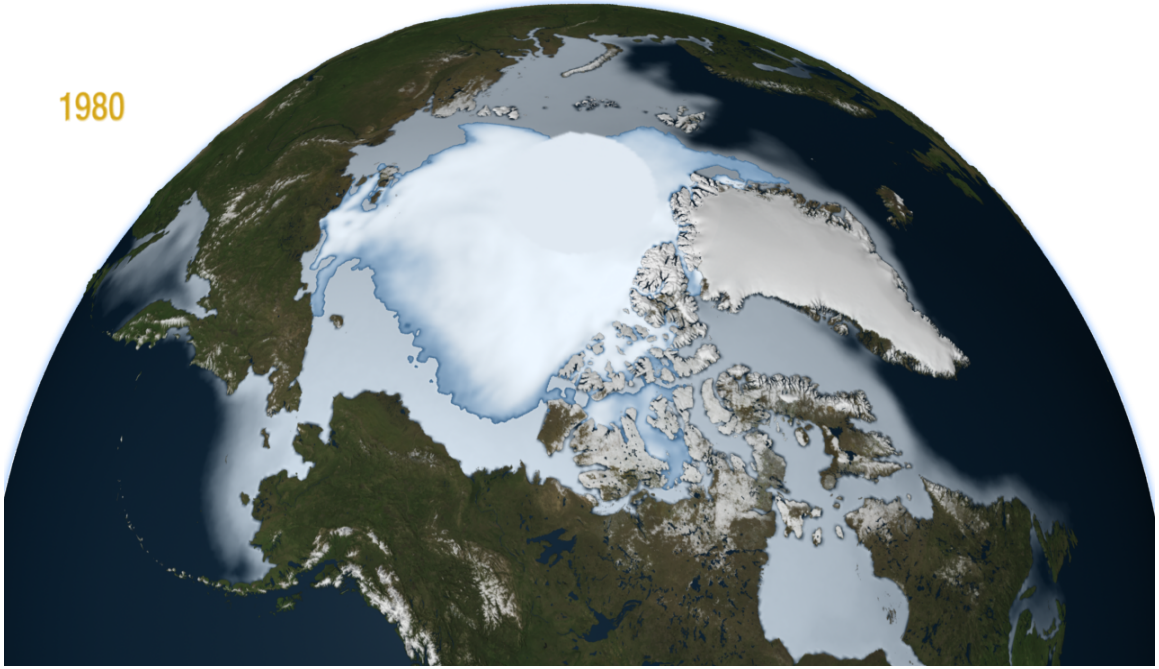
- Print or copy the data sheet (from Page 2)
- Gather your blocks or other stackable items (31 pieces)
- Look at the graph below the picture and stack that number of blocks that match the number of each year. Each cube represents 1 million square kilometers. Note, the surface area of the United States is 8 million square kilometers or 8 blocks. The State of California = ½ a cube.
- After you build your towers, look at the differences. Do you see a pattern?

Note: Additional information for teachers and parents on Page 3.

SEA ICE TOWERS

1980	1990	2000	2007	2012	2020

Arctic, North Pole



1980	1990	2000	2007	2012	2020
8	6	6	4	3	4

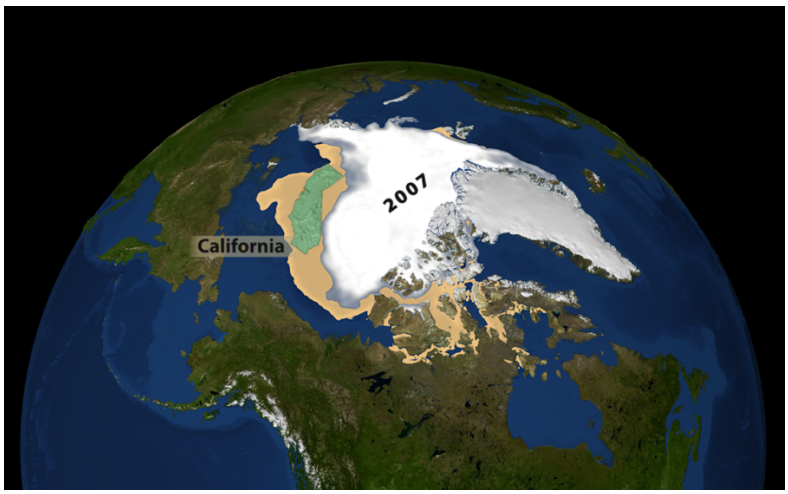
Note: Sea Ice 1980-2020 (millions of KM^2) summer minimum. (Photo above shows ice coverage in 1980.) Number inside box represents number of cubes. Each cube=1 million KM^2. For comparison, the contiguous US = 8 million KM^2 or 8 blocks. State of California = ½ a cube.

Notes to Parents and Teachers

The Sea Ice Towers Activity is for elementary level children (~grades 3-5) and shows graphically in three dimensions how sea ice is changing over the years. *This activity may contain small parts. Please be aware for safety.*

In the Arctic, sea ice (frozen ocean water) grows and shrinks depending on the season. Satellites have been measuring the sea ice extent since the late 1970's, and only in a 40-year period, rapid changes have occurred. Sea ice is important in regulating our global climate and to keep the planet cool.

The data consists of numbers from satellite data rounded up or down of yearly averages of sea ice cover in summer at its lowest extent over a 40-year period (1980 – 2020). The numbers represent millions of kilometers squared. Note: Each cube represents 1 million square kilometers. For comparison the surface area of the United States is 8 million square kilometers or 8 blocks. The State of California = ½ a cube.



NASA's ICESat-2 is the newest generation of Earth monitoring satellites launched in 2018, taking measurements of the ice, as well as trees, land, oceans, and clouds. ICESat-2 provides scientists with important measurements of sea ice thickness to learn about how our polar regions are changing.

For more information on sea ice and NASA Earth observing satellites, check out:

- Sea ice animation with polar bear https://svs.gsfc.nasa.gov/10492
- Sea ice animation 1980-2020: https://svs.gsfc.nasa.gov/4860
- Earth Observatory for Kids article and DIY science: https://earthobservatory.nasa.gov/blogs/eokids/wp-content/uploads/sites/6/2020/03/25_Sea-Ice_508.pdf
- ICESat-2 mission Funzone: https://icesat-2.gsfc.nasa.gov/funzone
- Landsat Mission:
- https://www.nasa.gov/mission_pages/landsat/overview/index.html