

Sea Level Rise NASA Resources for Grades 6- 8

6th through 8th grade NGSS related to Sea Level Rise:

MS-LS2-3. Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.

MS-LS2-4. Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.

MS-LS2-2. Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.

MS-LS2-5. Evaluate competing design solutions for maintaining biodiversity and ecosystem services.

MS-ESS2-2. Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.

MS-ESS2-1. Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process

MS-ESS2-4. Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity.

MS-ESS3-1. Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes.

MS-ESS2-5. Collect data to provide evidence for how the motions and complex interactions of air masses result in changes in weather conditions.

MS-ESS2-6. Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates.

MS-ESS3-5. Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.

MS-ESS3-2. Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects

MS-ESS3-3. Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.

MS-ESS3-4. Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.

MS-PS4-1. Use mathematical representations to describe a simple model for waves that includes how the amplitude of a wave is related to the energy in a wave.

MS-PS4-2. Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials.

MS-PS4-3. Integrate qualitative scientific and technical information to support the claim that digitized signals are a more reliable way to encode and transmit information than analog signals.

MS-ETS1-1. Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.

MS-ETS1-2. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

MS-ETS1-3. Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.

NASA Resources

Websites:

[NASA's Rising Waters interactive](#)

[NASA's Sea Level Rise Portal](#)

[Sentinel-6 Mission](#)

[NASA's Climate Kids](#)

- [Sea Level](#)

[NASA's Climate Change and Global Warning](#)

- [Sea Level](#)

Lesson Plans:

[Graphing Sea Level Slopes and Surface Currents](#)

[Data Jigsaw: Exploring Sea Level Rise with Others](#)

[Stability and Change: Monitoring Sea Level](#)

[Creating Your Own Sea Surface Height Model](#)

[Connect the Spheres: Earth Systems Interactions](#)

[Lessons in Sea Level Rise](#)

[Climate Change Inquiry Labs](#)

[Climate Change Online Labs](#)

[Connect the Spheres: Earth Systems Interactions](#)

[Could a World of Swimmers Raise Sea Level?](#)

Activities:

[ICESat-2 Sea Ice Towers Activity](#)

[Earth's Water Globe Activity](#)

[16 Years of Ice Loss from Greenland and Antarctica: A Comparison Activity](#)

Virtual Interactive Activities:

[Sea Level Rise IQuest](#)

[Tour of the Electromagnetic Spectrum online book with videos](#)

[Floods IQuest](#)

[Living in a Freshwater World interactive](#)

[Water Cycle IQuest](#)

[Weather and Climate IQuest](#)

Articles:

[Earth Observatory for Kids](#), known as EO Kids, is a NASA affiliated magazine for students, primarily focused on students aged 9 through 14. However, there are many articles and activities in these issues which might be interested and accessible for younger children.

- [EO Kids: Making and Melting Ice at Earth's Poles](#)

- [EO Kids: Ice on Earth: By Land and By Sea](#)
- [EO Kids: Freshwater issue](#)

[Water's Family Tree: Where Did Earth's Water Come From?](#) article

[Sea Level 101: What Determines the Level of the Sea?](#) blog

[Bevy of Biomes](#) learning poster

[ICESat-2 Measures the Ice Shelf](#) learning poster

Videos:

[What is the Greenhouse Effect](#) (2:29)

[What Causes Sea Level Rise?](#) (2:43)

[Getting the Big Picture](#) (2:39)

[Watching Rising Seas from Space](#) (1:58)

[The Data Downpour](#) (4:17)

[ICESat-2 Atlas Laser Focus](#) (series of videos)

[Real World: ICESat-2 and Earth's Cryosphere](#) (5:23)

[Watching Rising Seas from Space](#) (1:59)

[Sea Level Rise](#) (1:30)

STEM Career focus video series:

[Meet Dr. Michael Freilich, Inspiration for the Sentinel-6 mission](#) (5:51)

[Ben Hamlington, NASA Scientist Studies Sea Level Rise from Space](#) (1:30)

[Shannon Statham: From Tuning Antennas to Making Dresses, Engineer Puts the A in STEAM](#) (1:32)

[Parag Vaze: NASA Engineer Observes Sea Level Rise from Space for 30 Years](#) (1:34)

[Severine Fournier: Science is International" Says French Sea Level Rise NASA Scientist](#) (1:36)

[Shailen Desai: NASA Engineer Helps Track the Global Impacts of Rising Seas](#) (1:26)

Data Visualizations:

[Draining the Oceans](#)

[22 Year Sea Level Rise: TOPEX/JASON](#)