

Sea Level Rise

NASA Resources for Grades 9 through 12

NGSS related to Sea Level Rise:

HS-PS4-1. Use mathematical representations to support a claim regarding relationships among the frequency, wavelength, and speed of waves traveling in various media.

HS-PS4-2. Evaluate questions about the advantages of using digital transmission and storage of information.

HS-PS4-3. Evaluate the claims, evidence, and reasoning behind the idea that electromagnetic radiation can be described either by a wave model or a particle model, and that for some situations one model is more useful than the other.

HS-PS4-4. Evaluate the validity and reliability of claims in published materials of the effects that different frequencies of electromagnetic radiation have when absorbed by matter.

HS-PS4-5. Communicate technical information about how some technological devices use the principles of wave behavior and wave interactions with matter to transmit and capture information and energy.

HS-LS2-7. Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.

HS-LS2-8. Evaluate evidence for the role of group behavior on individual and species' chances to survive and reproduce

HS-LS4-6. Create or revise a simulation to test a solution to mitigate adverse impacts of human activity on biodiversity

HS-ESS2-1. Develop a model to illustrate how Earth's internal and surface processes operate at different spatial and temporal scales to form continental and ocean-floor features.

HS-ESS2-2. Analyze geoscience data to make the claim that one change to Earth's surface can create feedbacks that cause changes to other Earth systems.

S-ESS2-5. Plan and conduct an investigation of the properties of water and its effects on Earth materials and surface processes.

HS-ESS2-6. Develop a quantitative model to describe the cycling of carbon among the hydrosphere, atmosphere, geosphere, and biosphere.

HS-ESS2-7. Construct an argument based on evidence about the simultaneous coevolution of Earth's systems and life on Earth.

HS-ESS2-4. Use a model to describe how variations in the flow of energy into and out of Earth's systems result in changes in climate.

HS-ESS3-5. Analyze geoscience data and the results from global climate models to make an evidence-based forecast of the current rate of global or regional climate change and associated future impacts to Earth's systems.

HS-ESS3-1. Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.

HS-ESS3-2. Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.

HS-ESS3-3. Create a computational simulation to illustrate the relationships among the management of natural resources, the sustainability of human populations, and biodiversity.

HS-ESS3-4. Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.

HS-ESS3-6. Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity.

NASA Resources

Websites:

[NASA's Rising Waters interactive](#)

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

[Sentinel-6 Mission](#)

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

- [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:

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

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

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](#)