

Sea level rise

Lesson Map: <http://esriaustralia.com.au/education/SpatialActivity17>

Engage

Where are glaciers located?

- Click on the Lesson Map URL above to open the map.
- ? In the Details pane, under the heading Content, tick the checkbox to turn on the layer called Glaciers of the World.
- Describe the distribution of the global glaciers and ice sheets. *[Mostly in the North and South Poles]*
- Glacial and ice sheet melting is a significant concern, given global warming.
- The Paris Climate Agreement, commencing in 2020, aims to hold the increase in the global average temperature to well below 2 degrees Celsius.
- Some estimations predict 2 degrees Celsius of warming, resulting in a sea level rise of over 2 metres by 2100.

Explore

What happens if sea levels rise 2 metre?

- In the Contents window, tick the checkbox to turn on the layer Global Sea Level Rise 1 Metre.
- Click on the Bookmarks button, and open the Bookmark for Victoria, Australia.
- In the 'contents' window, hover your mouse over the activated map layer. Additional icons will open. Click the 'show table' icon.
- ? Which areas are most at risk of sea level rise? *[Along the coastline, and along rivers]*
- ? Click on the Bookmarks button, and open the Bookmark to see South Vietnam.
- Click the Measure Button and select 'Area'. Select the unit as Sq Kilometers from the dropdown list.

Download student worksheet [here](#).

Time
20 minutes

Activity

Investigate the distribution of global ice sheets and glaciers, understand the impact of global sea level rise.

Learning Outcome

Students will be able to:

- Understand the global impact of SLR
- Quantify these impacts
- Understand the correlation between climate change impacts and poverty, especially Bangladesh

ACARA Curriculum Link

[Year 8 Geography – Unit 1: Landforms and landscapes](#)

[ACHGK051](#) | [ACHGS057](#) | [ACHGS058](#)

[Year 10 Geography – Unit 1: Biomes and food security](#)

[ACHGK060](#) | [ACHGK061](#) | [ACHGK063](#)
| [ACHGS065](#) | [ACHGS066](#)

[Senior secondary Curriculum – Geography. Unit 3: Land cover transformations](#)

[ACHGE065](#) | [ACHGE067](#) | [ACHGE071](#)
| [ACHGE072](#) | [ACHGE073](#) |
[ACHGE074](#) | [ACHGE075](#) | [ACHGE076](#)
| [ACHGE077](#) | [ACHGE079](#)

- ➔ Click around the perimeter of the inundation zone in South Vietnam which would be impacted by 1 metre of sea level rise.
- ➔ Approximately what area of South Vietnam would be inundated following 1 metre of sea level rise? [Approx. 26,000 sq km]

Explain

What happens if the sea level rises by 5m?

- ➔ Tick the checkbox to turn on the layer 'Sea Level Rise 5 Metre'
- ➔ Go back to the bookmark called South Vietnam.
- ? Approximately what area of South Vietnam would be inundated following 5 meters of sea level rise? [Approx 45,000 sq km]
- ➔ You may wish to compare other global examples of 1m vs 5m of sea level rise. Suggested regions include Europe, Indonesia and China.

Extend

How would sea level rise impact the Bay of Bengal?

- ? Turn off all data layers by unticking all checkboxes in the Content window.
- ➔ Sea level rise has the potential to significantly impact those in impoverished global regions.
- ➔ Using the search bar, locate Bangladesh.
- Tick the checkbox to turn on the layer Bangladesh Boundary.
- Tick the checkbox to turn on the data layer Percentage of Population Living Below the Poverty Line.
- Click on the area along the coast with the highest percentage of its population living below the poverty line. A pop-up window with additional information will open.
- ? What is this division called, and how many people live there? [Barisal – 8 147 000 people]
- Turn off the layer Percentage of Population Living Below The Poverty Line.
- Progressively add the layers Bengal Bay Inundation – beginning with 1m, 3m, 5m

Teacher Feedback:

To share your feedback on this, or any Spatial Activity, please contact education@esriaustralia.com.au

and 7m.

- ? What is the approximate area of Bangladesh that would be inundated if sea levels were to rise by 7m? Use the Measure tool to roughly estimate the area of the inundation zone. *[Approx. 59,000 sq km]*
- ? The total land area of Bangladesh is currently 147 750 Sq Km. What percentage of current landmass would be inundated if sea levels rose by 7m? *[Approx. 40%]*
- In the Content pane, click the layer (represented with a table icon) called Bengal Bay Population in Flood Zone. This layer shows that all those living in a predicted flood zone in the Bay of Bengal.
- ? Which countries will be affected by flooding in the Bay of Bengal? *[Bangladesh, India, Myanmar]*
- ? Some scientists estimate that 2m of sea level rise could be seen by 2100. How many people in the Bay of Bengal would be affected by 2m of sea level rise? Hint: In the table, find the heading 'PopulationInFloodArea' for 2m sea level rise. *[24 805 957 affected]*
- ? How many people would be affected by 7m of sea level rise in the Bay of Bengal? *[90 592 613 affected]*

Next Steps:

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