

## POLAR EXPLORER SEA LEVEL APP

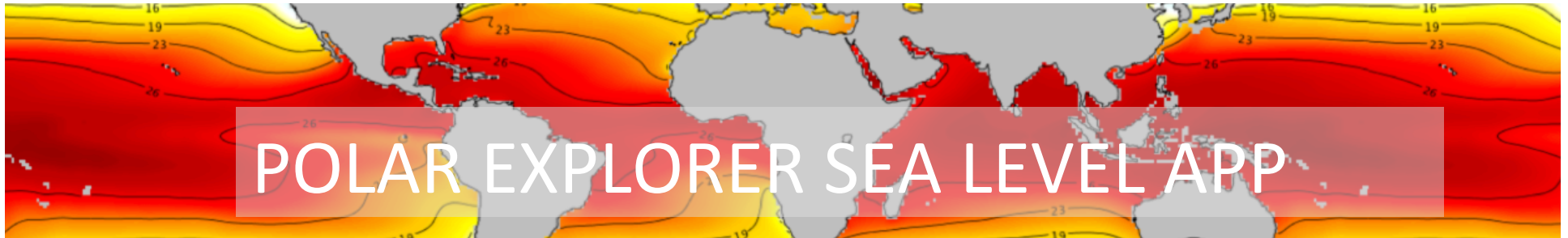
# Complete an investigation #1

## 1. What is Sea Level: Elevations Beneath the Sea

- Locate the area off shore of New York called the New York Bight.
- *What is the range for the depths in this area?*

Now locate the Hudson Canyon.

- *What is the deepest depth you can find in the Hudson Canyon?*
- *What connection could the **New York Bight** have to Sea Level?*
- *Now consider the **Hudson Canyon**, what connection could it have to Sea Level?*



## Complete an investigation #2

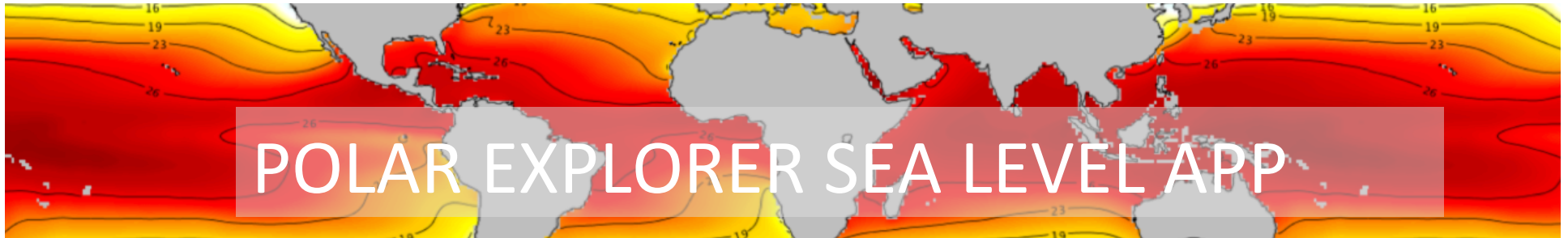
### 1. Why Does Sea Level Change: What is the role of the ocean: Internal Ocean Temperature (Present)

Zoom down into the ocean.

- *At what depth do the last two visible areas of warmer ocean water disappear? Can you identify those ocean features? How does ocean temperature relate to sea level rise?*

Explore the ocean temperatures at different depths.

- *As you dive down in the layers of ocean water, at what depth does the majority of warm water appear to stop? How could this be significant in thinking about future sea level rise?*



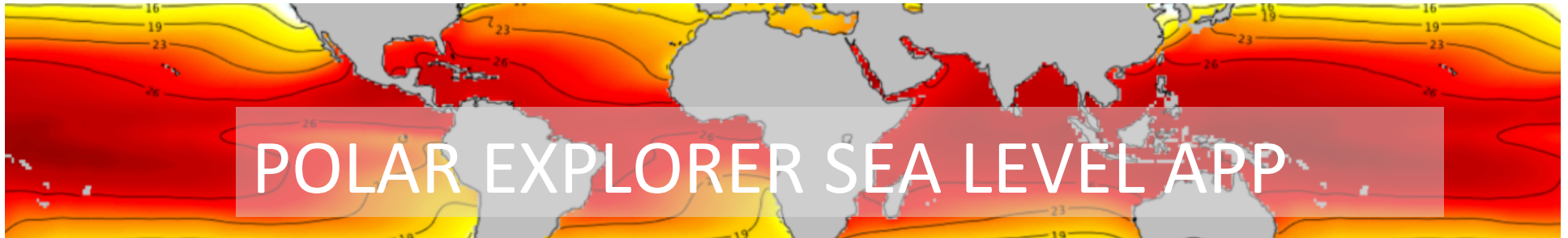
## Complete an Investigation #2.5

### 1. Why Does Sea Level Change: What is the role of the ocean: Internal Ocean Temperature (Present)

Now, focus on the polar regions...

Zoom down in the ocean around Greenland & West Antarctica

- *What happens to the ocean temperature as you increase in depth?*
- *At what depth is the water around Greenland the coldest? And the warmest? What about Antarctica?*
- *How does it differ from the Atlantic and Pacific Oceans?*
- *Brainstorm ideas on what might be happening.*

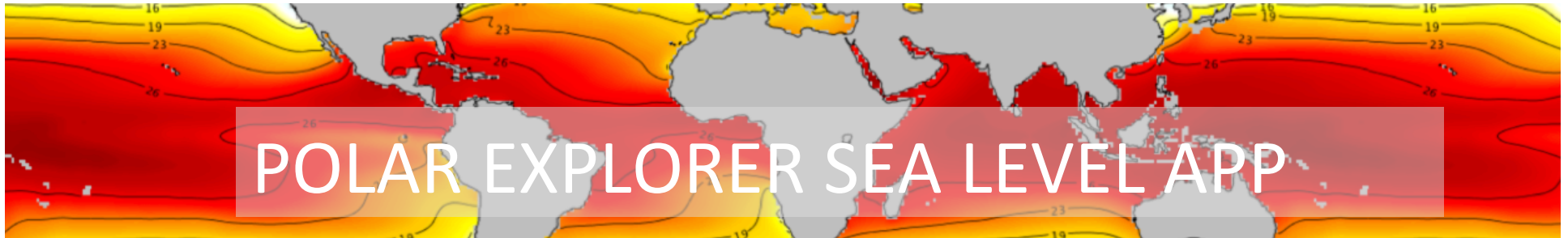


## Complete an investigation #3

### 1. Why Does Sea Level Change: What is the role of the atmosphere: Temperature change over last 5 years

Click through different areas of the map.

- *Where is the warming occurring at the greatest rate?*
- *How might this affect sea levels?*



## Complete an investigation #4

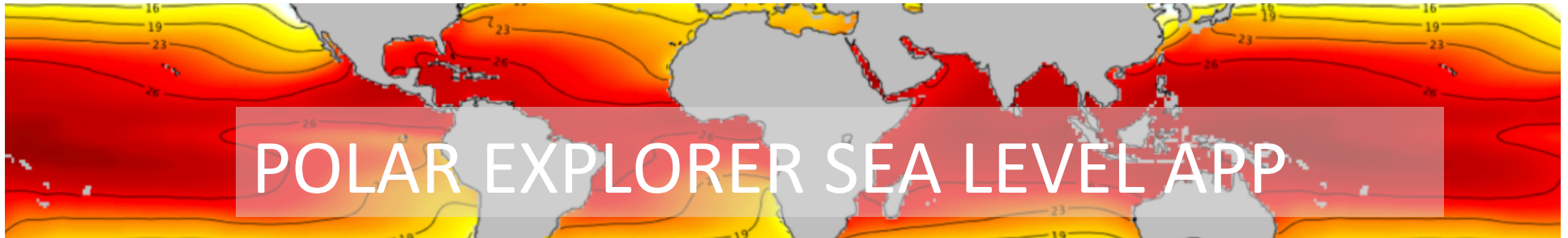
### 1. Where is sea level changing now: Regions vulnerable to future coastal flooding

Zoom in on the East Coast of the U.S.

- *Where do you find sea level is rising the most?*

Consider different Earth processes. See if you can create a hypothesis to explain this?

- *Where you do find sea level is falling?*
- *Consider different Earth processes. See if you can create a hypothesis to explain this?*

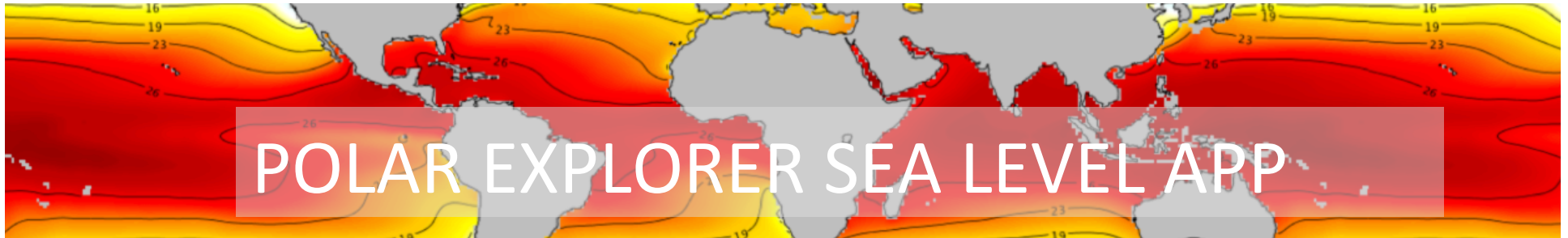


## Complete an investigation #5

### 1. Where is sea level changing now: Tide stations recording rising or falling

Review the tide gauges and click around to see what some of the values are.

- *See if you can locate where sea level rising the most?*
- *Consider different Earth processes. Can you create a hypothesis to explain this?*
- *Where do you find sea level is falling?*
- *Consider different Earth processes. Can you create a hypothesis to explain this?*

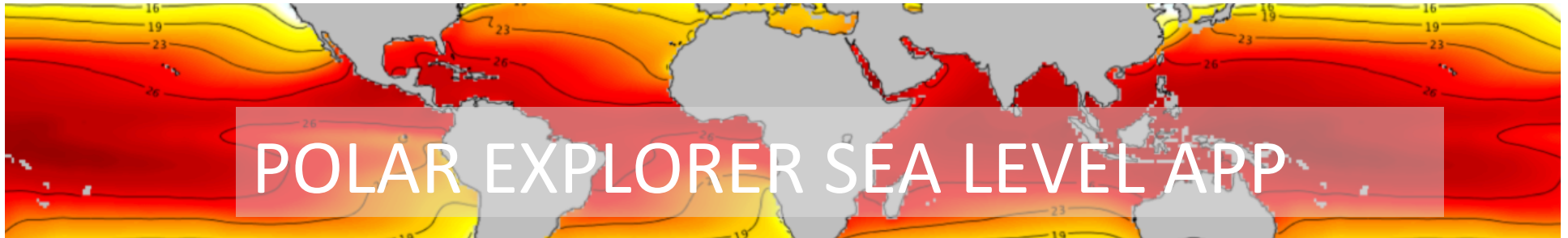


## Complete an investigation #6

### 1. Where is sea level changing now: Regions vulnerable to future coastal flooding

Zoom into the east coast of the U.S. and the Gulf of Mexico.

- *What are the areas that are most severely impacted by flooding?*
- *How might this impact the residents in these areas? Name at least 3.*
- *What do you see that surprises you?*



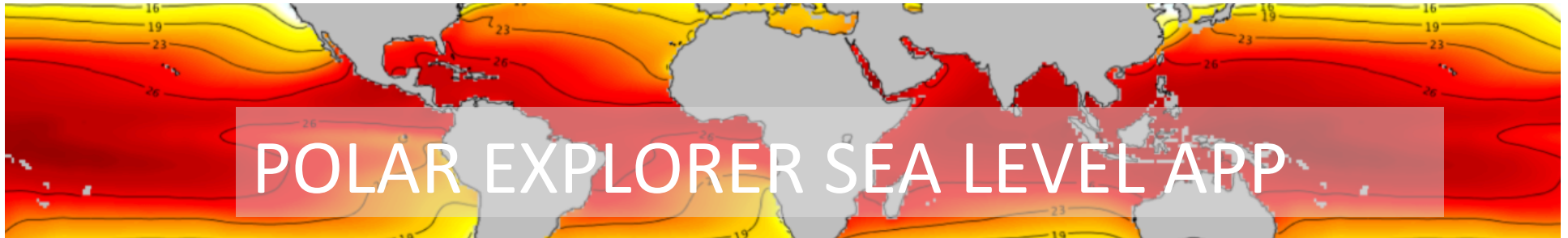
## Complete an investigation #7

### 1. Who is vulnerable: Population density

Compare the “population density” map to the “tide stations recording rising and falling” map.

- *How does this map relate to sea level rise?*
- *Hypothesize area of highest vulnerability (i.e. which areas have high-density population and are vulnerable to sea level rise)?*
- *Are there possible mitigation strategies that you can think of for the high density and vulnerable populations?*





## Complete an investigation #8

### 1. Who is vulnerable: Human impact on Earth

Compare the “Human Impact on Earth” map to the “Population Density” map.

- *What do you think about this map, does anything about this map surprise you?*
- *Does this map generate any questions?*
- *How does it relate to the population density map?*
- *How might it relate to sea level rise?*