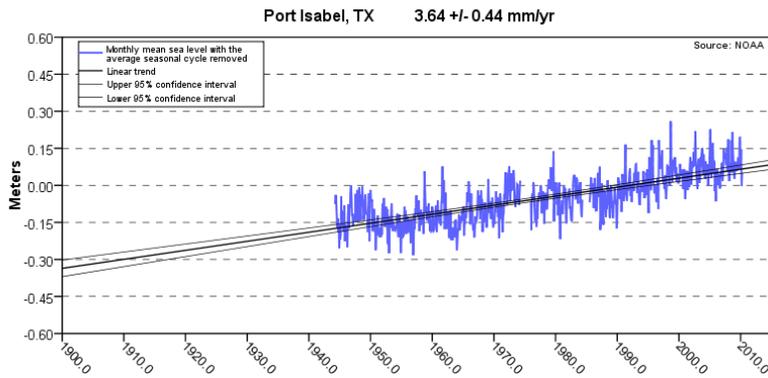


# Thinking About Climate Change

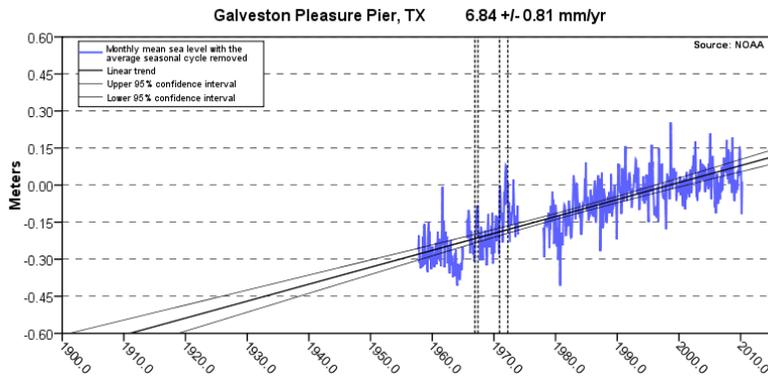


## Northern Gulf of Mexico Sea Level Change

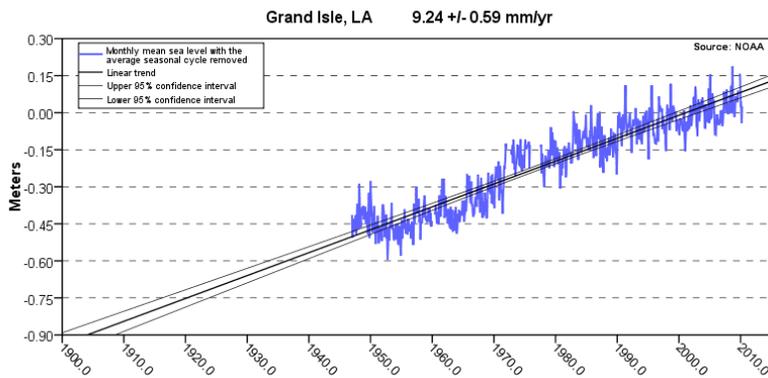
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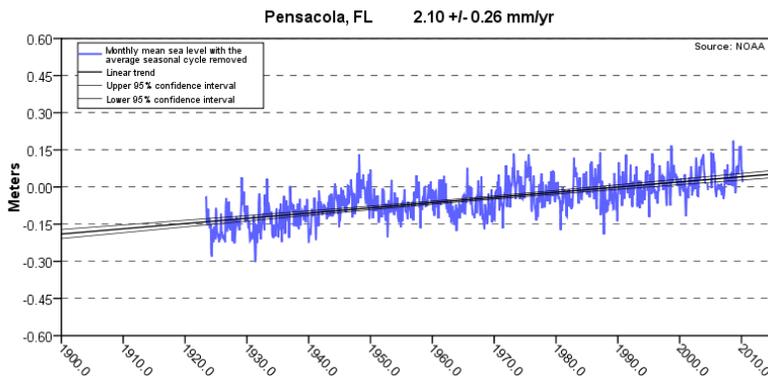
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4



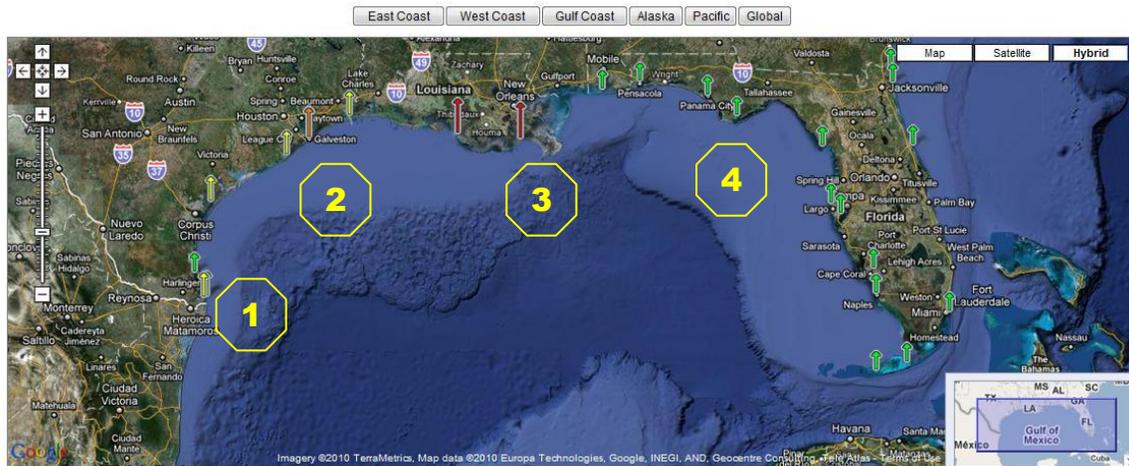
Thinking About Climate Change: Northern Gulf of Mexico Sea Level Change

5

# Thinking About Climate Change



## Northern Gulf of Mexico Sea Level Change Sea Levels Online



The map above illustrates regional trends in sea level, with arrows representing the direction and magnitude of change. Click on an arrow to access additional information about that station.

### Let's look at sea level data collected at four sites across the northern Gulf of Mexico.

- Which site has the longest record? \_\_\_\_\_
- Which site has experienced the largest change in sea level? \_\_\_\_\_  
Has sea level risen or fallen since the data has begun being recorded at this site? \_\_\_\_\_  
How much has sea level changed in meters at this site? \_\_\_\_\_ How many inches is this equivalent to? \_\_\_\_\_
- Which site has experienced the smallest change in sea level? \_\_\_\_\_  
Has sea level risen or fallen since the data has begun being recorded at this site? \_\_\_\_\_  
How much has sea level changed in meters at this site? \_\_\_\_\_ How many inches is this equivalent to? \_\_\_\_\_
- Why might sea level change be different at different sites? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- What does changing sea level have to do with climate change? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

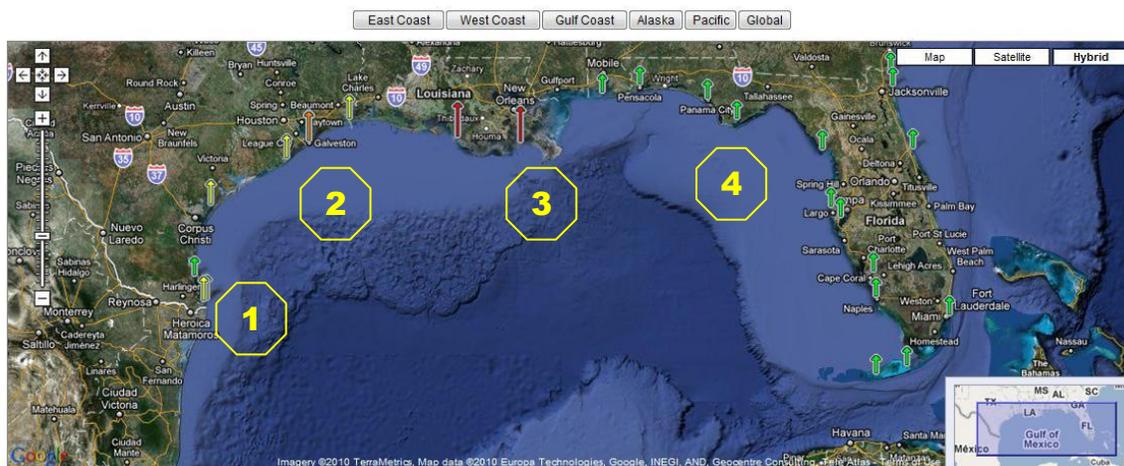
### Drawing conclusions

- In general, what can you say sea level in the northern Gulf of Mexico based on the data presented in these four graphs?  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Image source: NOAA Tides and Currents website (December 9, 2008). Sea Levels Online. Accessed July 8, 2010, at <http://tidesandcurrents.noaa.gov/sltrends/index.shtml> (click on Gulf Coast).

# Thinking About Climate Change

## Northern Gulf of Mexico Sea Level Change Sea Levels Online



The map above illustrates regional trends in sea level, with arrows representing the direction and magnitude of change. Click on an arrow to access additional information about that station.

Sea Level Trends mm/yr (feet/century)	
9 to 12 (3 to 4)	3 to 6 (1 to 2)
6 to 9 (2 to 3)	0 to 3 (0 to 1)
3 to 6 (1 to 2)	-3 to 0 (-1 to 0)
0 to 3 (0 to 1)	-6 to -3 (-2 to -1)
-3 to 0 (-1 to 0)	-9 to -6 (-3 to -2)
-6 to -3 (-2 to -1)	-12 to -9 (-4 to -3)
-9 to -6 (-3 to -2)	-15 to -12 (-5 to -4)
-12 to -9 (-4 to -3)	-18 to -15 (-6 to -5)

Let's look at sea level data collected at four sites across the northern Gulf of Mexico.

1. Which site has the longest record? **Pensacola, FL.**
2. Which site has experienced the largest change in sea level? **Grand Isle, LA.**  
Has sea level risen or fallen since the data has begun being recorded at this site? **Risen.**  
How much has sea level changed in meters at this site? **0.05m (in YR 2008) + 0.45 m (in year ~1945) = 0.50 m sea level rise.** How many inches is this equivalent to? **19.7 inches**
3. Which site has experienced the smallest change in sea level? **Pensacola.**  
Has sea level risen or fallen since the data has begun being recorded? **Rise**  
How much has sea level changed in meters? **0.15m+0.05m = 0.2 m** How many inches is this equivalent to? **~7.9 inches**
4. Why might sea level change be different at different sites? **Some sites might be sinking (subsiding) at a faster rate than other sites. Other causes: seasonal weather patterns, variations in the Earth's declination, changes in coastal and ocean circulation, anthropogenic influences (such as dredging), vertical land motion, and the El Niño Southern Oscillation (for an excellent discussion, see <http://tidesandcurrents.noaa.gov/sltrends/faq.shtml>).**
5. What does changing sea level have to do with climate change? **Changes in sea level are linked directly to important oceanic and atmospheric processes. Sea level change and long term trends (local, regional and global) is an important indicator of climate change.**

### Drawing conclusions

1. In general, what can you say sea level in the northern Gulf of Mexico based on the data presented in these four graphs?  
**Sea level has risen at the four sites that provided data for the graphs. Sea level has risen from 0.2 m at Pensacola, FL to about 0.50 m at Grand Isle, LA.**

Image source: NOAA Tides and Currents website (December 9, 2008). Sea Levels Online. Accessed July 8, 2010, at <http://tidesandcurrents.noaa.gov/sltrends/index.shtml> (click on Gulf Coast).