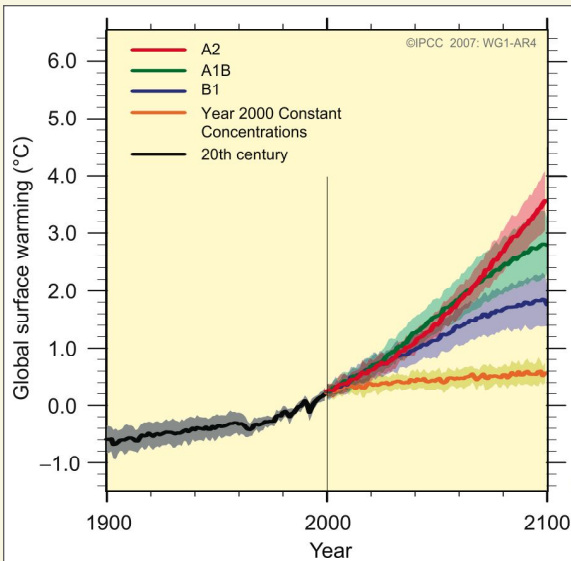


## Climate Change is Irreversible



Predicted Global Average Surface Warming by the Intergovernmental Panel on Climate Change for Several Scenarios of Future Economic Growth

### FUTURE TEMPERATURES

- Various levels of warming predicted for the future depend on projected concentrations of greenhouse gases in the atmosphere, the more gases the warmer it becomes
- The principal greenhouse gas, CO<sub>2</sub>, remains in the atmosphere for up to thousands of years
- The ultimate concentration of CO<sub>2</sub> in the atmosphere will determine the ultimate level of warming which will be fixed for thousands of years into the future
- The current process of rising sea levels will also continue for thousands of years into the future

## Regional Response Options

- The Hampton Roads Planning District Commission is in the midst of a three year study to develop a detailed understanding of regional risks and possible responses to climate change
- We can expect the options to be expensive and lead to significant social disruption
- There is no option but to adapt to the impacts of climate change, but doing so strategically is a choice
- Strategic adaptation will require strong leadership and deep commitment

## Personal Response Options

- Make personal choices to reduce greenhouse gas emissions such as opting for renewable electric power (<http://www.dom.com/dominion-virginia-power/customer-service/energy-conservation/green-power.jsp>), drive more fuel efficient cars, buy local foods, etc.
- Support strategic adaptation planning for the region
- Demand accountability on the issue of regional climate change adaptation of your political leadership

For additional information contact Doug Dwoyer at [hrclimate@gmail.com](mailto:hrclimate@gmail.com). I also provide free public talks to groups on request

# CLIMATE CHANGE IN HAMPTON ROADS



12 Nov 2009 Nor'easter

5:00 PM

Gloucester Point Park

### CLIMATE CHANGE

- Climate Change is real and is happening now with impacts already evident in Hampton Roads
- Hampton Roads future is tied directly to the future of the Arctic and the Antarctic
- Climate Change is irreversible
- What should the region and its citizens do about it?

# Climate Change in Hampton Roads Today



## Victims of nor'easter flooding in Hampton still picking up pieces

- Local residents face third rebuilding after flooding associated with a Nor'easter in three years
- Storms that produced little damage thirty years ago now cause major flooding due to one foot sea-level rise since 1930

### IMPACTS

- Sea level in Hampton Roads has risen over one foot since 1930 and is rising faster here than anywhere else on the east coast
- The Chesapeake Bay no longer freezes in winter
- Warming Bay waters are threatening sea grass beds that serve as nurseries for both shell- and fin-fish

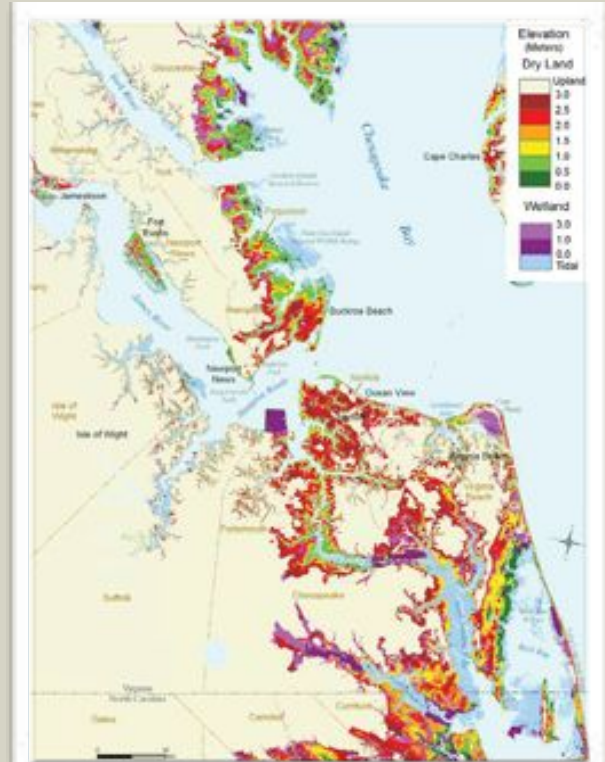
# Hampton Roads Future and the Arctic and Antarctic



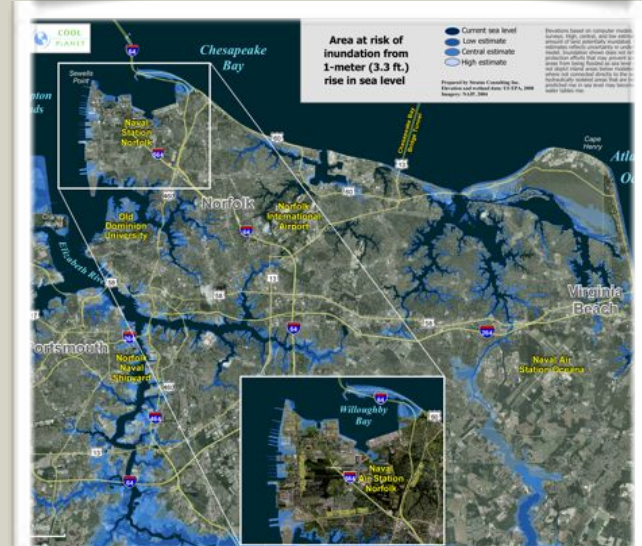
Western Greenland's Jakobshavn-Isbrae glacier calving front retreats 1 mile overnight (Source: NASA Goddard Spaceflight Center)

- There are three major ice sheets on the planet capable of raising sea level if melted, Greenland and East and West Antarctica
- The Greenland and West Antarctic sheets contain enough water to raise sea level 40 feet if fully melted
- Warming of Arctic accelerating due to melting sea ice and release of greenhouse gases as tundra melts
- West Antarctic ice sheet losing 200 billion metric tonnes of ice per year

Current projections are for 3 to 7 feet of sea level rise by 2100 in Hampton Roads



Hampton Roads Land Elevation



Potential Norfolk Inundation