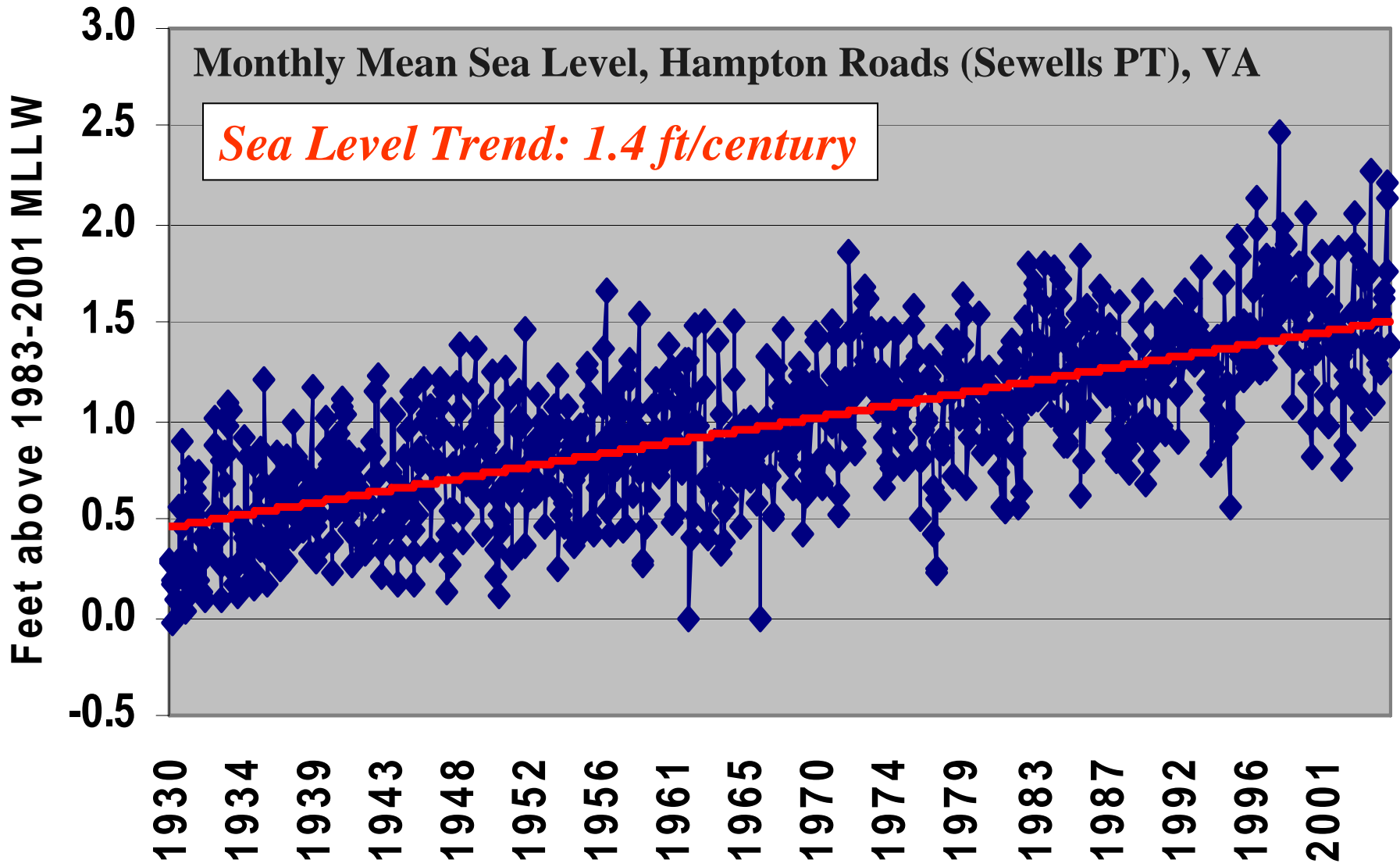


Baseline conditions and setting the stage

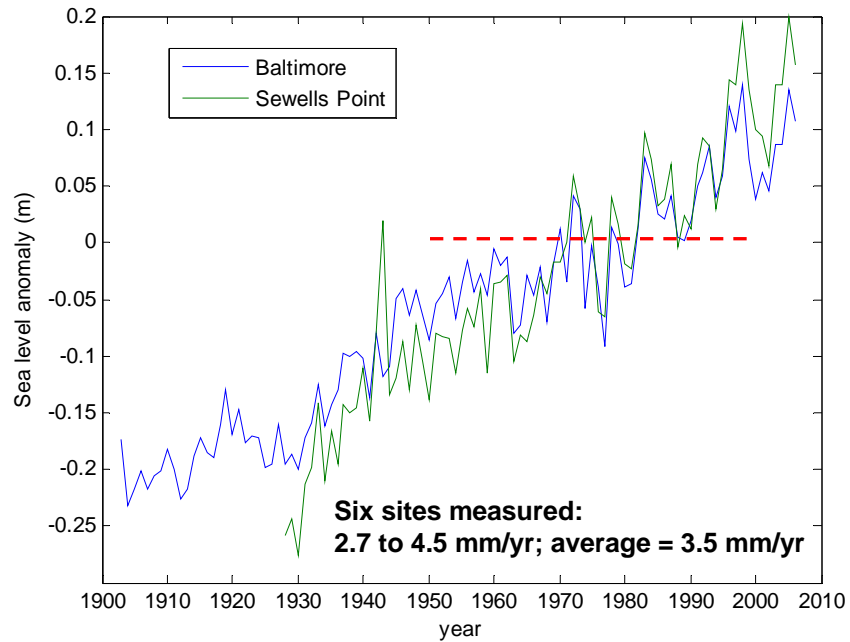
Roger Mann,
with thanks to Jim Bauer and Carl
Hershner

QuickTime™ and a
decompressor
are needed to see this picture.





Relative Sea Level Changes in Chesapeake Bay Waters (vs. 1950-2000 mean)



From STAC Report (draft April 2008)

Relative Sea Level Rise Along the East Coast of North America

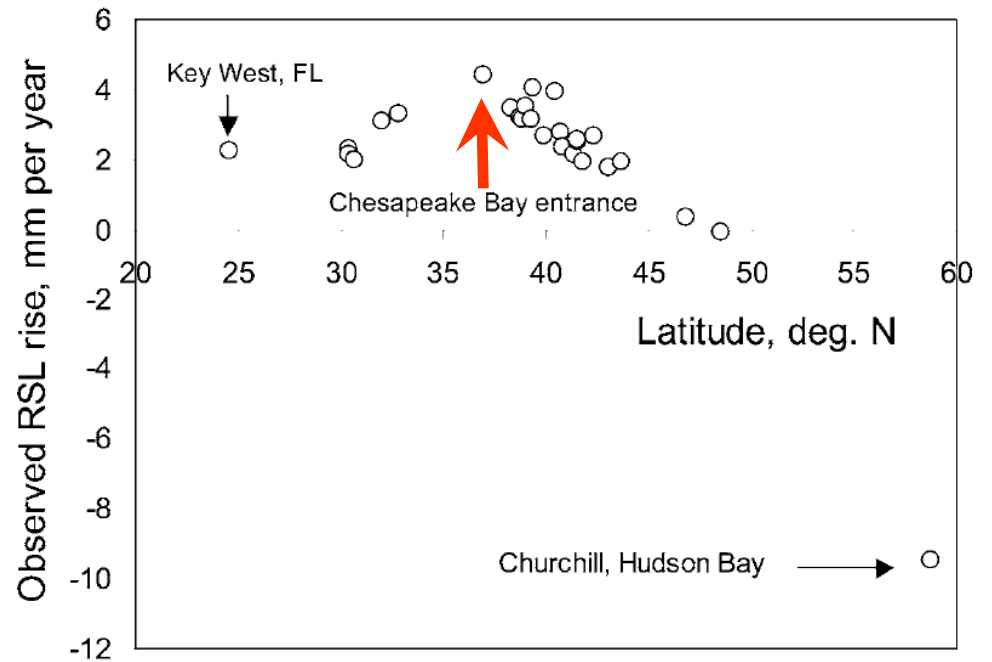
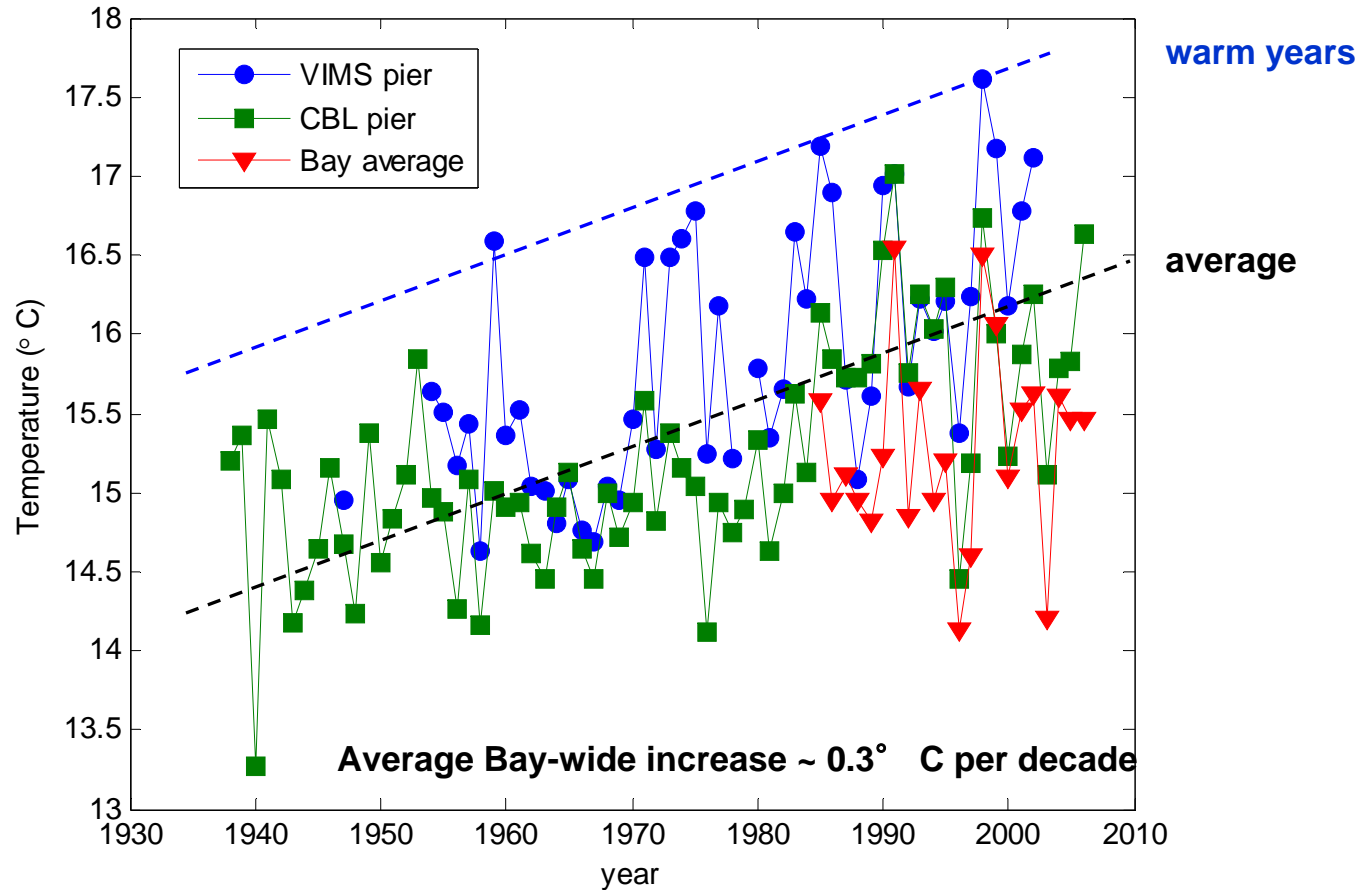


Figure 2. Relative sea level rise rates from Hudson Bay, Canada to Key West, Florida.

From Zhang et al. (2004) Climatic Change 64: 41–58.



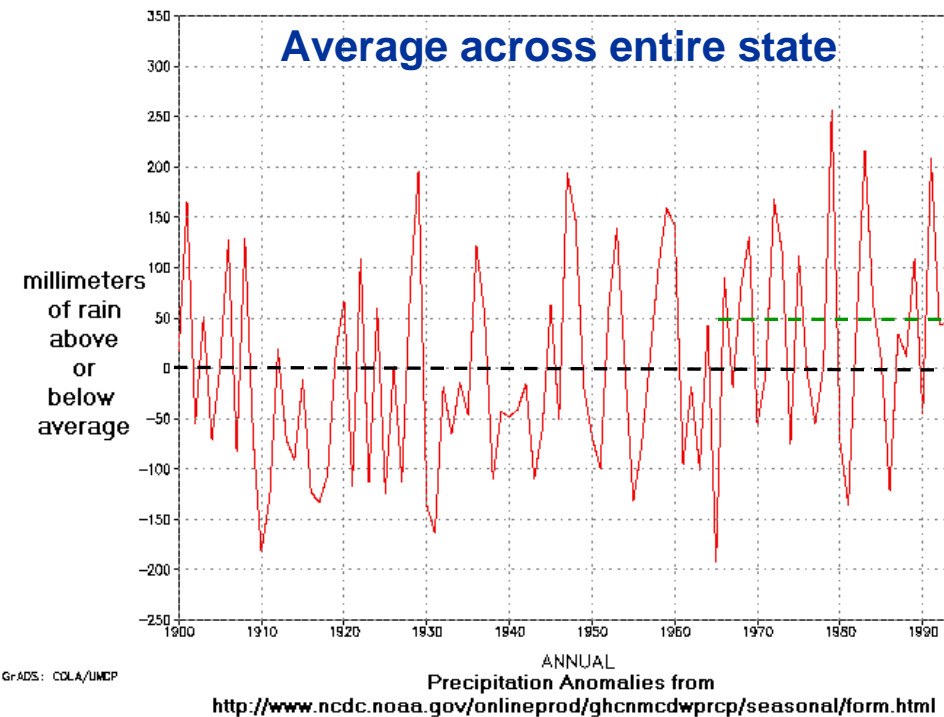
Measured Temperature Changes in Chesapeake Bay Surface Waters



Both the average, and maximum annual temperatures have increased over the last 5-6 decades

*From Austin (2002) American Fisheries Society Symposium, 32, 155-170
and Secor and Wingate (2008) manuscript in prep. and STAC Report (draft April 2008)*

20th Century Rainfall Patterns in Virginia



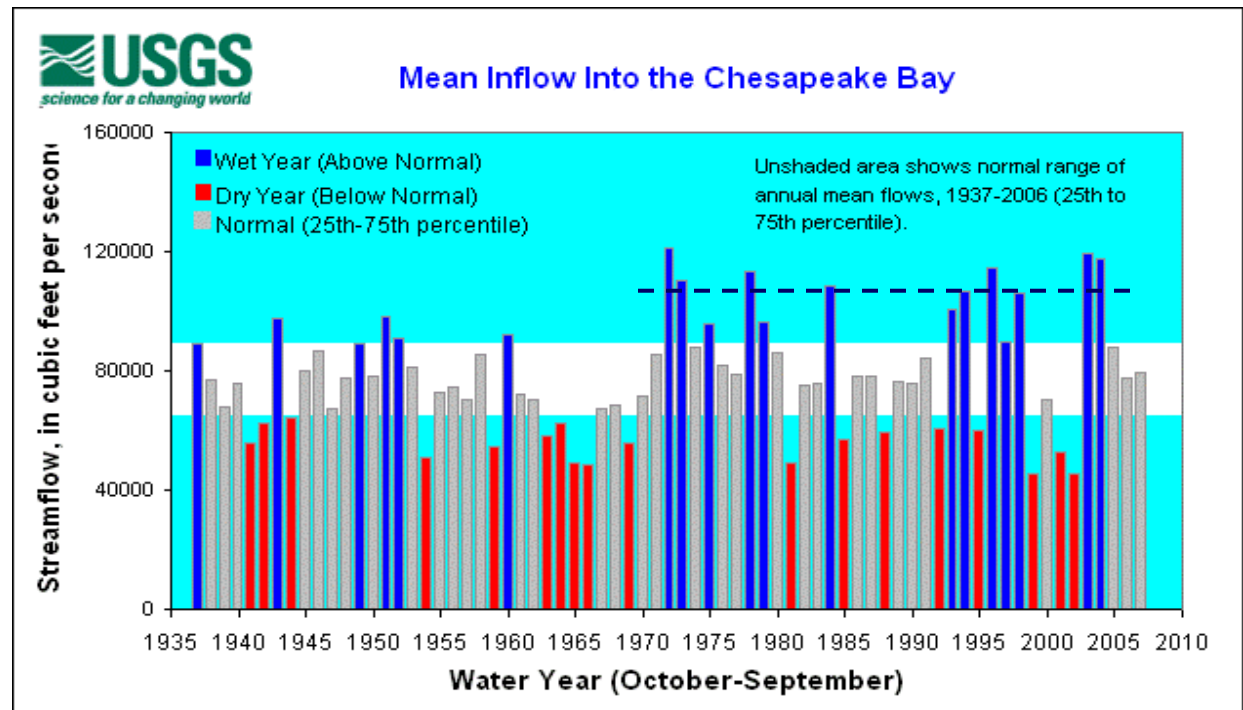
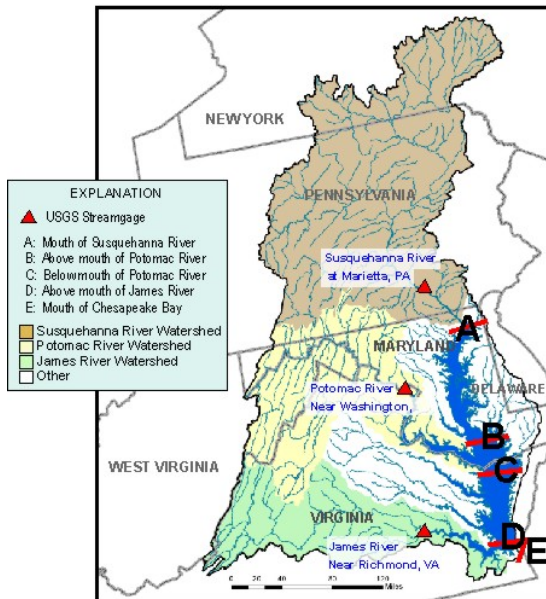
**Up-shift since 1970s
 -possible links to NAO,
 ENSO**

→ this kind of averaging across large geographic regions can obscure regional variability - which may be more relevant locally than state-wide patterns



Long-Term Changes in River Water Inputs to Chesapeake Bay

Major Chesapeake Bay Watersheds and Streamflow Stations and Sections used for Flow Calculations



→ Implications for materials transported by rivers, e.g., nutrients sediments, etc. and their impacts on ecological and geological processes in the Bay and along the coast

Summary of Climate-Related Impacts on Socio-Economic Sectors in the Coastal Zone

Coastal socio-economic sector	Climate-related impacts (and their climate drivers in Figure 6.1)						
	Temperature rise (air and seawater)	Extreme events (storms, waves)	Floods (sea level, runoff)	Rising water tables (sea level)	Erosion (sea level, storms, waves)	Salt water intrusion (sea level, runoff)	Biological effects (all climate drivers)
Freshwater resources	X	X	X	X	-	X	x
Agriculture and forestry	X	X	X	X	-	X	x
Fisheries and aquaculture	X	X	x	-	x	X	X
Health	X	X	X	x	-	X	X
Recreation and tourism	X	X	x	-	X	-	X
Biodiversity	X	X	X	X	X	X	X
Settlements/ infrastructure	X	X	X	X	X	X	-

X = strong; x= weak; - = negligible or not established.

Endpoints served by today's discussions...

- An institutional mandate to provide sound science in support of policy and management (“proper extension”)
- Timeliness of the Governors Commission on Climate Change - A recipient of our testimony
 - The white papers as a component of the final report
- The Climate Commission report is to be a partner product to the Virginia Energy Plan
 - Energy and climate change are inseparable. This is and will be a significant election issue in the Fall at all levels, made only more pointed by the daily rise of oil prices on the world market
- By example, to make us a “go to” institution for scientific opinion on this broad subject.