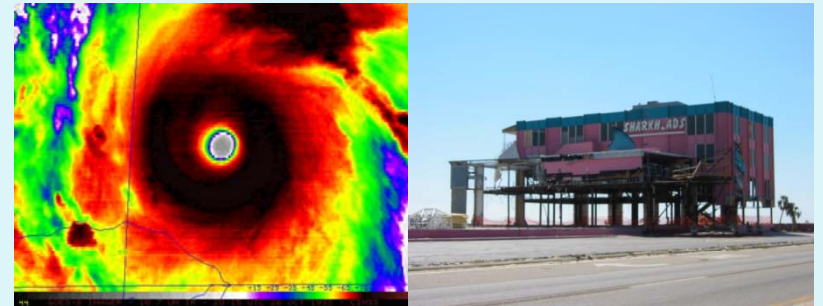


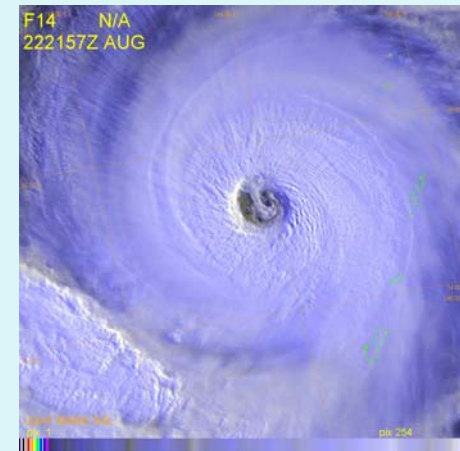


# The Potentially Disastrous 2010 Hurricane Season

**Greg Holland**



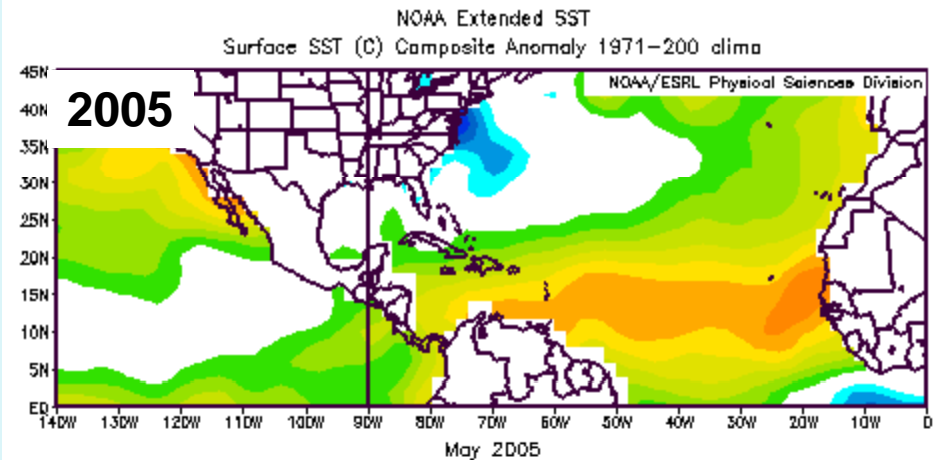
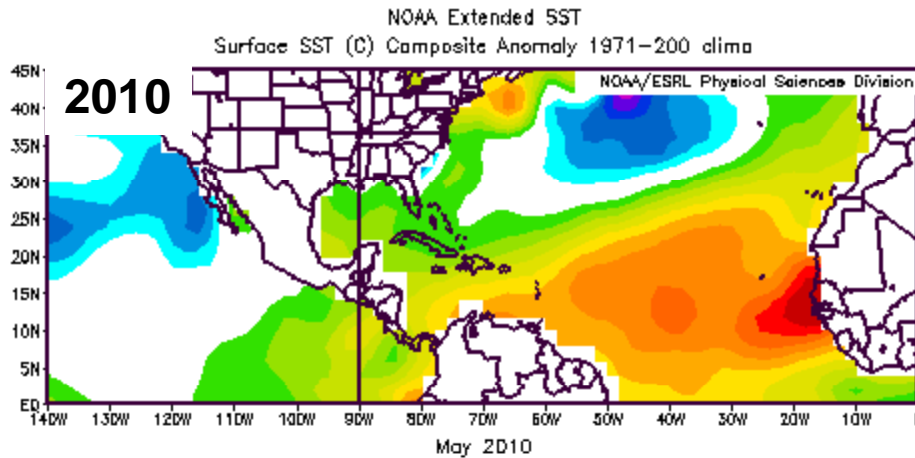
**NCAR Earth System Laboratory  
National Center for Atmospheric Research**



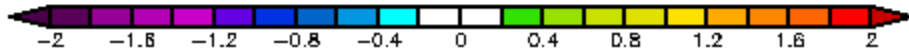
NCAR is Sponsored by NSF and this work is partially supported by the Willis Research Network and the Research Program to Secure Energy for America



# Ocean Temperature Anomalies, May



(Source NOAA)



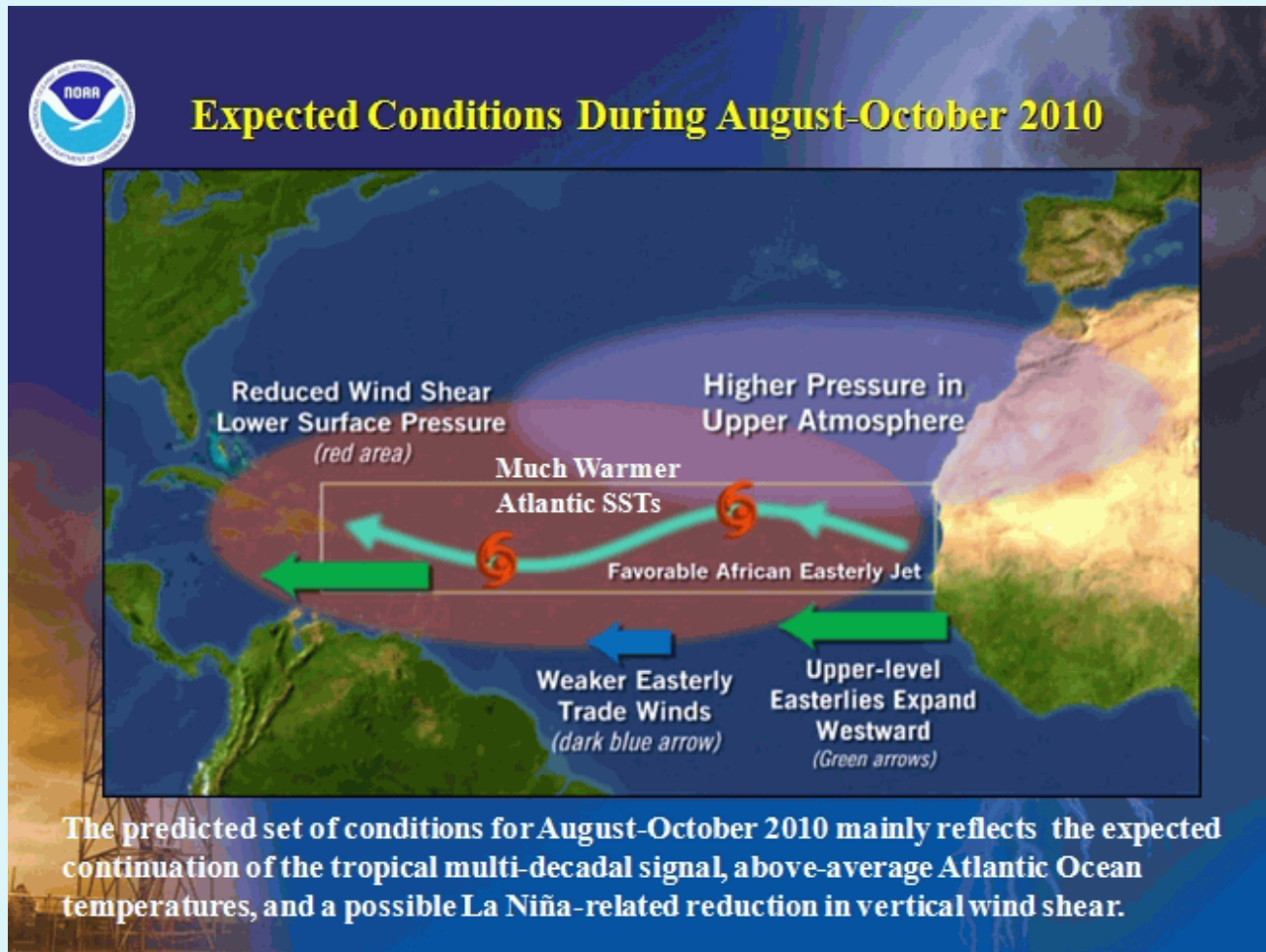
- May ocean temperatures in eastern North Atlantic were warmest on record;
- They were similar in character to May 2005, but substantially higher;

# Seasonal Hurricane Forecasts

NOAA estimates:  
 14-23 Storms  
 8-14 Hurricanes  
 3-7 Major Hurr.

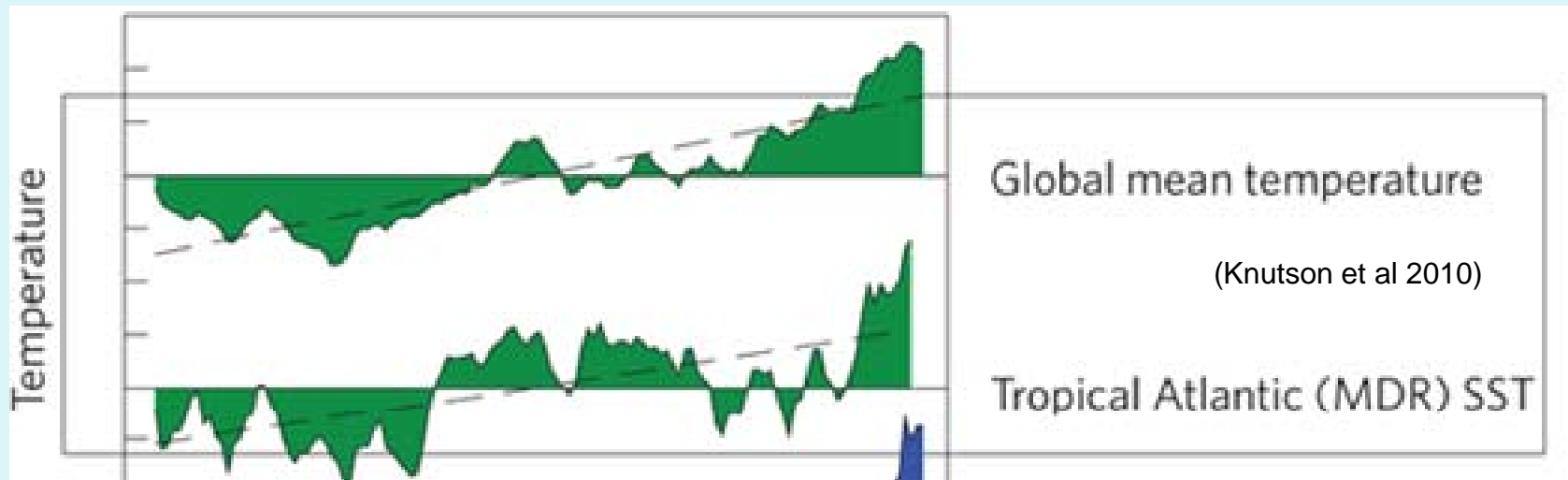
All others lie in  
 the same band

This is the highest  
 seasonal forecast  
 for hurricane  
 activity ever  
 made.



# What is Happening?

- Combination of Global Warming and Natural Variability:
  - *Global average surface temperatures for May 2005 were second warmest on record, May 2010 was the warmest on record. (NOAA Monthly Climate Statement);*
  - *North Atlantic is currently in a decade of high ocean temperatures due to climate variability;*



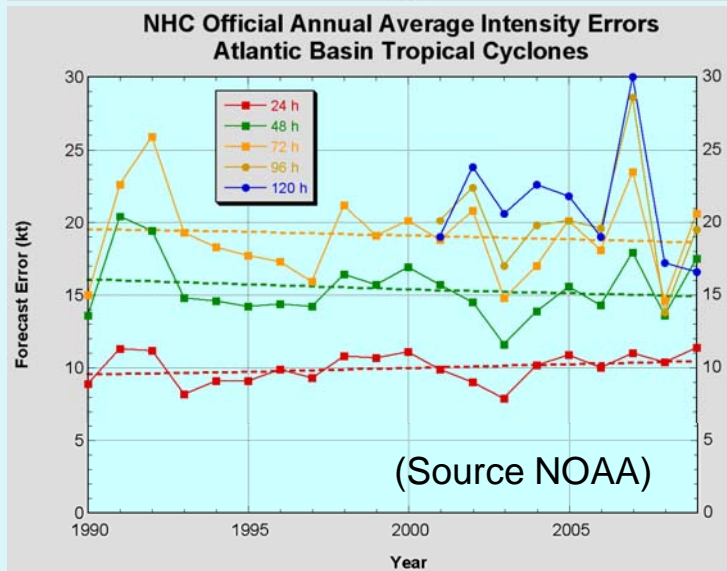
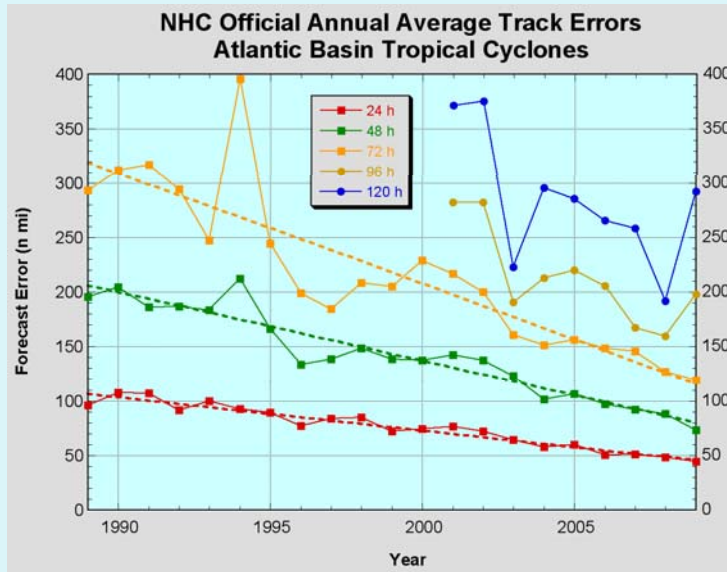


# Outlook for Atlantic Hurricanes and Climate Change

- Annual frequency change is uncertain, some studies predict an increase, others a decrease;
- Very consistent predictions of intensity increasing by 5-10% in the mean;
- Potential 50-100% increase in major hurricanes, consistent across all studies;
- Rainfall consistently projected to increase by ~20%;
- Adequate planning urgently requires improved assessments of these and other factors

(e.g. Knutson et al 2010, Holland et al 2010)

# Hurricane Forecast Capability



- Sustained increase in track forecast accuracy since the 1990s;
- 3-day forecast error is now approaching 1-day forecast error from 1990.

- Intensity forecasting has not improved;
- Applied research program being conducted under NOAA sponsorship to improve this.



# Decision Tools: Making the Best Use of Hurricane and Climate Model Predictions

- Rapidly growing community focusing on developing decision support tools based on high-impact weather predictions;
  - *e.g. The Willis Research Network.*
- Question:
  - “In predicting damage to offshore energy facilities in the Gulf of Mexico, what is the most important:  
Intensity?  
Size?  
Forward Speed?”*



## Summary

- All indications are for a bad 2010 hurricane season, please be prepared;
- Climate outlook indicates a substantial increase in major hurricanes for which we need to implement planning strategies based on sound science;
- Decision tools offer the potential for improved interpretation of hurricane forecasts and climate predictions





# Thank You

