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
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.

The predicted set of conditions for August-October 2010 mainly reflects the expected continuation of the tropical multi-decadal signal, above-average Atlantic Ocean temperatures, and a possible La Niña-related reduction in vertical wind shear.
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;*

(Knutson et al 2010)
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