

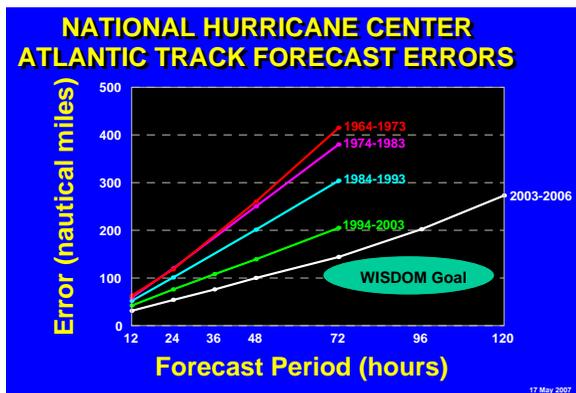


WISDOM (Weather In-Situ Deployment Optimization Method)

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Introduction

A challenge for hurricane forecast improvement is to develop systems capable of obtaining atmospheric measurements in an economical manner without placing government personnel at increased risk. One such system is the Weather In-Situ Deployment Optimization Method (WISDOM) program developed at NOAA OAR.



- Federal Partners: NOAA (OAR/ESRL/ARL, NWS) DHS S&T, Air Force, DoD
- University: MSU, UM, Texas A&M, CIMH
- Industry: NSC, ETC, Raytheon

Flood the data poor region with enough balloons to improve forecast by one day.



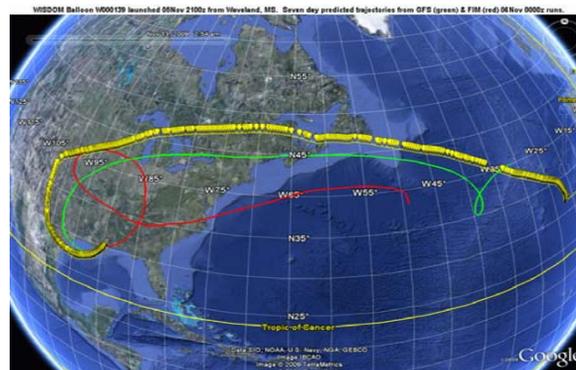
Goals

The WISDOM program aims to improve the hurricane track prediction in the 3 to 6 day period before landfall by providing wind and atmospheric data over poorly observed areas of the Atlantic basin.



Proof of Concept Testing

- NOAA, with funding support from the DHS S&T, conducted a successful initial feasibility test during the 2008 hurricane season with balloons reporting wind data in near real time.
- In 2009 with support from DHS S&T, NOAA, and the Air Force, the program aimed to quantify the forecast improvement provided by ingesting WISDOM data into numerical weather prediction models, including ESRL's Flow-Following Finite Volume Icosahedral Model (FIM).



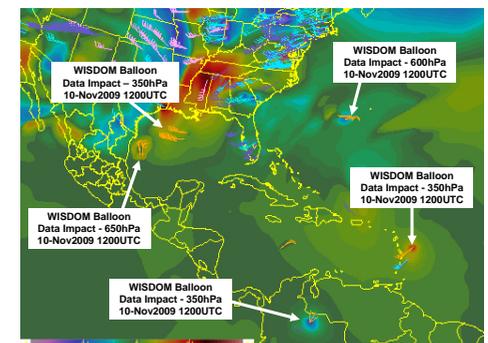
WISDOM Balloon W000139 launched 2100z from Waveland, MS. 7 day predicted trajectories from GFS (green) & FIM (red) 06Nov2009 - 0000z model runs.

Data Transmission

- The WISDOM system uses small super-pressure balloons carrying 100 gram payloads with GPS positioning and satellite communications capability.
- Data are transmitted in real time via satellite ground station to the MADIS servers at NOAA/ESRL.
- The 2009 WBS collected wind and pressure data; and included flight termination capability.



WISDOM holds the possibility of precisely located, accurate real-time wind measurements over the deep ocean for less than a dollar per measurement.



Real time WISDOM analysis:
Analysis increment of wind speed STMAS

"NOAA ... will exploit new technologies to better understand, monitor, and predict the behavior of Earth's complex ... systems ... "NOAA's challenge is to determine the most cost-effective means for observing ... the atmosphere ... to support these requirements..."

From: "Framing NOAA's Future Research" and the NOAA Research 5-yr plan

<http://wisdom.noaa.gov>