Meteorological Modeling for Traffic Management

ENSCO, Inc.
Aerospace Sciences and Engineering Division

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Weather Impacts on Air Traffic Management

- Air transportation is growing rapidly making management of limited airspace critical.
- Majority of delays in air traffic within the NAS are due to adverse weather:
  - Adverse weather often affects airspace and limits traffic to terminals.
  - Limited planning of the interface between en-route and terminals compounds problem.
- Improved weather forecast are required:
  - National models lack sufficient temporal and spatial resolution to address traffic management needs.
  - High resolution 4-D regional model is better solution.
  - Presentation of forecast information to TM is as important as better forecasts.
ENSCO Data Assimilation & Modeling

Data fusion
Forecast and safety modeling systems

Launch Support
Emergency Response
Aviation Support
Severe Weather Response

Decision Products

LOCAL DATA SETS

ENSCO, Inc.
METWISE Predict Overview

- Proven model developed to forecast convection
  - Focused on explicit convection and supercell prediction
  - Can operate on local to hemispheric scales
  - Designed for optimization on parallel computing
  - Well-documented
  - International applications
ENSCO Model Configuration

• Current (METWISE Predict)
  – Model runs 8 times per day (every 3 hours)
  – Forecast covers from 30 minutes to 9 hours
  – Forecasts provided in 30-minute increments
  – 12 km grid spacing over CONUS

• Added Value beyond current national models
  – Higher temporal and spatial resolution (vs. 20 km x 1 hr.)
  – Visualization, Time Animation, & Prognostic products not currently available with national models
  – Higher resolution regional forecasts can be produced (4km x 15 minutes)

• Future
  – Longer forecast periods are possible
  – Migration towards community model (WRF)
    • ENSCO continuously evaluates newest technology
4 May 05 – 15Z ARPS Model

ENSCO ARPS Initialization 15Z
Valid 17Z- 21Z (30-min intervals)

CCFP Issued 15Z
Valid 17Z

CCFP Issued 15Z
Valid 19Z

CCFP Issued 15Z
Valid 21Z

ENSCO MetWise National Radar
Valid 17Z- 21Z (30-min intervals)