

**Office of the Federal Coordinator for  
Meteorological Services and  
Supporting Research**

***Improvements in Atmospheric  
Dispersion Modeling***

15<sup>th</sup> Conference on Atmospheric Transport and Diffusion Modeling  
George Mason University

12 July 2011

Session Moderator  
Walter D. Bach, Jr., Ph.D.  
Science and Technology Corporation

# ***Outline***

**Background**

**Presentations of Recent Developments**

**Panel Discussions**

**Audience Q & A**

**Wrap Up**

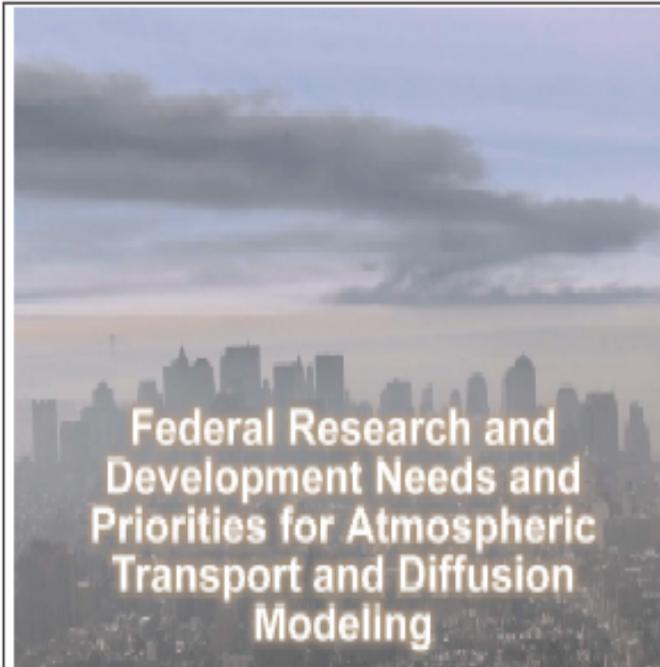
# The Report

U.S. DEPARTMENT OF COMMERCE / National Oceanic and Atmospheric Administration

OFCM



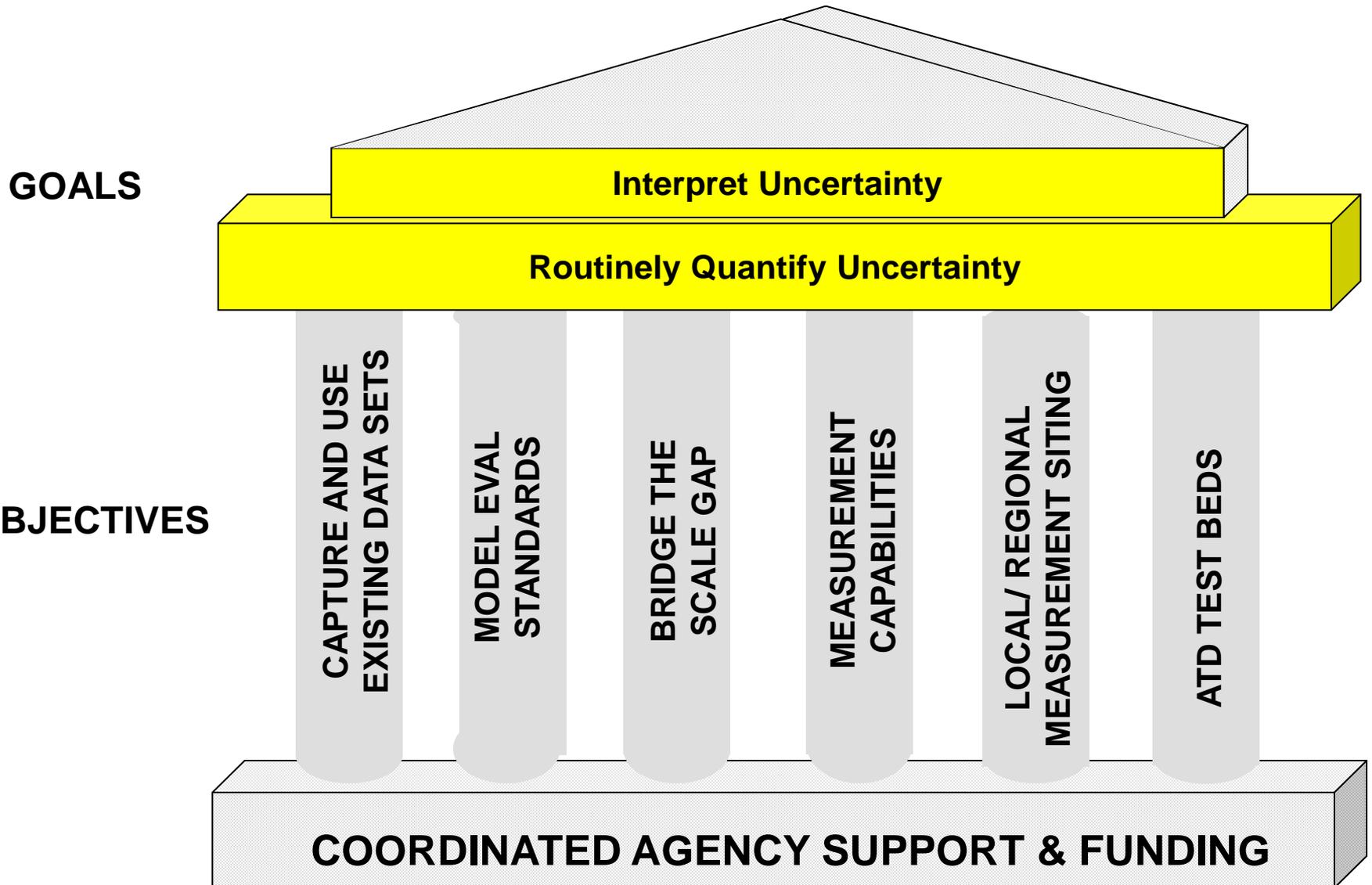
OFFICE OF THE FEDERAL COORDINATOR FOR  
METEOROLOGICAL SERVICES AND SUPPORTING RESEARCH



JOINT ACTION GROUP FOR ATMOSPHERIC  
TRANSPORT AND DIFFUSION MODELING  
(RESEARCH AND DEVELOPMENT PLAN)

FCM-R23-2004  
Washington, DC  
September 2004

# A R&D Strategy to Meet User Needs



# R&D Needs with Prioritization

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<i>R&amp;D Need</i>	<i>Time Sensitivity</i>	<i>Short Term Gain</i>	<i>Overall Level of Effort</i>	<i>Lead Time</i>	<i>Ultimate Gain Potential</i>
<b>Bridge the modeling gap</b>	near term	average	moderate	average	exceptional
<b>Characterization of surface conditions &amp; input data sets</b>	near term	average	high	average	exceptional
<b>Test and refine physical basis for sub-grid-scale parameterizations</b>	longer term	average	moderate	average	exceptional
<b>Characterize dispersion in complex environments</b>	immediate	average	high	average	high
<b>Improve ensemble construction and interpretation</b>	immediate	minimal	high	short	exceptional
<b>Techniques to better estimate wet and dry deposition</b>	near term	average	moderate	average	high

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# R&D Needs with Prioritization

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<i>R&amp;D Need</i>	<i>Time Sensitivity</i>	<i>Short Term Gain</i>	<i>Overall Level of Effort</i>	<i>Lead Time</i>	<i>Ultimate Gain Potential</i>
<b>Physical and high-resolution computational models</b>	near term	average	moderate	average	exceptional
<b>Improve tracer materials and measurement technology</b>	immediate	high	moderate	short	exceptional
<b>Improve boundary-layer measurement technology</b>	immediate	high	high	short	exceptional
<b>Improve and evaluate sensor fusion techniques</b>	immediate	high	moderate	moderate	high
<b>Data QA/QC for model fit and data assimilation</b>	immediate	average	moderate	moderate	high
<b>Develop physics-based model evaluation methods</b>	near term	High	low	average	exceptional

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# *Presentations*

**Dr. Paula Davidson**, DOC, NOAA, National Weather Service, Office of Science & Technology, Silver Spring, MD

**Mr. Mark Miller**, DOC, NOAA, National Ocean Service, Office of Response and Restoration, Emergency Response Division, Seattle, WA

**Mr. Jeff McQueen**, DOC, NOAA, National Weather Service, National Center for Environmental Prediction, Environmental Modeling Center, Camp Springs, MD

**Dr. John Hannan**, DOD, Defense Threat Reduction Agency, Information & Analysis Division, Warning and Reporting Information & Analysis, Ft. Belvoir, VA