

Summary of the DTC-EMC  
***NWP Workshop on Model  
Physics with an Emphasis  
on Short-Range Prediction***

26 – 28 July 2011

World Weather Building

Organized by **Jamie Wolff** (DTC),  
**Cliff Mass** (UW), and **Brad Ferrier** (EMC)

# Participants (34 invitees)

Mike Barlage	National Center for Atmospheric Research (NCAR)
Steve Silberberg +	Aviation Weather Center (AWC)
John Brown	Earth System Research Laboratory (ESRL)
Brian Colle	Stony Brook University (SBU)
Geoff DiMego	Environmental Modeling Center (EMC)
Jim Doyle +	Naval Research Laboratory (NRL)
Jimmy Dudhia	National Center for Atmospheric Research (NCAR)
Mike Ek	Environmental Modeling Center (EMC)
Brad Ferrier	Environmental Modeling Center (EMC)
Boris Galperin	University of South Florida (USF)
Bill Gallus	Iowa State University (ISU)
Jongil Han	Environmental Modeling Center (EMC)
Song-You Hong	Yonsei University (YSU)
Yu-Tai Hou	Environmental Modeling Center (EMC)
Zavisa Janjic	Environmental Modeling Center (EMC)
Isidora Jankov	Earth System Research Laboratory (ESRL)
Jack Kain	National Severe Storms Laboratory (NSSL)
Gary Lackmann	North Carolina State University (NCSU)

Bill Lapenta	Environmental Modeling Center (EMC)
Steve Lord	Environmental Modeling Center (EMC)
Cliff Mass	University of Washington (UW)
Jeff McQueen	Environmental Modeling Center (EMC)
Shrinivas Moorthi	Environmental Modeling Center (EMC)
Louisa Nance	National Center for Atmospheric Research (NCAR)
David Novak	Hydrometeorological Prediction Center (HPC)
Hua-Lu Pan	Environmental Modeling Center (EMC)
Christa Peters-Liddard	NASA Goddard
Jainn Jong (Roger) Shi	NASA Goddard
Dave Stensrud	National Severe Storms Laboratory (NSSL)
Mark Stoelinga	3Tier
Wei-Kuo Tao	NASA Goddard
Greg Thompson	National Center for Atmospheric Research (NCAR)
Steve Weiss +	Storm Prediction Center (SPC)
Jamie Wolff	National Center for Atmospheric Research (NCAR)

# Agenda

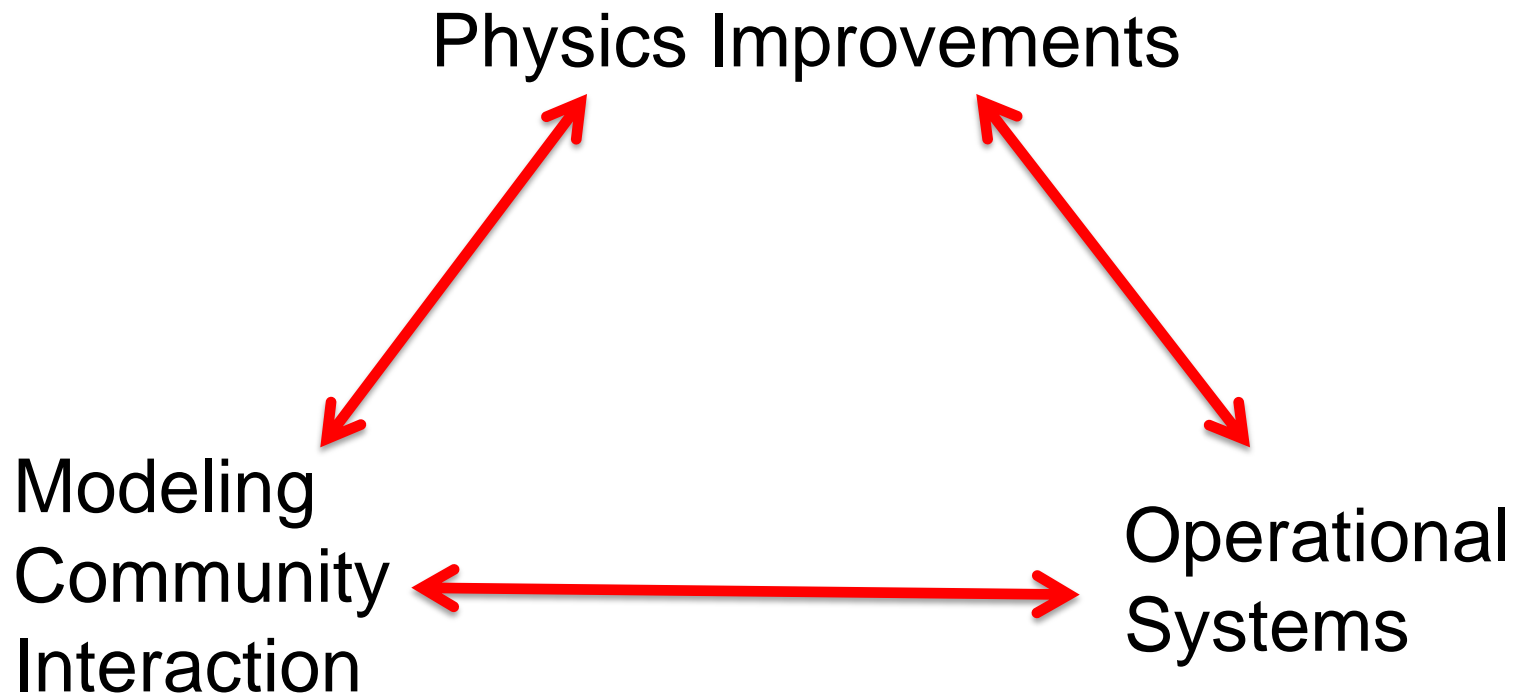
- Day 1 – State of physics parameterizations
  - Radiation, LSM, Microphysics, PBL+sfc layer, Cu, etc.
  - Plenary discussion
- Day 2 – Transition to operations
  - Views from NCEP service centers, DTC, wind energy, air quality
  - Views from academia, NRL, NSSL, ESRL, NCEP
  - Panel discussion
  - Plenary discussion: **The Way Ahead**
- Day 3 – Action Plan

# The Way Ahead

- Organizational
  - EMC advisory board
  - Regular working groups under advisory board (e.g., microphysics, PBL-sfc processes, convection, radiation, aerosols, horizontal diffusion, etc.)
  - Regular workshops
- Dynamic, 2-way interaction with research and user communities for sharing ideas & discussing priorities

# The Way Ahead

(Compliments of Dave Stensrud @ NSSL)



# The Way Ahead

- Request more computing resources
  - Make the case based on further analysis of:
    - CAPS ensemble (50 members, 4-km CONUS)
    - Additional retrospective runs
    - “Ensembles of opportunity” - current runs from EMC (HRW, NMMB), NSSL (CAPS), ESRL (HRRR)
  - Highest priority item: 4-km ensemble system
    - 20K processor-hours for 20-member operational 4-km ensemble (> 10X current)

# The Way Ahead

- Grants programs for high priority NWP science challenges (> \$2 Million)
  - NOAA announces/suggests areas where work is needed via “NOAA Announcements of Opportunity”
    - Collaborating investigator works closely with ops sponsor
  - Visiting scientist/student program
  - NOAA leadership in other community activities (conferences, workshops, teaching short courses)
  - NOAA leadership in working towards a community modeling system

# The Way Ahead

- Verification framework for physics improvement
  - Multi-tiered verification strategy facilitated by the DTC
    - High impact “benchmark” cases (1<sup>st</sup> step)
    - More extensive testing over longer time periods (2<sup>nd</sup> step)
    - Possibly tailored for different user communities
  - Establish a “Go!” (decision) index? (e.g., UKMO)
  - More emphasis on physical validation (some examples)
    - SURFRAD data sets
    - NASA field campaign data sets (esp for microphysics); improved by following DOE/ARM way of archival, distribution
    - Satellite data sets