

# NOAA THORPEX ANNUAL PROGRESS REPORT

June 30, 2005

**Project title:** *Impact of fundamental assumptions of probabilistic data assimilation/ensemble forecasting: Conditional mode vs. conditional mean*

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## SUMMARY

During the first year of the project, the efforts were directed toward preparation for the project, and toward the development of an interface between the Maximum Likelihood Ensemble Filter (MLEF) and the Global Forecasting System (GFS). A full-time Research Associate is hired to work on the THORPEX project, and the accounts for the NCEP computers ('snow' and 'frost') are recently obtained. Main accomplishments achieved during the first year of the project are:

- Design of the project web page [<http://www.cira.colostate.edu/thorpex/>], with links to the THORPEX web sites.
- Work on development of an interface between the MLEF and GFS at resolution T62 is close to completion. Preliminary results with simulated observations, designed to validate the system performance, and to address the ensemble size issue, are anticipated for July 2005. Due to the delay in obtaining the computer account, the inclusion of observation operator is postponed for 2-3 months (September 2005). The results, however, are still anticipated for the second year, as planned.
- Preliminary experiments are designed such that the NCEP inter-comparison observations from January 1 – February 28, 2004 are used. This will allow clear-cut comparison with other ensemble methodologies developed to work with GFS.
- Model error (bias) and parameter estimation are being included in the system.
- The MLEF code with capability of using the ensemble mean (instead of the mode) is developed.
- Preliminary results of the comparison between the conditional mean and mode, using a global shallow-water model, are presented at the EGU/THORPEX meeting in Vienna, Austria, in April 2005  
[Available at [ftp://ftp.cira.colostate.edu/Milija/posters/EGU\\_Vienna2005.ppt](ftp://ftp.cira.colostate.edu/Milija/posters/EGU_Vienna2005.ppt)]

The work is closely following the work plan for the first year. We anticipate first preliminary results in July 2005. Since the model error (bias) is already being included in the system, it will be straightforward to conduct the extended experiments with real observations. We work close with NCEP scientists Yucheng Song and Mozheng Wei, as well as with research groups at Univ. of Maryland (Istvan Szunyogh), NOAA/CDC (Tom Hamill, Jeff Whitaker), NRL Monterey (Craig Bishop), and others.