

# Weather Prediction Center (WPC) Action Plan

January 15, 2014

RECOMMENDATION	ACTION	STATUS
<p><b>1. Increase the use of high-resolution models in WPC operations.</b></p>	<p>1.1: Include in the annual HMT-WPC Winter Weather Experiment a focus on high-resolution models.</p> <p>1.2: Participate in the Spring Experiments of the SPC Hazardous Weather Testbed (HWT) and in the Aviation Weather Testbed, for which one of the areas of exploration is the use of high-resolution models.</p> <p>1.3: Participate in the development and evaluation of higher-resolution models by NCEP/EMC.</p> <p>1.4: Through the WPC-HMT, explore the use of convection-allowing numerical guidance in the forecast process and collaborate with field offices and research community on the topic.</p>	<p>1.1: The 3<sup>rd</sup> HMT-WPC Winter Weather Experiment was held in Jan-Feb 2013 with 23 participants from Weather Forecast Offices, NCEP Centers, NWS Headquarters, Earth Science Research Lab, and universities. The experiment included ensemble systems, testing of a new NCEP method for deriving model snowfall accumulations, and experimented with Day 4-5 winter weather outlooks. The participants also worked jointly with the Aviation Weather Testbed's (AWT) Winter Experiment with WPC providing ground-based forecast information and AWC providing forecasts for in-flight concerns.</p> <p>1.2: WPC was not able to participate in the SPC Spring Experiment in 2013 for budget reasons. Several WPC forecasters and others at the HMT-WPC participated in the AWC/AFWA Experiment in 2013. If FY14 budget allows we hope to participate with AWC and SPC this spring.</p> <p>1.3: There were relatively few model implementations in 2013 due to the WCOSS transition. In 2013 WPC participated in the RAP parallel evaluation (Dec.) and expects to participate in the SREF and HRRR evaluations scheduled for February 2014.</p> <p>1.4: WPC-HMT hosted the Flash Flood and Intense Rainfall Experiment in September 2013 focused on the use of convective-allowing NWP for flash flood prediction.</p>
<p><b>2. Increase the use of ensemble prediction techniques in WPC</b></p>	<p>2.1: Include in the annual WPC Winter Weather Experiment a focus on ensemble prediction.</p>	<p>2.1: The 3<sup>rd</sup> HMT-WPC Winter Weather Experiment provided participants with an opportunity to explore experimental AFWA and SREF ensemble systems. Also</p>

<p><b>operations and the provision of more ensemble-based probabilistic products.</b></p>	<p>2.2: Participate in the SPC/NSSL Spring Experiments of the Hazardous Weather Testbed, for which one of the areas of exploration is the use of ensemble forecast systems.</p> <p>2.3: Participate with NCEP/EMC in the development and evaluation of improved model-based ensemble forecast systems.</p> <p>2.4: Use the WPC-HMT to explore additional use of ensembles in the forecast process, including participation with the academic and research communities through the CSTAR program.</p> <p>2.5: Implement and improve upon a Probabilistic Winter Precipitation Forecast (PWPF) system based on a hybrid forecaster-based/ensemble-based technique.</p> <p>2.6: Enhance the WPC Probabilistic Quantitative Precipitation Forecast (PQPF) system.</p>	<p>forecasters were exposed to ensemble sensitivity approaches for determining the source of the forecast uncertainty. Some of these new ensemble systems are now used operationally by forecasters.</p> <p>2.2: WPC was not able to participate in the SPC Spring Experiment in 2013 for budget reasons. If FY14 budget allows we hope to participate with AWC and SPC this spring.</p> <p>2.3: Worked closely with EMC/NCO in the development and evaluation of new snowfall prediction variables in the SREF as well as the establishment of clusters in the SREF.</p> <p>2.4: WPC has 3 funded CSTAR projects for 2014 and 2 additional projects that decisions are still pending.</p> <p>2.5: The PWPF system became operational on Mar 13, 2012. WPC added Google Earth displays and additional forecast time steps in 2013.</p> <p>2.6: WPC has a FY14 milestone to extend the PQPF suite out to 7 days.</p>
<p><b>3. Modify performance plans to recognize more explicitly scientific collaboration, publication, and innovation. Reward those who expand the scientific envelope at WPC.</b></p>	<p>3.1: Increase visibility of science achievement and innovation in performance plans through a process consistent with the Collective Bargaining Agreement.</p> <p>3.2: Continue activities to encourage and reward WPC staff for contributing to the scientific advancement of WPC.</p> <p>3.3: Provide WPC forecasters the opportunity to participate in the activities of the HMT-WPC.</p>	<p>3.1: At the beginning of the annual performance cycle for FY2014, the performance plans of WPC staff were reviewed and modified to emphasize scientific activities and other innovation more explicitly. There are 6 formal projects DTB-FOB projects in place this year.</p> <p>3.2: Staff are expected to keep their supervisors apprised of their non-operational activities. Through a number of mechanisms, such as annual Isaac Cline Awards, CIYA, etc., staff are recognized for both their forecasting and non-forecasting accomplishments.</p> <p>3.3: Participation by WPC forecasters in the experiments of the HMT-WPC (such as the Winter Weather Experiment and the Atmospheric Rivers Retrospective</p>

	<p>3.4: Continue to encourage staff to make suggestions to WPC plans and programs, in accordance with Article 8 of the Collective Bargaining Agreement.</p>	<p>Forecast Experiment) are essential to the success of the experiments and have inspired scientific interest among the staff. FOB staff are also encouraged to work on other projects within the WPC-HMT and to provide support through web development and other activities.</p> <p>3.4: Through the NWSEO steward the staff provides input to the annual WPC planning process, with the steward being a key member of the planning team. Other staff input is encouraged as new products and services are developed. Recently, with encouragement by managers, several forecasters have initiated internal email discussions on portions of the WPC product suite with an aim to make improvements. Many staff are engaged in this process which may lead to changes to our products and is having a very positive effect on morale.</p>
<p><b>4. Increase collaboration with CPC, NHC, and SPC to expand WPC mission and eliminate seams.</b></p>	<p>4.1: Work with SPC in the development and implementation of the Mesoscale Precipitation Discussion (MPD) and the establishment of a Meteorological Watch Desk at WPC.</p> <p>4.2: Expand the testing of the SPC back-up capability for WPC's QPF products.</p> <p>4.3: In collaboration with CPC, explore extending WPC forecasts to days 8, 9, and 10.</p>	<p>4.1: The development of the WPC MPD included significant input from SPC. Operational implementation occurred on April 9, 2013 and has been highly successful. Over 200 MPD were issued in 2013 (about 1 per day) with many positive comments from field offices and external customers.</p> <p>4.2: WPC is developing a plan to transition the back-up system to AWIPSII in FY14.</p> <p>4.3: An FY14 NWS milestone is to develop a coordinated plan for implementation of Day 8-10 forecasts. WPC is a member and active participant on this task.</p>
<p><b>5. Define WPC involvement and work more closely with the NWS Operations Center (NOC).</b></p>	<p>5.1: Modify WPC product suite to provide additional products in support of the NOC.</p> <p>5.2: Investigate the creation of a medium-range Winter Weather Outlook patterned after the SPC severe weather outlook.</p>	<p>5.1: WPC is an occasional briefer on the daily NOC conference calls with NWS leadership. In addition, the NOC makes daily use of WPC products for a significant portion of their briefing. No new products have been requested of WPC for NOC use. Item completed.</p> <p>5.2: The medium-range Winter Weather Outlook was tested in the 2013 Winter Weather Experiment. Those Outlooks showed promise skill-wise, and users provided</p>

		positive feedback on their utility. WPC initiated contact with NWS OCCWS suggesting WPC move forward with development. As a result, it is an FY14 NWS milestone for WPC to develop an NWS prototype Winter Weather Outlook for days 4-7.
<b>6. Enhance Decision Support Services, especially with respect to the emergency management community.</b>	<p>6.1: Implement a Meteorological Watch Desk and a Mesoscale Precipitation Discussion and associated graphic to alert field forecasters and emergency managers about conditions favorable for flash flooding.</p> <p>6.2: Establish and outfit a room in the NOAA Center for Weather and Climate Prediction for the back-up Hurricane Liaison Team (HLT) for supporting FEMA and others in the federal emergency management community if needed during land-falling tropical cyclones.</p> <p>6.3: Create WPC products in kml files containing raster images for use in Decision Support activities, including training, by the NWS in Alaska, the Operational Proving Ground, and elsewhere.</p>	<p>6.1: Operational implementation occurred April 9 at 15z. Item completed.</p> <p>6.2: A dedicated HLT room was designated in NCWCP. WPC and FEMA staff met several times to discuss procedures and a practice briefing schedule. FEMA has requested WPC provide on demand briefings on major winter storms. Routine briefings were to begin on January 7, 2014, but did not occur due to a last minute problem on the FEMA end. The next regular briefing is scheduled for February 3.</p> <p>6.3: A portion of the WPC product suite has been made available in kml file format and is increased as resources allow. We were recently requested to provide the National Forecast Charts in kml for use by field offices in Decision Support briefings. We expect to begin issuance of those products, somewhat scaled down, on May 1.</p>
<b>7. Establish a Warning Coordination Meteorologist (WCM) position to further promote WPC customer interactions and Decision Support Services.</b>	<p>7.1: Pursue the creation of an WPC WCM position through the NOAA budget planning process.</p> <p>7.2: Expand the capabilities of WPC staff members to provide Decision Support Services for high-impact events upon request.</p>	<p>7.1: WPC has been unsuccessful at securing funding for this position but continues to advocate for it. The need for a WPC WCM was also recommended in the NOAA Service Assessment Report for Hurricane Irene (2011).</p> <p>7.2: As the NWS develops training to provide Decision Support Services (DSS) in support of the Weather-Ready Nation initiative of the NWS Strategic Plan, WPC staff will be provided opportunities to attend the training. Initially training may be focused on a group of 2-5 people especially interested in DSS activities, including briefings.</p>
<b>8. Expand visitor programs and student summer programs.</b>	8.1: Expand the WPC Visiting WFO and RFC Forecaster Programs, resources permitting.	8.1: Both programs were not funded in FY13 because of the severe NWS budget situation. Funding to restore them has been identified as a gap for FY14.

	<p>8.2: Foster and accelerate the collaborative partnerships through visiting scientist programs and CSTAR.</p> <p>8.4: Continue active participation in hosting summer student interns to the WPC.</p>	<p>8.2: Leverage trips to the Washington area by leading academics to include a visit to WPC. Emphasize WPC's open door policy with regard to visits. A number of visitors were attracted this way in 2013.</p> <p>8.4: WPC did not host any university students in summer 2013.</p>
<p><b>9. Enhance diversity.</b></p>	<p>9.1: Continue to encourage strong staff participation in DoC, NOAA, and NWS leadership development programs.</p> <p>9.2: Continue WPC's active outreach to school children in the Washington metropolitan area.</p> <p>9.3: Conduct a survey of WPC staff in which the staff evaluates the strengths and weaknesses of the WPC management team, in accordance with Article 8 of the Collective Bargaining Agreement. Provide feedback to the staff of the results of the survey through the WPC Director. Address employee comments provided in the survey.</p> <p>9.4: Continue to follow WPC's long-standing practice of hiring the best qualified candidate for each position, based on the quality ranking factors appropriate to the position.</p>	<p>9.1: Employees are encouraged to participate in additional opportunities as they arise.</p> <p>9.2: Outreach is ongoing at local schools and on site at WPC.</p> <p>9.3: The biennial survey was conducted in fall 2012 and WPC managers reviewed the results compiled by the NWSEO steward on Feb 15, 2013.</p> <p>9.4: Ongoing. No hiring was done in 2013.</p>
<p><b>10. Plan for the evolution of forecaster roles in the future.</b></p>	<p>10.1: Annually evaluate the unmet requirements WPC has and the potential to fulfill those needs and to determine training needs that would enable WPC to fulfill those requirements.</p> <p>10.2: Provide training opportunities to staff members to become more skilled in emerging roles, such as Decision Support Services.</p>	<p>10.1: As part of the development of the WPC Annual Operating Plan, the opportunities for WPC to develop new products and services with their associated training needs are identified at AOP planning meetings of WPC staff, and subsequently refined based additional input from WPC staff and the NCEP Director.</p> <p>10.2: WPC staff have received some training in Decision Support Services via the DSS sessions of the testbed experiments. We will pursue more formal training as it becomes available.</p>
<p><b>11. Address the shortage of information technology and scientific development staff in WPC.</b></p>	<p>11.1: Increase the number of WPC's Development and Training Branch (DTB) staff members and WPC-HMT staff as resources become available.</p>	<p>11.1: Additional WPC/DTB positions have been identified as a requirement, but no action has been taken. The use of FOB staff in DTB has been formalized (response 3.1) which mitigates the shortage somewhat. Longer term we hope to gain FTE resources and/ or transition some staff from FOB to DTB, but cannot be done in the near term.</p>

	<p>11.2: Leverage the developmental talent residing in the WPC Forecast Operations Branch (FOB).</p> <p>11.3: Include IT and scientific development capabilities in the hiring criteria for WPC forecast staff.</p> <p>11.4: Strive to find production efficiency measures to free up forecaster resources to work on developmental activities.</p>	<p>11.2: Several FOB forecasters are augmenting WPC/DTB's development capabilities. FOB staff have been involved in the IT development for the Met Watch Desk, the public archive of WWD products, webpage development, AWIPS II testing, and the streamlining of the AWIPS database. (Response 3.1)</p> <p>11.3: IT and scientific development capabilities are addressed in the hiring process both in the evaluation of candidate résumés and directly in the interview process.</p> <p>11.4: WPC continues to explore the modification of the Basic Weather forecast graphics to incorporate NDFD forecasts of weather type. WPC is evaluating a streamlined Model Diagnostic Discussion to free up forecaster resources for the production of a MPD Discussion.</p>
<b>12. Expand WPC involvement with targeted observation programs.</b>	12.1: Explore ways of improving the effectiveness and efficiency of the WSR Programs.	12.1: In cooperation with NCO and EMC, streamlined Atlantic WSR procedures were adopted for the 2013-2014 season. The Pacific WSR has been discontinued.
<b>13. Evolve WPC's surface analyses to include more mesoscale detail.</b>	13.1: Explore methods to incorporate into WPC surface analyses the forecasts of the Rapid Refresh (RAP), NOAA's next generation, hourly updated forecast and assimilation system, implemented May 1, 2012.	13.1: WPC has not been able to take on this project due to higher priority projects.
<b>14. Evolve forecast verification metrics as model resolution increases.</b>	14.1: Through the HMT-WPC, further the development of object-oriented verification techniques having application to WPC products.	14.1: The DTC Met Tool (including MODE) is running in the WPC-HMT. An interactive display of WPC and model precipitation forecasts has been created with additional models and time periods added. This is the final stages before being added to our webpage for public use.