

THE HEALTH OF THE NATIONAL WEATHER SERVICE COOPERATIVE PROGRAM – ONE STATE’S PERSPECTIVE

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1. INTRODUCTION

The National Weather Service’s Cooperative Program, a nationwide network of thousands of citizens; mostly volunteers, gathering daily climate information on temperatures, precipitation, snowfall and specific weather events, has now been in continuous operation for over 110 years. Data from this amazing network have always been important in monitoring and describing our climate, but in the past two decades data from the Cooperative Program have emerged as the single best source for tracking long-term changes and variability in our climate (National Research Council, 1998) and an essential part of the nation’s drought monitoring activities. With the deployment of the Automated Surface Observing System (ASOS) at airports across the country and the resulting loss of snow measurements from many of these sites, the Cooperative Program also emerged as the only source of snowfall data covering the entire nation.

During the 1990s and at the same time that ASOS was being deployed, the National Weather Service (NWS) began restructuring offices and personnel. Instead of one primary forecast office in each state supported by smaller airport weather stations that took local airways weather observations and adjusted forecasts for local applications, the country was divided into more than 100 forecast areas, each with a more or less equally staffed “forecast office” with similar responsibilities. With these new offices, the areas of responsibility sometimes crossed the boundaries of state lines and generally were associated with the coverage area of each WSR-88D weather radar.

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Nationally, the number of radar units, forecast offices and NWS weather forecasters increased with this reorganization, but the total number of weather offices and personnel decreased – a necessary part of the Modernization plan.

2. COOPERATIVE PROGRAM MANAGEMENT CHANGES

With this large change in organization came a change in the management of the Cooperative Program. For many years the Cooperative Program had been managed with a small staff at each of the NWS regional headquarters and with one local “Cooperative Program Manager” in each state. Occasionally areas included multiple states or parts of states. Each Cooperative Program Manager’s (CPM) sole responsibility was maintaining all aspects of the Cooperative Program in his or her area (and there weren’t many “hers”). This included visiting each station routinely, maintaining and upgrading weather instruments, checking data quality, training and equipping new observers, and recording and updating all “metadata” for each station. The CPMs worked very independently and were normally not included in other activities of their local office. This changed dramatically during the 1990s, however. With office and staffing changes, the CPM position was abolished and replaced by a “Data Acquisition Program Manager” (DAPM) supported by a small staff of “Hydrometeorological Technicians” (HMT). This small team had a variety of tasks to perform each day at each office of which the operations of the Cooperative Program and climatological data collection was just one part. Furthermore, the whole staff was to be directed by their local “Meteorologist in Charge” which meant the Cooperative Program responsibilities would have to complete for resources in an environment where the daily forecast and warning responsibilities were the main priorities.

As State Climatologists became aware of this planned staffing and management change early in the 1990s, there was great concern that this could lead to a deterioration in climatological data quality.

The concerns were expressed in a position paper published by the American Association of State Climatologists (NCDL, 1992). In particular, the AASC was concerned that the focus on the Cooperative Program could be diluted by distributing its management and care over a larger number of individuals whose primary tasks were supporting the operational focus of each office – severe weather warnings and public weather forecasting. The resources of the Cooperative Program could be intermingled with that of the overall office and could be used for other purposes. Also, there was the concern that in the new staffing structure of each office, the main entry level positions were the “Hydrometeorological Technicians” but that most incoming employees had their eyes set on future weather forecasting jobs, not the collection of climatological data. In all, climatologists were greatly concerned that cooperative observers and their data would not get the necessary attention and resources needed to maintain the program at the level needed to assure high quality data nationwide. The effort for a State Climatologist to actively support the function of the Cooperative Program within their state also appeared to be compromised. Instead of having a single contact, there may be many (20 or more for some states) involved in small ways in Cooperative Program management making it nearly impossible for coordination.

3. COOPERATIVE PROGRAM EVALUATION

The new style of management of the Cooperative Program has now been in place for several years, and enough time has passed to look back and see if there have been any discernable impacts on the network and its data. Beginning in early 2002, the Colorado Climate Center began a multi-faceted evaluation of the Cooperative Program. This initial evaluation has been limited to Colorado and parts of adjacent states. Sampling from other parts of the country and other NWS regional jurisdictions would be desirable but beyond the current scope of this small project. As this paper is being written, this evaluation has not been completed and final results have not been compiled. However, we would like to describe our progress to date and the methods that we are employing in hopes of eventually completing a more comprehensive appraisal.

The following methods of evaluation are being performed or considered.

3.1 Qualitative Assessment

- 1) A survey of Cooperative Observers to identify areas of satisfaction and dissatisfaction. Results will be separated into two groups:
 - a) those that have been in the program only since the new management system began, and
 - b) those that have been in the program at least 15 years to have experienced several years of each type of management.
- 2) Survey of “Meteorologists in Charge”. This will also be divided into two groups – those that have only been involved in office management since the re-organization, and those that were involved both before and after the change.
- 3) Survey of DAPM’s and HMT’s. Again, these will be separated into two groups for analysis – those that were involved in or aware of the Cooperative Program under previous management versus those that have only worked with the program in recent years.

The qualitative assessments will all be helpful in assessing attitudes about the Cooperative Program and its management. However, we are aware that there may still be biases and attitudes influenced by management decisions and not indicative of the actual health of the Cooperative Program. Therefore, the quantitative assessments are especially important for evaluating the status of the Program.

3.2 Quantitative Assessment

To the best of our ability within a very limited budget we are attempting to assess the following specific attributes of daily data from the Cooperative Program. At this point only data from Colorado are being evaluated (since we have original data in our office) and only for the years 2002, 1992, and 1982 for comparison and evaluation of changes.

- 1) The number of cooperative observers and the rate of change in these numbers over the previous decade.
- 2) The number of site visits each year to Cooperative Stations (not sure metadata is complete enough to verify these statistics).
- 3) The number of Historical Climate Network stations that have been discontinued or

significantly changed in each of these decades.

- 4) The number of late or missing reports
- 5) The amount of missing data on reports that are filed on time
- 6) Comparison of data quality (this is very difficult as National Climatic Data Center QC methods have changed over this 20-year period).
- 7) Number of remarks recorded on observation forms.
- 8) The number of observers reporting special weather events (fog, hail, glaze, damaging winds, etc.)
- 9) The number of observers reporting snowfall and snowdepth
- 10) Number of stations that report data daily to NWS (very hard to determine for past years)

4. PRELIMINARY RESULTS

So far none of the evaluations are totally completed and the task has shown itself to be larger than first envisioned. It may also prove difficult to determine if the change in management is the sole reason for any changes that are observed as other changes are occurring simultaneously. However, what we have observed so far is encouraging. While the enthusiasm for the Cooperative Program definitely varies from office to office within the National Weather Service, the program continues to appear relatively healthy and relatively consistent from area to area. The strategies for staffing Cooperative Program management varies significantly from office to office with some DAPM's doing much of the hands on work of the Cooperative Program themselves while others delegate it among all or parts of their staff. Despite differences in staffing and management, most offices are accomplishing site visits at a rate at least equal and possibly greater than pre-modernization. Another very positive change is the large number of stations reporting daily in support of NWS operational activities.

Initial results of observer surveys show a wide range of reactions. Many observers have been able to tell that a change in management has occurred. Some have noted an increase in site visits and personal contacts from the NWS

offices. At the same time, some have been very disappointed in the change. Few observers quit because of the change but some considered quitting. The main cause of disappointment seemed to be related to personal acquaintances and friendships with long-time CPM's that ended as a result of management and staffing changes.

Data quality and quantity assessments are underway but are not yet complete. Of the four Forecast Offices currently being evaluated, one has seen a notable increase in the number of cooperative observers while three have had little change or a slight decrease. There appears to be a small improvement in the quality of snowfall observations, but the number of remarks and the number of observers that note significant weather events like hail or damaging winds seem to have decreased. Remarks have decreased greatly in some areas, possibly because of greater utilization of computerized data entry forms.

Even as we work to complete this evaluation, a new change is occurring. The position of DAPM is being phased out and replaced by an "Information Technologist". So far, one of the four offices we are evaluating is experiencing this change. As this change begins to occur, the responsibility for oversight of the Cooperative Program is being shifted to the Meteorologist in Charge. Increasingly, the MIC's across the country are being asked to take a more active role in Cooperative Program Management. In the long run, this may prove to be a great benefit to the Program and a boon to climatologists. Modernization of the Cooperative Program is also approaching. Each year for at least a decade it has been spoken about, but now real progress may be imminent. This could very much affect the future health of the Cooperative Program.

5. REFERENCES

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