20.2 NAVIGATING ACROSS LAKE PARADIGM; ONE FORECAST OFFICE'S EXPERIENCES IN SUCCESSFULLY TRANSFORMING OPERATIONS TO MEET THE DEMANDS OF NDFD

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1. INTRODUCTION

The National Oceanic and Atmospheric Administration's (NOAA) National Weather Service's (NWS) migration to a National Digital Forecast Database (NDFD) (NWS, 2003) and the supporting Integrated Forecast Processing System (IFPS) software (MDL, 2003) has brought a tremendous change to the operational forecast environment. The Graphical Forecast Editor (GFE) (FSL, 2003) has been the cornerstone to this software package and has created a significant operational challenge for Weather Forecast Offices (WFOs) throughout the country. For many years, operations at WFOs were geared around the issuance of text products at pre-defined release times. Shift assignments and work hours were tied to composing and disseminating these products. In the current NDFD era, a new methodology is employed with a 5 km gridded digital forecast database (Glahn and Ruth, 2003). Updates to any portion of the database are driven by the receipt of new data or changing weather events. Therefore, the database is always current, allowing customers to access desired forecast information from the NDFD, as opposed to customers being constrained by the NWS's predefined issuance times of text products.

As one would expect, this change in forecast methodology requires a significant change in the way the WFO operates. The decision was made at WFO Taunton, Massachusetts to "think outside the box" and completely overhaul the office's forecast operations to meet the demands of NDFD. This would require the examination of compressed work schedules and moving away from the traditional public, aviation, and marine forecast desks, which have been the norm at many WFOs throughout the years. The most significant change would be to the operational forecaster, who would no longer be manually composing text products, but rather, would be creating digital forecast grids from which web based graphics and a suite of text products would be derived.

This paper will present the approach WFO Taunton has taken to best meet the challenging demands brought about by this transition to a national digital forecast database.

2. THE PARADIGM SHIFT

The Leadership Team at WFO Taunton, which is comprised of the Meteorologist-in-Charge, Warning and Coordination Meteorologist, Science and Operations Officer, Electronics System Analyst, Union Steward, Senior Service Hydrologist, Information Technology Officer, and, Administrative Assistant, believed that two significant hurdles to accomplishing a successful transition existed. Local office training, related to IFPS and GFE, would take a high priority to ensure the proficiency of forecasters, HMTs and Interns. More importantly, forecasters would need to understand the changing landscape brought about by NDFD and become accustomed to the new way of doing business.

2.1 Historical Perspective

Since the 1970s, most forecast offices tied their operations to the traditional text forecast products. Typically, there were three shifts per day, each eight hours in length, and at least two forecasters on duty around the clock. There was also one Meteorological Technician (HMT) or Meteorologist Intern (Met Intern) who was responsible for a mixture of surface, radar, and upper air observations as well as data quality assurance, and had little direct input into the forecast process. Traditionally, there was one Public Forecaster and one Aviation Forecaster. Some coastal forecast offices also utilized a Marine Forecaster. The start and end times of each shift were largely tied to the issuance times of the forecast products.

2.2 Tackling Training Requirements

For many forecasters, the transition to

NDFD was a trip into the unknown. The concept of creating digital forecasts was something completely unfamiliar to the NWS' operational forecasters. The old way of doing business, namely the method of interpreting model data then manually typing forecast products, was quickly transitioning to a method of graphically manipulating 5-km grids for your forecast area.

The key to this transition was training. The shift into grid-based operations could not occur without an understanding of NDFD and a desired level of proficiency with the new software; in effect, knowing the "knobology" of the system. NDFD training began with the "train-the-trainer" concept. Each focal point attended residence training at the National Weather Service Training Center (NWSTC) and upon return to the office, provided one-on-one training with the staff on GFE. As more forecasters were trained, they in turn trained others on the staff, including HMTs and Interns, who were new to the forecast process. Additional training on forecast philosophy and operations was provided through group training sessions, as well as through teletraining sessions which dealt with such topics as forecast collaboration.

As GFE was implemented to support NDFD, there was growing frustration among the forecasters, who quickly discovered that the usual way of doing business at the WFO would never be the same. In essence, there were two responses to this change at WFO Taunton. Many embraced this change and were determined to make the transition to NDFD work. Others, who were in the minority, were uncomfortable with the new way of forecasting and felt threatened by any change in operations. Thus, the WFO Taunton Leadership Team was presented with a unique opportunity to reexamine its shift structure and base shift operations coverage and work assignments on NDFD, while helping the staff adjust to the new operational environment.

3. IMPLEMENTING CHANGE

After reviewing several options, the Leadership Team narrowed their decision on operations to three modes. The current public, aviation, marine structure was the first option, since some staff members did not see a reason to change operations at all. Another approach was forecasting by elements, whereby each forecaster is assigned to complete forecast grids through seven days for pre-defined elements (temperature, sky cover, wind, for example). The third option was the Short term - Long term approach, where the database is split into parts and each forecaster completes all grids within a specified time frame. The forecast team would decide where the short term ends and the long term periods begin, based on the weather situation of the day. Typically, the first 24 hours would be covered by the Short Term forecaster, and the Long Term forecaster would concentrate on the forecast beyond that. In each of these modes of operation, the HMTs and Met Interns assisted with monitoring current weather and making first period forecast updates, something that was not routinely done before. Before making a decision on which operational mode to transition to, the Leadership Team opted for a three month trial period, in which each Forecaster-In-Charge (FIC) was permitted to choose one mode of operation for his or her shift and assess the strengths and weaknesses of each. The FICs were encouraged to experiment among all three modes of operations, and share their findings with the Leadership Team as well as the rest of the staff.

At the same time, nearly everyone agreed that the current shift structure would not work in the NDFD era. Many forecasters were consistently working past their normal eight hour shift. An immediate change was made to allow for Compressed Work Schedules (CWS), where Senior Forecasters worked ten hour shifts and General Forecasters, HMTs, and Met Interns worked nine hour shifts. In addition to reducing accrued compensatory time, this change allowed for routine overlap of operational shifts, and cut down on overtime which was previously necessitated by severe weather. It also allowed for an hour or two of administrative time for the forecasters on benign weather days, permitting additional time for training or research. Most importantly, however, it resulted in a noticeable improvement in employee morale, which would be key to implementing further change.

After the trial period ended, the Leadership Team made its decision to use the Short Term - Long Term approach, which was employed more successfully by a majority of the staff during the trial period. The benefits of this change were seen immediately. The workload for each member of the forecast team was reduced, now that the seven-day database was split into three manageable parts with the HMT/Met Intern working on the first six to twelve hours, the Short Term Forecaster working typically through the first 24 or 36 hours, and the Long Term Forecaster beyond that. Consistency between elements in each time period also improved, now that one person was responsible for all grids within a

specified time range. This approach also met the demands of NDFD the best, since the receipt of new model data or changing weather events meant that portion of the database could be updated quickly.

4. CONCLUSION

WFO Taunton forecast operations have undergone a successful transformation in the past two years, to meet the change brought about by NDFD. Shift operations coverage and work assignments are now tied to the receipt of observational and model data, rather than on product-based issuance times, as was done in the past. The Short Term - Long Term mode of operations allows for maximum flexibility of the work force, incorporating all members of the forecast team and reducing the impact on shift coverage by the management staff. The utilization of HMTs and Met Interns into the forecast process ensures the office's database always reflects current conditions. The use of CWSs has also led to a significant improvement in employee morale, by allowing for overlap on all operational shifts and additional administrative time for research, outreach, and training.

5. REFERENCES

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