The continuing evolution of severe weather forecasting in the United States: observations and forecasts, watches and warnings.

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For fifty years, the National Weather Service of the U.S. has advised the populace of the likely onset of hazardous weather. While the roots of the NWS severe weather warning programs go back to the late 1800s when efforts were made to detect and advise on the landfall of hurricanes, it was only after several tornadoes produced very high losses of life in May and June 1953 did the U.S. Congress direct the then U.S. Weather Bureau to become proactive in tornado forecasting and the provision of such information to the public. To say that the Weather Bureau was reluctant to do so is to put it mildly. While military forecasters had demonstrated some remarkable skill in predicting occurrences of tornadoes in the late 1940s, the senior administration of the Weather Bureau did not believe that such predictions could be done routinely or systematically, and that even if they could, the ensuing panic would be worse than the event. As we now know, those administrators were wrong on both counts.

Today National Weather Service Offices and national forecast centers routinely forecast and monitor the occurrence of a wide range of hazardous weather. While the hazardous phenomena associated with tropical cyclones and with severe thunderstorms remain central, forecasters also address the possibility of flash flooding events, wildfires and forest fires, severe winter storms, and occurrence of exceptionally warm or cold temperatures. Through long standing partnerships with schools, agencies such as the Red Cross, and the media (especially television), the public has been trained on the meaning of severe weather forecasts and the proper actions to take for each type of event. As a consequence, even though the population of the U.S. has increased significantly in the last 50 years, the annual death toll due to severe weather is far less than it was in the early 1950s.

The presentation will begin briefly review the history of severe weather forecasting and warning in the U.S. It will then describe today's situation, where an extensive array of forecast offices, special forecast centers, a national radar network, and an elaborate communication network combine to produce timely, accurate watches and warnings. The talk will emphasize the range of partnerships that are necessary for this system to work. The partners range from the local television weathercaster, to the state and county emergency managers, to local law enforcement personnel, to a legion of volunteer spotters. The importance of training the general public will also be discussed.

Reference: Bradford, Marlene, 2001: Scanning the Skies – A history of tornado forecasting. The University of Oklahoma Press, Norman, Oklahoma. 220 pp. ISBN 0-8061-3302-3.