

Scientific weather observations began in 1849 when the Smithsonian Institution developed a network of 150 weather observers who submitted their observations by telegraph. These observations enabled the development of weather maps. By 1860 the network had grown to 500 weather observation stations and was providing a daily weather report to the Washington *Evening Star*. This service was interrupted by the Civil War.

In 1869 the Telegraph Service, located at Cincinnati, began collecting weather data and producing weather charts which enabled regular weather forecasting. And, in 1870 the National Weather Service was established under the U.S. Army Signal Service.

The Johnstown Flood on May 30, 1889, which killed 2,209 people and wrecked 1,880 homes, made weather predicting a national priority.

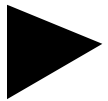
Predictions were prepared at Washington, D.C., daily, at 10 a.m. and 10 p.m. for twenty-four hour periods. The weather forecasts were telegraphed to Signal Service stations, railway officials, newspapers and others. This was before radio, television, the internet or cell phones. The forecasts were shared with the public by displaying flags. Four flags were used for this purpose:



No. 1. A white flag, indicated clear or fair weather.



No. 2. A blue flag, indicated rain or snow.



No. 3. A black, triangular flag, indicated a change in temperature; when placed before flag number 1 or 2 it indicated cold weather; placed after flag 1 or 2, warmer weather; it was not displayed when the temperature would not vary four degrees from the temperature of the same hour of the preceding day.



No. 4. A white flag with a black square in center, indicated there would soon be a sudden fall in temperature. This signal was only displayed if the temperature was predicted to fall to 45 degrees, or lower. It was usually ordered to be flown at least twenty-four hours in advance of the cold wave. When flag number 4 was displayed flag number 3 was always omitted.

The signals were to be read from the top of the pole down.

On July 31, 1889, the Punxsutawney *News* announced their new service of providing the weather “Indications,” for local residents. They