

## EDITORIAL

**o The Presidents' Day Snowstorm of 18–19 February 1979: Its History and Significance at *Monthly Weather Review***

On 18–19 February 1979, a rapidly deepening cyclone moved up the East Coast of North America, eventually dumping up to 60 cm of snow in eastern Virginia, Maryland, and Delaware. The National Weather Service was caught unawares, with the operational forecast models at the time missing the cyclogenesis event entirely, and therefore, the public forecast omitting reference to the possibility of heavy snow. Because the storm happened on the Presidents' Day holiday in the United States, the storm became known as the Presidents' Day snowstorm.

Eighteen months later, in September 1980, Lance Bosart of the State University of New York at Albany (now the University at Albany—State University of New York) would submit a paper to *Monthly Weather Review* in which he performed a meticulous analysis of the observations studying the storm's development, the failure of the operational models to capture the event, and mesoscale conditions for the heavy snow. That *Monthly Weather Review* article (Bosart 1981) and a subsequent one (Bosart and Lin 1984) showed that the preconditioning of the environment by fluxes from the ocean produced the conditions favorable for rapid cyclogenesis and that the absence of a latent heat flux parameterization in the models likely contributed to the forecast bust.

At the same time, Louis Uccellini was working as a research meteorologist for the NASA Goddard Space Flight Center in Maryland. He lived through the Presidents' Day Storm, the incredible 4–5 in.  $\text{h}^{-1}$  (10–13  $\text{cm h}^{-1}$ ) snowfall rates, and the busted forecast. In September 1982, he and his colleagues submitted the first of what would be five papers on the storm (four in *Monthly Weather Review* and one in the *Bulletin of the American Meteorological Society*; Uccellini et al. 1984, 1985, 1987; Whitaker et al. 1988; Hibbard et al. 1989) that attempt to understand the synoptic-scale mechanisms for cyclogenesis.


From a scientific perspective, their debates between the relative importance of diabatic processes versus dry dynamics ushered in now-standard analysis approaches such as frontogenesis, quasigeostrophic and semigeostrophic diagnosis, ageostrophic circulations, model verification against observations, potential vorticity, and air-parcel trajectories. They took these concepts—many of which worked best in theoretical or idealized models—and applied them to the real atmosphere. It seems quaint now, but this was a big leap of faith in the 1980s. Of course, the results were successful, and these techniques are commonly used in operational forecasting today.


More important, the discussion fueled research interest in extratropical cyclones, their rapid development, and their associated precipitation. As a result, another outgrowth of this early research on extratropical cyclones was investment from the National Science Foundation and the Office of Naval Research in understanding the causes of these rapidly developing cyclones. Thus, the Presidents' Day storm helped to open all kinds of research and educational doors, jump-started funding for cyclone-related research, and resulted in the creation of the Cyclone Workshop, a scientist-run workshop that is focused on cyclones.

Moreover, from the perspective of *Monthly Weather Review*, this debate and the resulting papers raised the bar on future submissions to our journal and its credibility. After this period, it was becoming less fashionable to write a purely descriptive paper showing some surface maps with frontal waves, some upper-level maps with some Rossby waves, and a lot of hand-waving speculation. This series of papers arising from this robust scientific discussion elevated synoptic meteorology to a more rigorous framework.

As part of the 150th volume of *Monthly Weather Review* (celebrated as “MWR150”) we revisit the Presidents' Day snowstorm to help to tell a bit of the story of our journal, as well. The two principals in this story and I—along with the help of others—participated in a podcast to capture the history of this period from their perspectives (Fig. 1). We also make available for the first time the video animation of the storm from Hibbard et al. (1989), which was an amazing piece of scientific visualization (Fig. 2),

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 Supplemental information related to this paper is available at the Journals Online website.

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FIG. 1. Lance Bosart and Louis Uccellini before recording their podcast on 17 Nov 2021.

well ahead of its time. Both the podcast (<https://doi.org/10.1175/MWR-D-22-0012.s1>) and the historical animation (<https://doi.org/10.1175/MWR-D-22-0012.s2>) can be accessed in the online supplemental material.

We hope that you find these resources valuable and see that this research published in *Monthly Weather Review* during the 1980s helped to define a discipline, to motivate the need to mobilize resources for research, to promote new research methods, and to serve as the venue for scientific debates.

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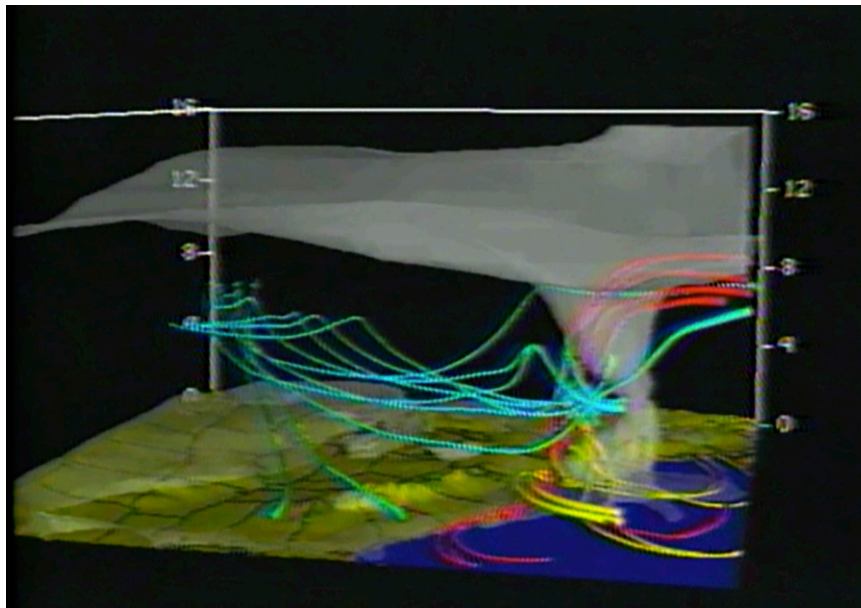


FIG. 2. A screenshot at 8 min 24 s into the Hibbard et al. (1989) video of the  $2 \times 10^{-5} \text{ K hPa}^{-1} \text{ s}^{-1}$  potential vorticity surface in gray and colored trajectories representing various airstreams.

and Brandon Crose for creating the podcast. I thank Gwendolyn Whittaker for her support in finding resources and managing the celebrations for MWR150 at the American Meteorological Society.

*Data availability statement.* The podcast and 4-D McIDAS animation are available in the online supplemental material for this editorial.

David M. Schultz  
Chief Editor

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