THE
ATMOSPHERICRESERVOIR
Examining the Atmosphere and Atmospheric Resource Management

UFO? NO, UFS!

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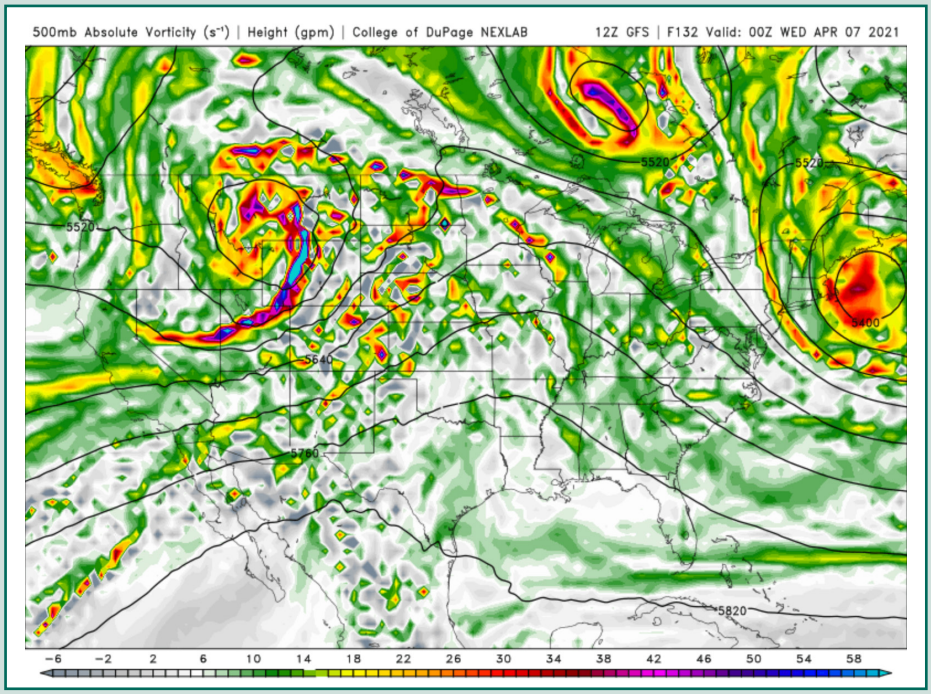

In March, one of the National Oceanic and Atmospheric Administration's (NOAA) numerical weather prediction models received significant upgrades. The Global Forecast System, commonly referred to by its acronym GFS, was given enhanced snowfall location modelling, and improved heavy rainfall and hurricane genesis forecasting abilities. The GFS now has greatly improved resolution, moving from 64 to 127 vertical levels. Because weather systems are so dynamic, any increase in a numerical model's vertical levels helps to pinpoint the intensity of precipitation at a given location. These upgrades were made possible by sharing computer code openly with the scientific community. In what's called the Unified Forecast System (UFS), open-source code is available to anyone wishing to develop or use the software.

The main purpose for sharing this computer code is to further a connection between the research and operational communities. For decades there has been an effort to use the results from research projects and experiments and apply them to real-world applications such as improved weather forecasts. The newest GFS model (version 16) has been coupled with an ocean wave model called Wave Watch III and this has extended the current wave forecast period from 10 to 16 days and streamlined the delivery of both weather and oceanic forecast products.

Future improvements in weather model forecast accuracy will undoubtedly involve factors such as the Earth's ocean-atmosphere interactions. What relevance would that have to North Dakota's weather? We need to better understand how weather systems "upstream" of our state are being changed and modified by ocean-atmosphere interactions. Before making landfall off the western coast of the U.S., storm systems can strengthen, weaken, or change course due to water temperature, ocean currents and other factors. In addition, atmospheric scientists are trying to predict other changes, such as moisture content, as storm systems move onto the western U.S. coast, travel over numerous mountain ranges (where some of that moisture is precipitated out) and finally pass over North Dakota. As you can see, we're just beginning to understand how interconnected our Earth really is.

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