# Cray’s Vision of Data-centric Computing for Meteorology

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As the volume of data, both from observations and from model output, increases, weather centers are likely to become much more focused on the ability of HPC systems to handle and use data efficiently and somewhat less focused on things like how many ranks a single high-resolution model can scale to. The ability to quickly analyze the output from ensemble forecast systems, to apply AI techniques to identify severe weather features in model output and satellite imagery and to improve forecast accuracy through improved data assimilation methods all require attention to the storage on HPC systems. Data analytics and AI techniques have become part of the toolkit and will be used in a variety of ways to complement traditional numerical methods, but the I/O patterns they generate differ substantially from our traditional workloads.

Concurrent with this broadening in workloads, the storage hierarchy on HPC systems will continue to get deeper, with non-volatile memory joining flash-based SSDs and high capacity HDDs. How can NVM technology be used to accelerate data-intensive meteorology work? Where should flash based storage go and how should it be used? How do we know what we need and how can we manage it when we have it?

This talk will present Cray’s vision for a flexible, data-centric architecture that brings data to compute resources in new ways to enable productive supercomputing in meteorology.