

Democratizing Access to Atmospheric Modeling with WRF employing NSF Cloud Computing Resources

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Introduction

The Weather Research and Forecasting (WRF) Model is a set of versatile Numerical Weather Prediction (NWP) software components. Deploying and running WRF often poses users with the challenges of:

- . Configuring an environment in which to compile WRF
- . Acquiring the hardware in which to run the model

Unidata and its collaborators at SIPI and NTU have developed a deployment strategy which overcomes these challenges as part of an initiative to provide Tribal Nations with the capacity for environmental monitoring and data sovereignty.

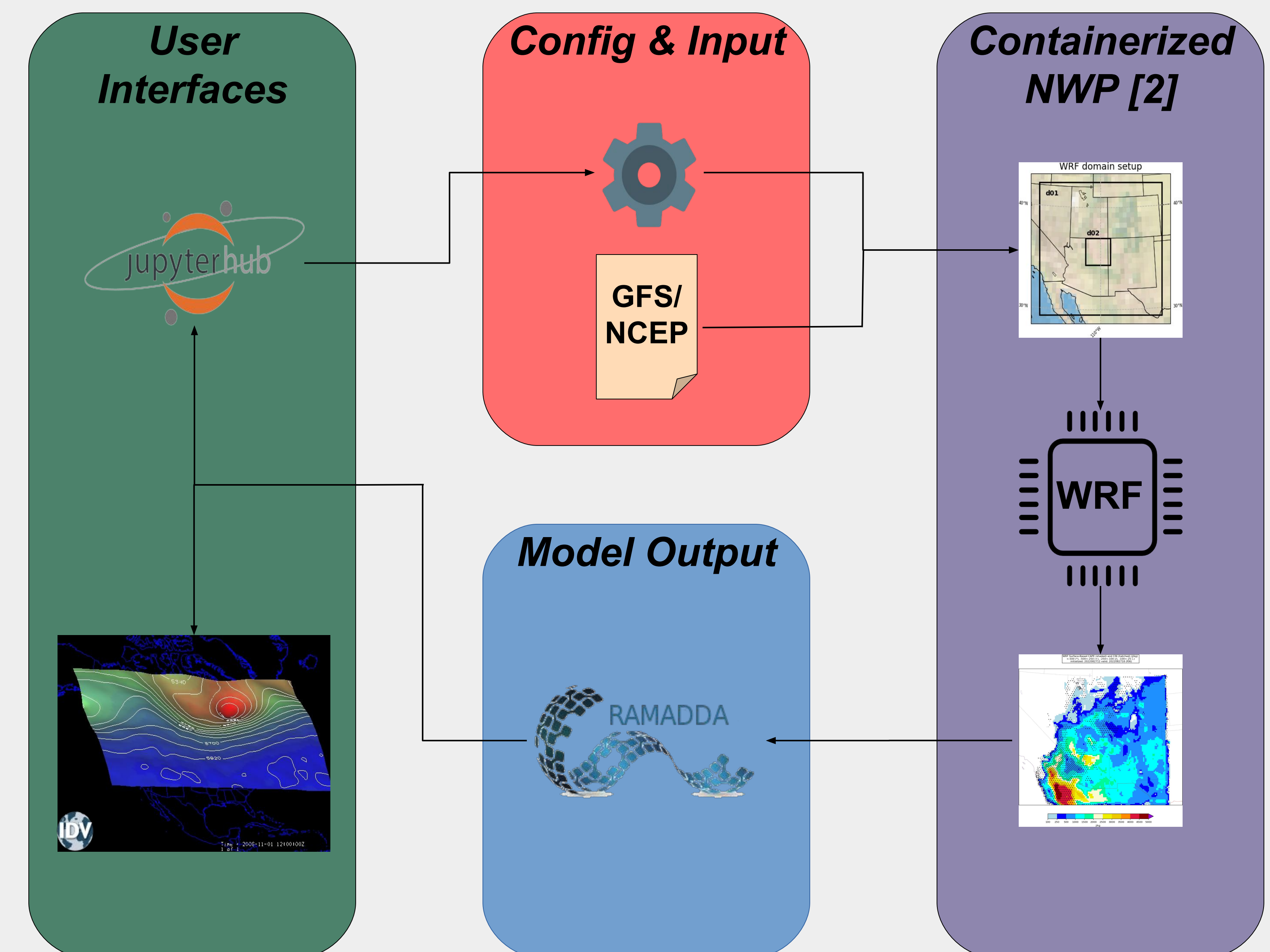
Containerization

- . Pre-configured environment
- . Deployment depends only on docker and common tools
- . Better numerical reproducibility [1]

JetStream2 Cloud

- . JupyterHub front end
- . Powerful hardware
- . RAMADDA serves data to the Unidata Integrated Data Viewer (IDV) and other clients

WRF on JetStream2



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References

- [1] Hacker, J. P., Exby, J. et al (2017). A Containerized Mesoscale Model and Analysis Toolkit to Accelerate Classroom Learning, Collaborative Research, and Uncertainty Quantification, *Bulletin of the American Meteorological Society*, 98(6), 1129-1138.
- [2] <https://github.com/NCAR/container-dtc-nwp>