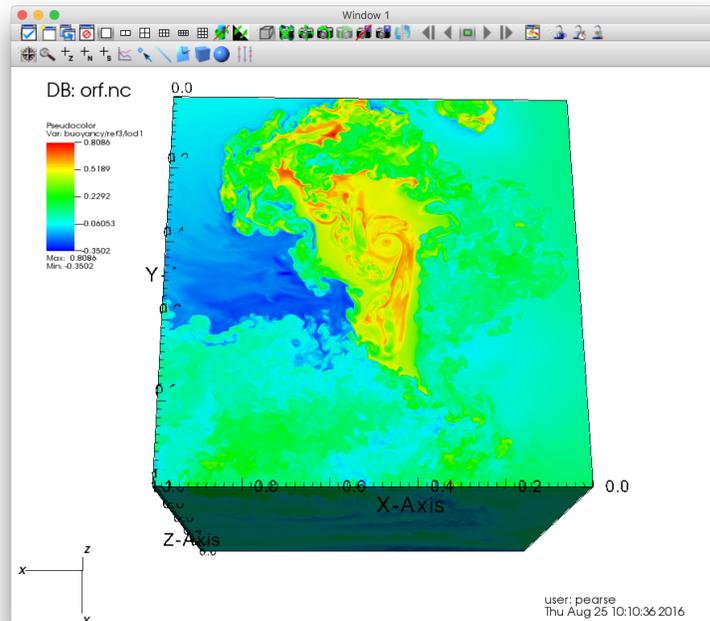


About the Data

The *orf-tornado.09100.nc* sample file contains a single timestep of a first of its kind F5 tornado simulation. The grid in this file is 485x501x280 on x, y, and z axes; and is comprised of cells that are 30 meters on a side. This region is a subset of a larger domain that contains the supercell thunderstorm that spawns the tornado in this file.

Parameterizations for this model run were taken from soundings of the May 24, 2011 tornado outbreak outside of Oklahoma City. The simulation was performed using CM1 v16, running on Blue Waters (20,000 processing cores). It was executed by Leigh Orf (UW-Madison/CIMSS), Robert Wilhelmson (UIUC/NCSA), and Louis Wicker (NSSL).



A top-down view of the variable 'buoyancy' at REF = 3, LOD = 1

Variable	Description	Unit	Min	Max
buoyancy	Buoyancy	m/s ²	-.350241	0.808616
dbz	Simulated Reflectivity	dBZ	-39.7876	75.8124
prspert	Pressure Perturbation	Pa	-9193.34	1861.08
qc	Cloud Water Mixing Ratio	kg/kg	0	0.012437
qr	Rain Water Mixing Ratio	kg/kg	0	0.0599694
uinterp	Wind Velocity (X)	m/s	-93.97	96.2388

vinterp	Wind Velocity (Y)	m/s	-101.625	89.2558
winterp	Wind Velocity (Z)	m/s	-39.6079	81.2231
vortmag	Vorticity Magnitude	s/{}-1}	9.83717e-6	1.75778
xvort	Vorticity along X axis	s/{}-1}	-1.19701	1.28542
yvort	Vorticity along Y axis	s/{}-1}	-1.00485	1.21383
zvort	Vorticity along Z axis	s/{}-1}	-1.48395	1.61141

Converting it to WASP

Once the data conversion tools have been built, the tornado data can be transformed into the WASP format with the following command:

```
ncdf2wasp orf-tornado.09100.nc myFile.nc
```

Where *myFile.nc* will be the name of your newly created WASP database. This WASP database can be converted back to its original NetCDF format with the following command as well:

```
wasp2ncdf myFile.nc reconstructedTornado.nc
```

Where *reconstructedTornado.nc* is the name of your newly generated NetCDF file. While there are command line arguments for both of these data conversion tools, they are unnecessary here and can be ignored.

Visualizing the WASP Data

To visualize your newly created WASP tornado, you can build the included Visit plugin for WASP data, or view it in Vapor 3.0. To build the Visit plugin, navigate to the [pathToThisTarball]/plugins/visit/WASP directory and follow the directions in the readme.

Note that WASP's wavelet encoding have two different parameters for compression:

- 1) Refinement Level (ref)
- 2) a Level of Detail (LOD)

A *high* Refinement Level (ref) will give a more resolved reconstruction of the compressed data. Conversely, a *low* Level of Detail will give a more resolved reconstruction. The highest 'ref' and lowest 'LOD' will give a perfect reconstruction of the originally converted data. These settings are selectable in the variable menus in Visit. Use them to achieve your desired results.