

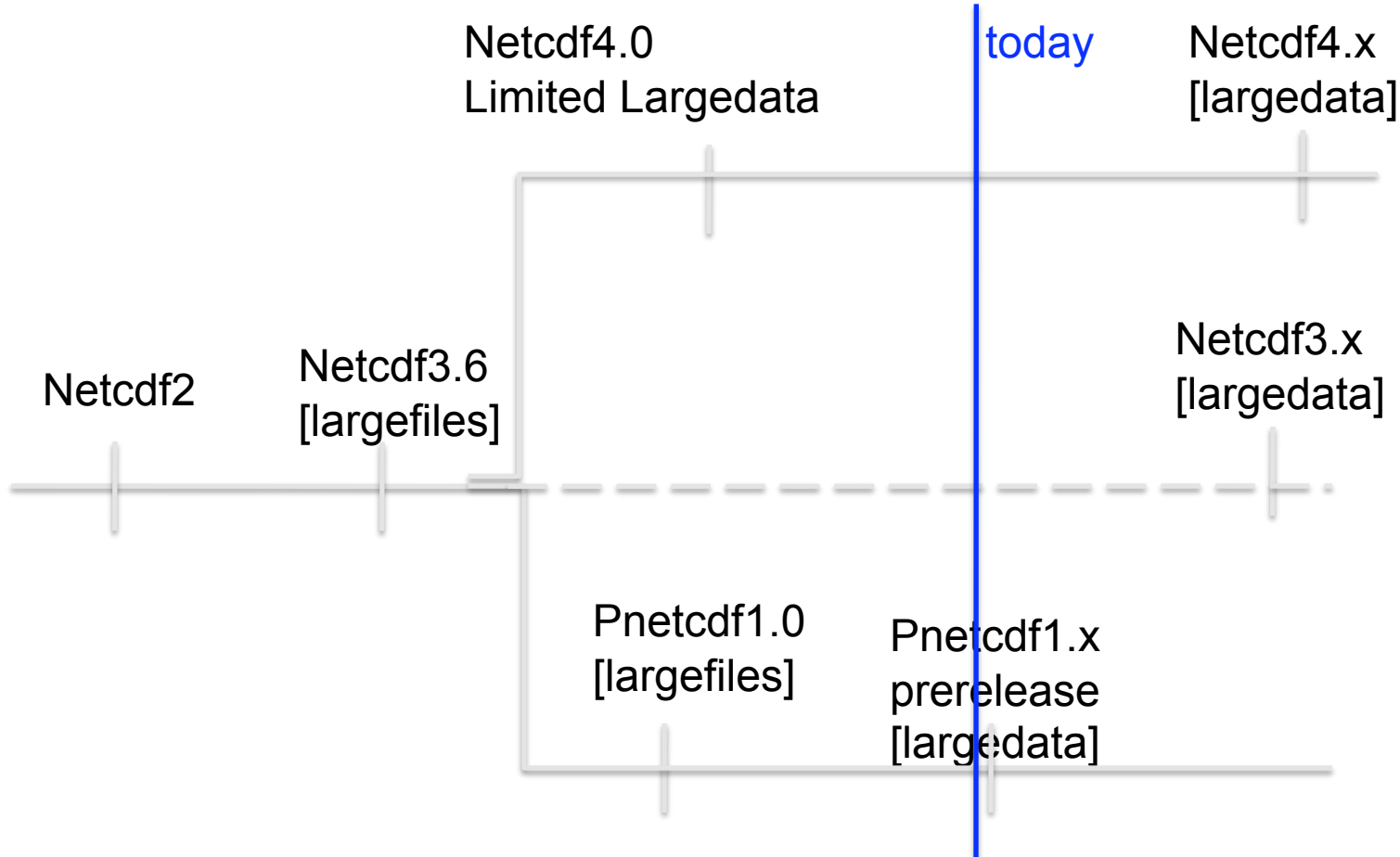
Update on Data Services for GCRM

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Collaborators: Prabhat, Mark Howison (LBNL)

NetCDF Status

Real large data support coming soon!



NetCDF key points

▶ Netcdf4 is

- Based on HDF5 data model which provides features such as compression, chunking, and theoretically has no size constraints
- backward compatible with netcdf3
- Current fortran API has 64 bit issue

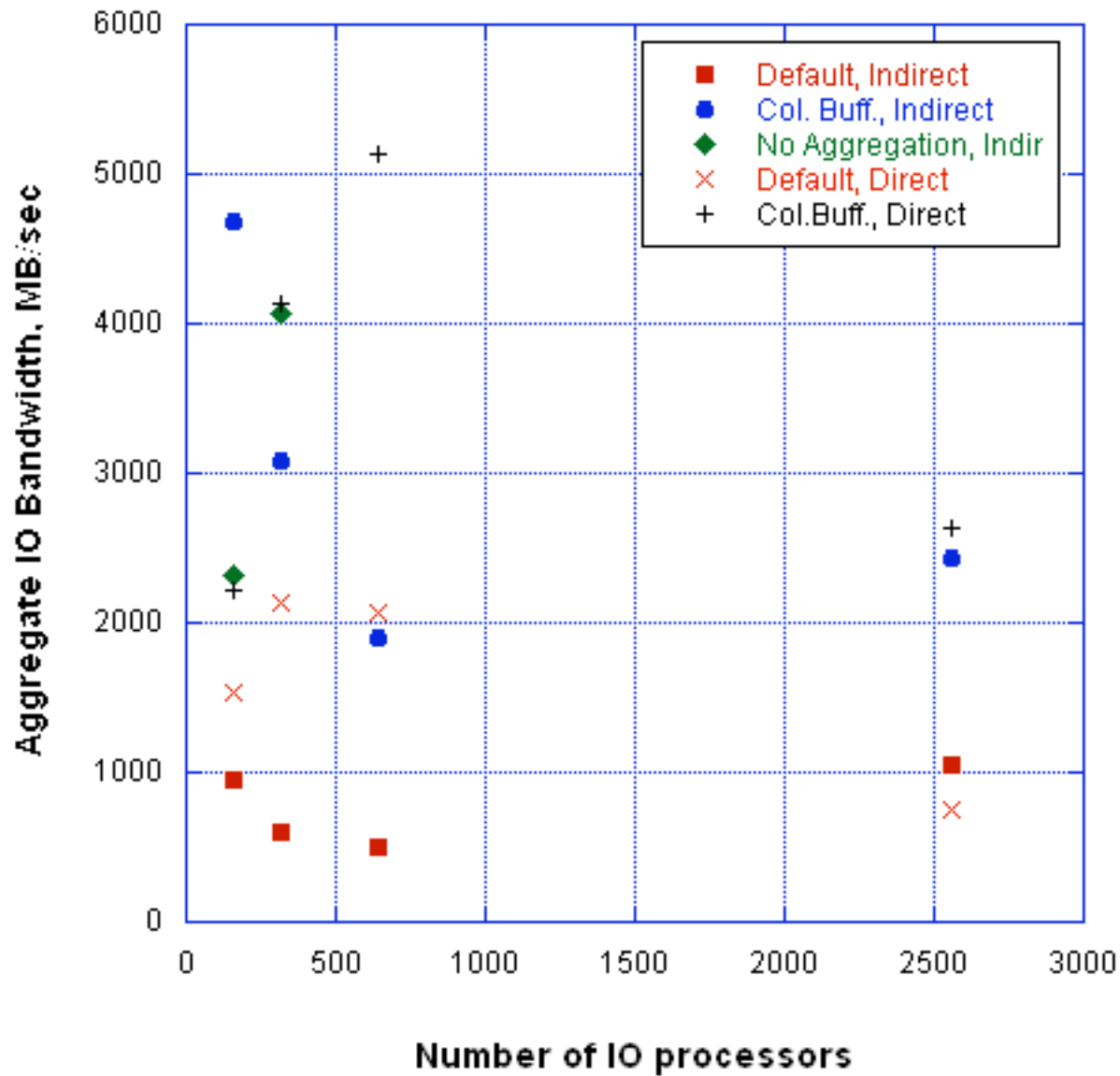
▶ Netcdf3

- will be maintained but is no longer considered the primary path forward

▶ Pnetcdf prerelease (magic number 5)

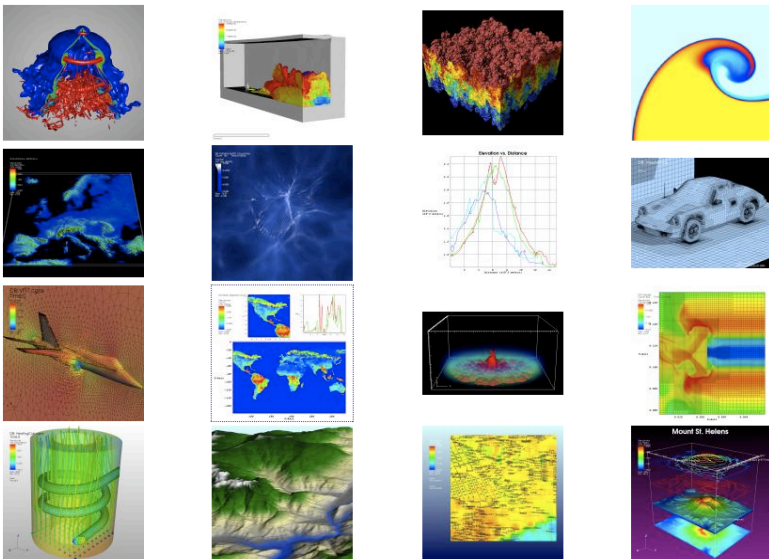
- Fully supports large data
- not compatible with netcdf3/4 until netcdf3/4 upgraded

IO Performance, 2560 processors, Franklin



Analysis/Visualization for large data

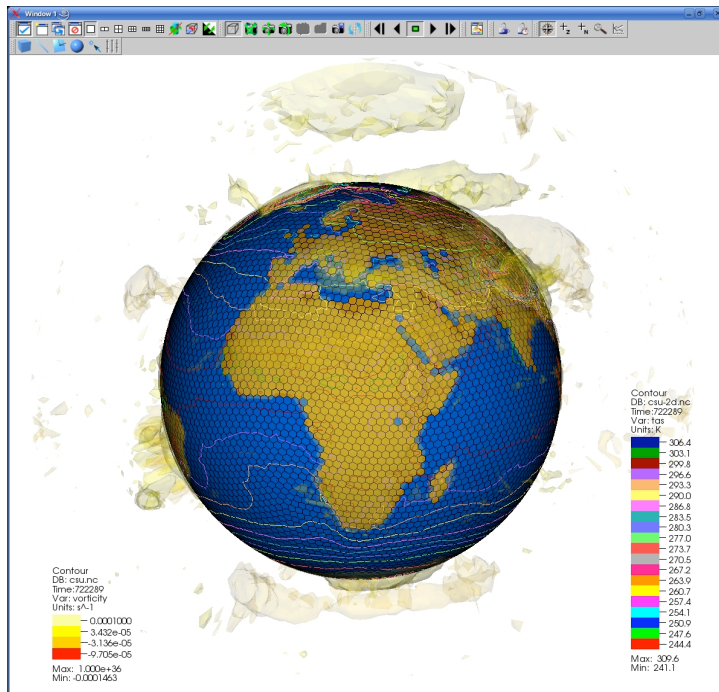
- ▶ Parallel IO
- ▶ Parallel Processing / Rendering
- ▶ Remote processing to avoid data transfers
- ▶ Zooming into high density data



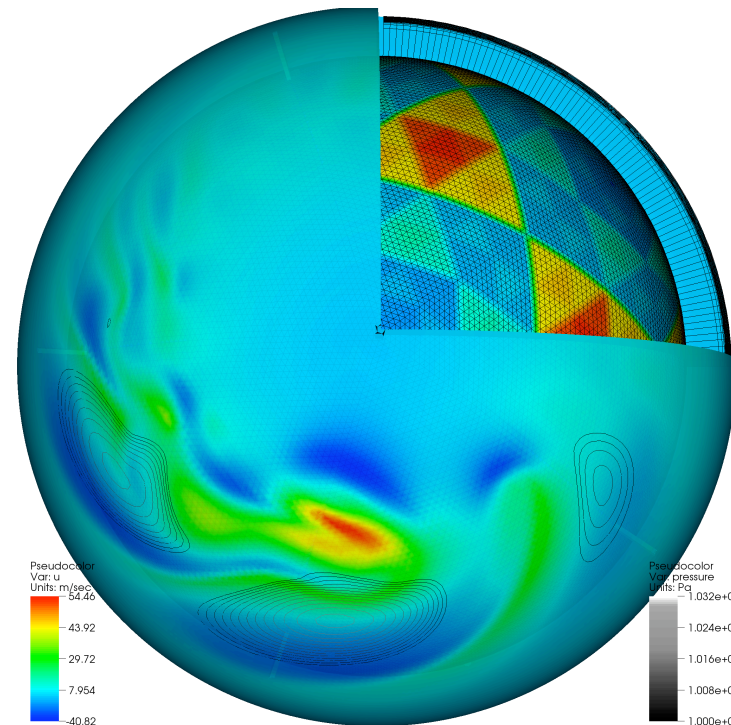
Visit

- 2d,3d general mesh viewer
- parallel, distributed architecture
- visualization and analysis
- not strong on climate data (yet)

3D visualization of geodesic data



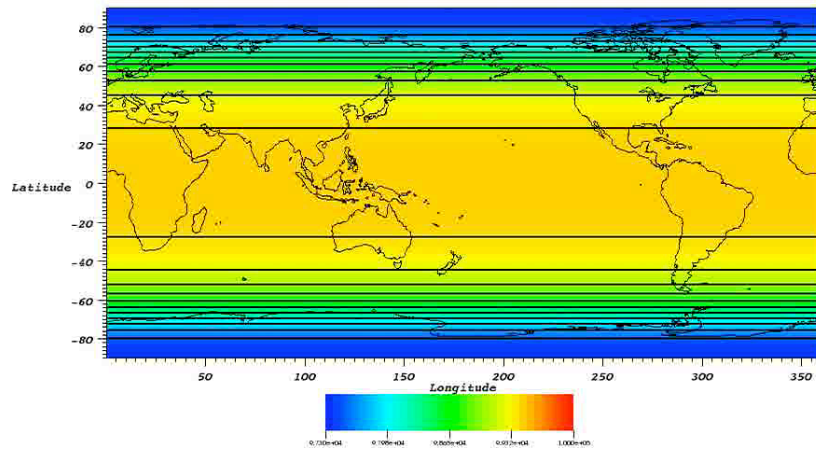
3D isocontours of vorticity.



Composite plot of multiple mesh types and variables in the geodesic grid. Cell area (2D cell-centered data) and wind velocity (3D corner-centered on layers) data is shown by pseudocolor plots. Pressure (3D cell-centered on layers) is shown by contour lines.

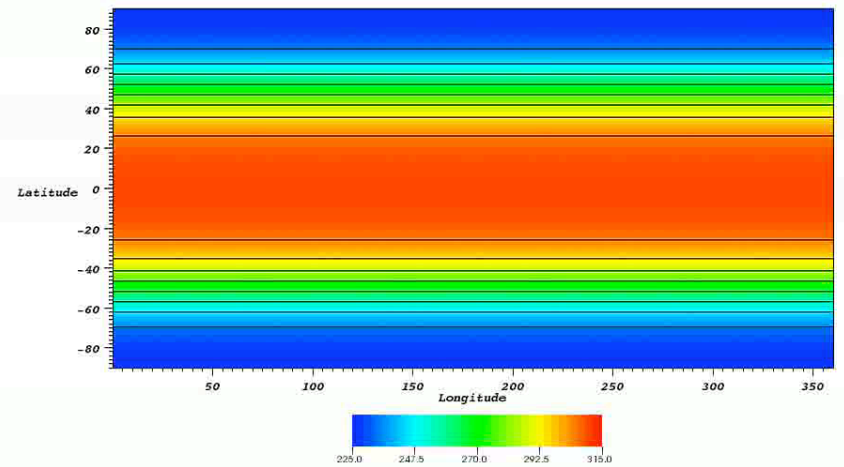
Plots and Movies of geodesic data

Pressure



D8: temperature_19010101_000000.nc
Time:0

Potential Temperature



Plots and movies courtesy of Prabhat (Ibni)