



The UGRID Reader - A ParaView Plugin for the Visualization of Unstructured Climate Model Data in NetCDF Format

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We present the UGRID Reader, a visualization software component that implements the UGRID Conventions into Paraview. It currently supports the reading and visualization of 2D unstructured triangular, quadrilateral and mixed triangle/quadrilateral meshes, while the data can be defined per cell or per vertex.

The Climate and Forecast Metadata Conventions (CF Conventions) have been set for many years as the standard framework for climate data written in NetCDF format. While they allow storing unstructured data simply as data defined at a series of points, they do not currently address the topology of the underlying unstructured mesh. However, it is often necessary to have additional mesh topology information, i.e. is it a one dimensional network, a 2D triangular mesh or a flexible mixed triangle/quadrilateral mesh, a 2D mesh with vertical layers, or a fully unstructured 3D mesh. The UGRID Conventions proposed by the UGRID Interoperability group are attempting to fill in this void by extending the CF Conventions with topology specifications. As the UGRID Conventions are increasingly popular with an important subset of the CF community, they warrant the development of a customized tool for the visualization and exploration of UGRID-conforming data.

The implementation of the UGRID Reader has been designed corresponding to the ParaView plugin architecture. This approach allowed us to tap into the powerful reading and rendering capabilities of ParaView, while the reader is easy to install. We aim at parallelism to be able to process large data sets. Furthermore, our current application of the reader is the visualization of higher order simulation output which demands for a special representation of the data within a cell.