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Using Progressive Resolution to Visualize large Satellite Image dataset

yuan ho and mohan ramanmurthy
Unidata/UCAR, boulder, United States (yuanho@ucar.edu)

Unidata's Integrated Data Viewer (IDV) is a Java-based software application that provides new and innovative ways of displaying satellite imagery, gridded data, and surface, upper air, and radar data within a unified interface. Progressive Resolution (PR) is a advanced feature newly developed in the IDV. When loading a large satellite dataset with PR turned on, the IDV calculates the resolution of the view window, sets the magnification factors dynamically, and loads a sufficient amount of the data to generate an image at the correct resolution. A rubber band box (RBB) interface allows the user to zoom in/out or change the projection, forcing the IDV to recalculate the magnification factors and get higher/lower resolution data. This new feature improves the IDV memory usage significantly. In the preliminary test, loading 100 time steps of GOES-East 1 km 0.65 visible image data (100 X 10904 X 6928) with PR, both memory and CPU usage are comparable to generating a single time-step display at full resolution (10904 X 6928), and the quality of the resulting image is not compromised. The PR feature is currently available for both satellite imagery and gridded datasets, and will be expanded to other datasets. In this presentation we will present examples of PR usage with large satellite datasets for academic investigations and scientific discovery.