January 2016

Data Analysis Services Group - *January 2016*

News and Accomplishments

VAPOR Project

Project information is available at: http://www.vapor.ucar.edu

WASP Award:

KISTI Award:

Development 2.x:

We started preparing for the stable release of 2.5, fixing knows bugs, etc.

John worked with Scott to try and troubleshoot a memory related error in the Flow integrator that has proven problematic for Scott's work with Joanie Kleypas. Unfortunately, the problem could not be pinned down and had to be tabled for later (there was suspicion that it may be related to nVidia's OpenGL driver).

Development 3.0:

Continued to review and improve various components of the 3.0. This month we focused on the "barbs" renderer and its supporting classes.

John cleaned up the RegularGrid class, and its derivatives, in preparation for development of a CurvilinearGrid class. A new StructuredGrid pure virtual base class was introduced.

John also implemented a set of functions for computing Wachspress coordinates (generalizations of barycentric coordinates) for planar polygons. The Wachspress coordinates will be used by the CurvilinearGrid class for interpolation, and determining whether a point is inside or outside the grid.

Administrative:

Education and Outreach:

Software Research Projects

Feature Tracking:

Climate data compression:

Samuel Li, a PhD student from U. of Oregon, returned to continue his data compression research, started last summer. Samuel is investigating the SPECK wavelet coefficient encoder. John arranged for Samuel to collaborate with Allison Baker, John Dennis, and Haiying Xu on CAM data compression. Baker et al published a paper in 2013 that evaluated a number of lossy compression techniques applied to CAM outputs. A unique component of the paper was its evaluation methods: the work assessed whether a compressed data set that was the member of an ensemble could be distinguished from other ensemble members. The original paper did not include wavelet based compression.

During the course of the evaluation performed by Samuel it was determined that the original Baker paper used flawed methods of comparison. Baker et al are now attempting to devise improved methods. It was also determined that a number of the CAM variables present numerical stability issues for the wavelet transforms. They are highly discontinuous in nature and should probably not be compressed with transform based methods.

Samuel also began looking at temporal domain compression using data sets provided by Pablo Mininni.

John and Samuel are not meeting weekly with Baker et al to make as much progress as possible while Samuel is at NCAR (through March).

Production Visualization Services & Consulting

- xxx

ASD Support

- xxx

Publications, Papers & Presentations

- xxx

Systems Projects

Data Services

- xxx

Accounting & Statistics

- xxx

Security & Administration

- xxx

System Monitoring

- xxx

System Support

ML - Data Analysis & Visualization Clusters

- xxx

GLADE Storage Cluster

- xxx

Data Transfer Cluster

- xxx

Experimental Clusters

- xxx

Test Clusters

Storage Usage Statistics

NWSC+GLADE+Usage+Report

Other

- xxx