

**LLNS Subcontract: B614665**  
**Quarterly Report**  
**POP: October 1 – December 31, 2015**

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**1. Bug fixes**

- 1.1. BUG #1645: Blank spots on solid fillareastyle with fillareaindices.  
The solid fillareastyle was treated as a pattern style in that each level was extracted and rendered individually. Because of a bug in vtkBandedPolyDataContourFilter this results in blank spots. In this fix we trigger merging of levels which fixes the problem for solid fill.
- 1.2. BUG #1106: wrong dataset created from nc file with decreasing lat and bounds.  
We did not handle correctly a nc file which specifies bounds and has decreasing latitude or longitude. Added test for this problem.
- 1.3. BUG #1720: Computing geographic projection bounds uses open interval.  
Inside VTKPlots.fitToViewport the geographic projection bounds is computed by generating a 2D array of points inside the original data and then doing a geo projection. The problem was that the array of points was using an open interval using the original data bounds, so it was missing the last values.
- 1.4. BUG #1728: Proj4 wraps longitudes to -180,180.  
We pass two additional options to proj4  
+over to not wrap longitude values  
+lon\_0 to set the central meridian
- 1.5. Fix plot wrapping issues with patterns/hatches
- 1.6. Fix animation of projected plots
- 1.7. Fix plotting for projected plots for invalid values
- 1.8. Fix VTK bug related to geo-transformation

**2. New Features**

- 2.1. Add patterns/hatches support for boxfill and meshfill plots.
- 2.2. Add support for line stipple patterns and line widths for isoline plots
- 2.3. Support for Xcode version 7 (OS X 10.10 and higher)
- 2.4. Worked towards updating PROJ4 version in VTK
- 2.5. Preparation towards release 2.4

**Work planned for second quarter (January 1 – March 31, 2016)**

1. Make 2D plots interactive and use Context2D work for ticks and labels
2. Work on documentation for UV-CDAT (VCS, CDMS, Build)
3. Add support for matrix plots
4. Add support for brushing and linking in 2D plots
5. Help improving the performance of CDMS
6. Initial work on bringing other grid types in CDMS

**Labor effort by category through December 31, 2015:**

<b>Labor Category</b>	<b>Hours</b>	<b>Rate</b>	<b>Total Cost</b>
R&D Engineer 1	215.4	\$112.59	\$24,251.89
R&D Engineer 2	220.2	\$132.14	\$29,097.23
R&D Leader 1	49.8	\$175.78	\$8,753.84

**Reimbursable Costs October 1 – December 31, 2015:**

**\$62,102.96**