Satellite-related AWIPS II TTR Candidates

This document lists capabilities and configurability in the currently fielded version of the Advanced Weather Interactive Processing System (AWIPS) that are not in AWIPS II, or not correct in AWIPS II.

For satellite imagery and products, ability to set the product legend in XML
In AWIPS I, it was possible to set the legend (text that appears in the lower right corner of the display pane upon loading a product or image) via a flat text file that was committed during localization (through localDepictKeys.txt). In AWIPS II, the SatelliteConstants class would have to be extended to add or change a product legend. This capability should be incorporated into the valid XML elements for the satelliteImageryStyleRules.

Expanding color bar labeling to map raw values to display values
In AWIPS I, it was possible to define the raw-to-display mapping as a sequence of pipe-delimited couplets containing a raw value and the corresponding display value (which appears during sampling and overlays the color bar) via a flat text file that was committed during localization. This allowed for the overt definition of piecewise functions (through localImageStyle.txt). At display time, the sampling was either interpolated between the defined values or matched to the closest defined couplet (see subsequent item). Currently, AWIPS II conversions are handled through the class extensions of the UnitConverter. This capability should be incorporated into the valid XML elements for the satelliteImageryStyleRules, and, to preserve the formulaic functionality, replacing the UnitConverter class with Python scripts able to be accessed and modified without rebuilding the code base.

Add SCALABLE and DISCRETE as acceptable range scale attribute values
Not all range scales are LINEAR or LOGARITHMIC. If custom raw-to-display mapping is introduced as described above, AWIPS II should allow the sampling to maintain discrete values to override the default behavior of scaling between the defined couplets.

Suppose for raw values 0 to 10, we define display values as 5 and 15, accordingly. For a DISCRETE type, raw value 7 should return 15, whereas, if SCALABLE, raw value 7 would return 12. This style more adequately represents the functionality in AWIPS I.

It should also be possible to define and display piecewise linear functions, including those which are discontinuous in the display value range. For example, for raw values 0 to 10, scale raw values 0 to 5 as 2 to 4, and for raw values 6 to 10, scale raw values as 10 to 40.

Image differencing (derived products) should be permitted in display value space
This is applicable to the 11-3.9, 11-12, and 11-13 micron band differences.

For satellite imagery, the individual bands are delivered linear in raw data "byte" space, but piecewise linear in display space. Performing the subtraction, or other image manipulation, in raw space, then scaling it to a display range, is error-prone without first converting each data item in the derived product to the defined displayUnits (running through what are currently extensions of UnitConverter). The derived product should retrieve the scaling from XML (as described above) or a Python script (currently permissible, but not implemented). The implementation of this was not entirely correct in AWIPS I, which used a multiplier and scalar "mx+b" formulation in the localization localDepictKeys.txt file.

Last modification: Jordan Gerth, CIMSS, September 1, 2011