Abstract

Polar-orbiting multi-band meteorological sensors such as VIIRS and MODIS pose substantial challenges for taking imagery "the last mile" to forecast offices, scientific analysis environments, and the general public. To do this quickly and easily, the Cooperative Institute for Meteorological Satellite Studies (CIMSS) at the University of Wisconsin has created an open-source, modular application system, Polar2Grid. This bundled solution automates tools for converting various satellite products like those from VIIRS and MODIS into a variety of output formats, including GeoTiffs, AWIPS, and NinJo forecasting workstation compatible TIFF images. In addition to traditional visible and infrared imagery, Polar2Grid includes three perceptual enhancements for data transforms is done for pre-calculation of destination grid data transforms is done to create clean input. Polar2Grid is partitioned into three major segments: a Front End which abstracts away the specifics of a given instrument and provides well-conditioned swaths and geolocation; a Back End which converts the gridded data to display ranges and exports additional swath-specific enhancements are applied to create clean input. Post-processing enhancements such as square-root curves are applied to the gridded data, depending on metadata including data type and channel.

Examples

- VIIRS multi-band over TX in AWIPS
- VIIRS True/False Color CREFL in re.ssec.wisc.edu, courtesy S. Batzli & R. Dengel
- VIIRS DNB Histogram and Dynamic ERF Enhancement developed by Curtis Seaman

Fork Polar2Grid @ GitHub!
https://github.com/davidh-ssec/polar2grid

Polar2Grid is built in the Python scripting language, using open-source software including GDAL, libtiff, PROJ.4, cython, numpy, and matplotlib. Community users are welcome to download ready-to-run Linux binary bundles, or build it from scratch on their own systems. Contributors can use github to obtain the full source repository, implement and share new capabilities, and request their integration into future releases. Developer documentation is at https://github.com/davidh-ssec/polar2grid.

The ready-to-run linux binary bundle can be found at: http://cimss.ssec.wisc.edu/cispp/

Collaboration With The PyTroll Team

The Polar2Grid team is now working closely with the PyTroll team. The PyTroll group has succeeded in building a collection of open source python packages for working with satellite imagery and building a community around these tools. Our teams have realized how similar our projects are and will be combining efforts to bring the direct broadcast and satellite imagery community better tools with more features.