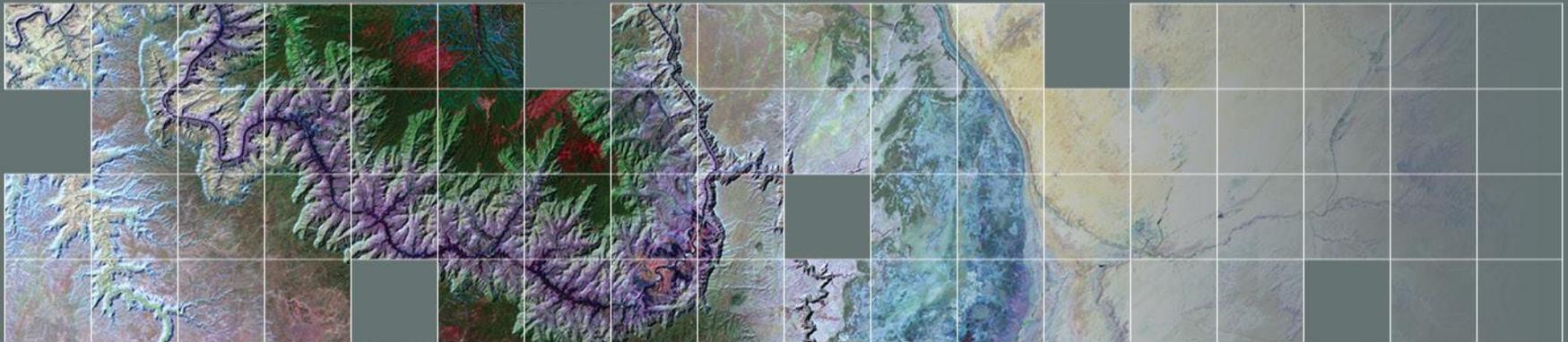




Climate and Land Use Change
Earth Resources Observation and Science (EROS) Center

Landsat Level-2 Product Status



John Dwyer
February 5, 2015
Landsat Science Team

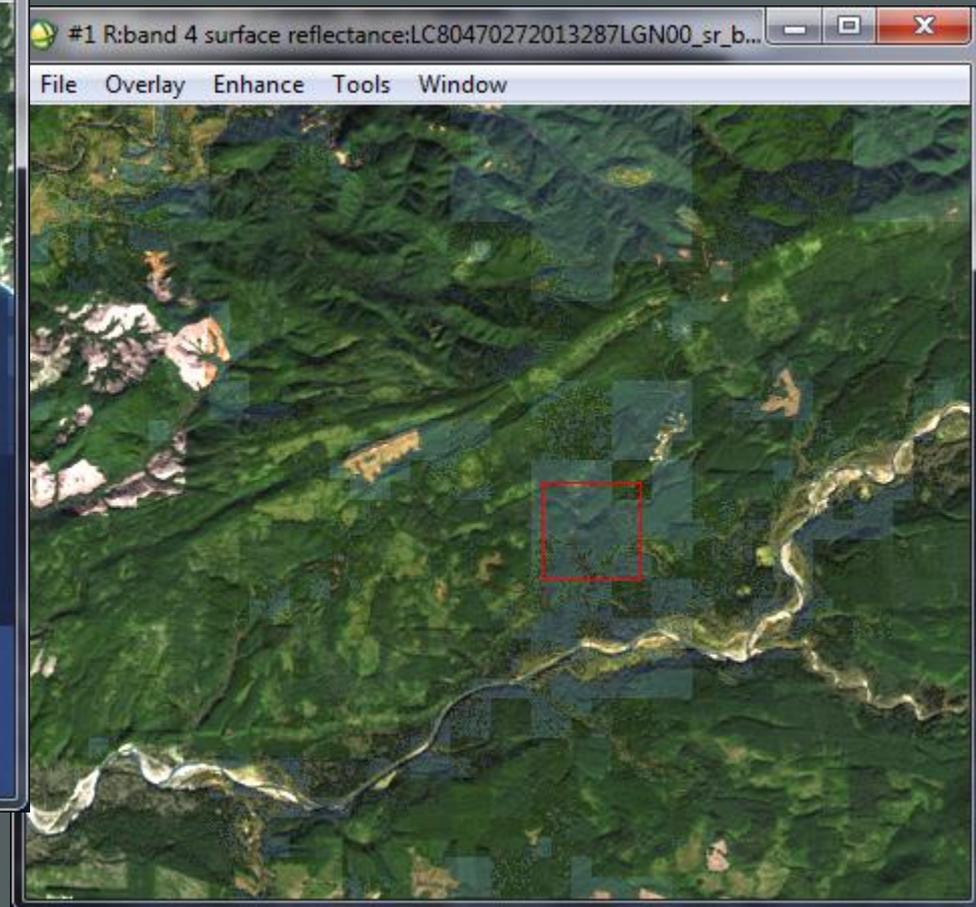
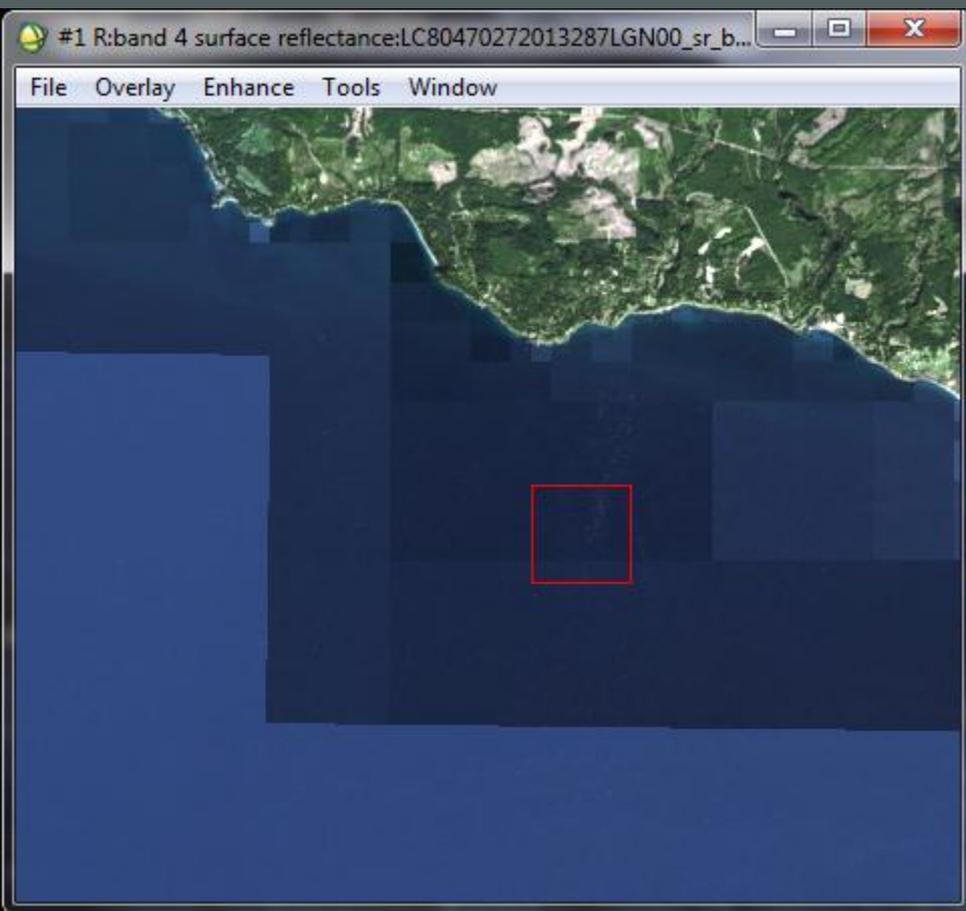
Surface Reflectance Status

- **TM and ETM+ processed through LEDAPS**
 - On-demand through EarthExplorer and ESPA
 - Planning transition to operational systems
- **OLI processed through separate code base**
 - Currently in “provisional” (Beta) release
 - In the process of documenting code, processing flow, known issues (following slides)
 - Product Guide
http://landsat.usgs.gov/documents/provisional_l8sr_product_guide.pdf

Artifacts and Adjustments

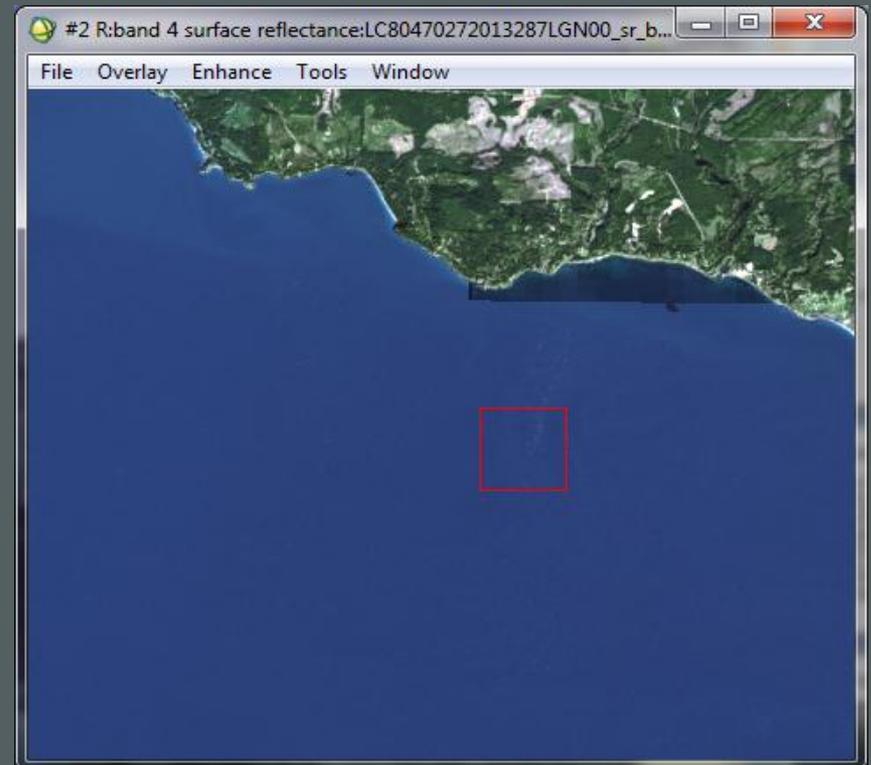
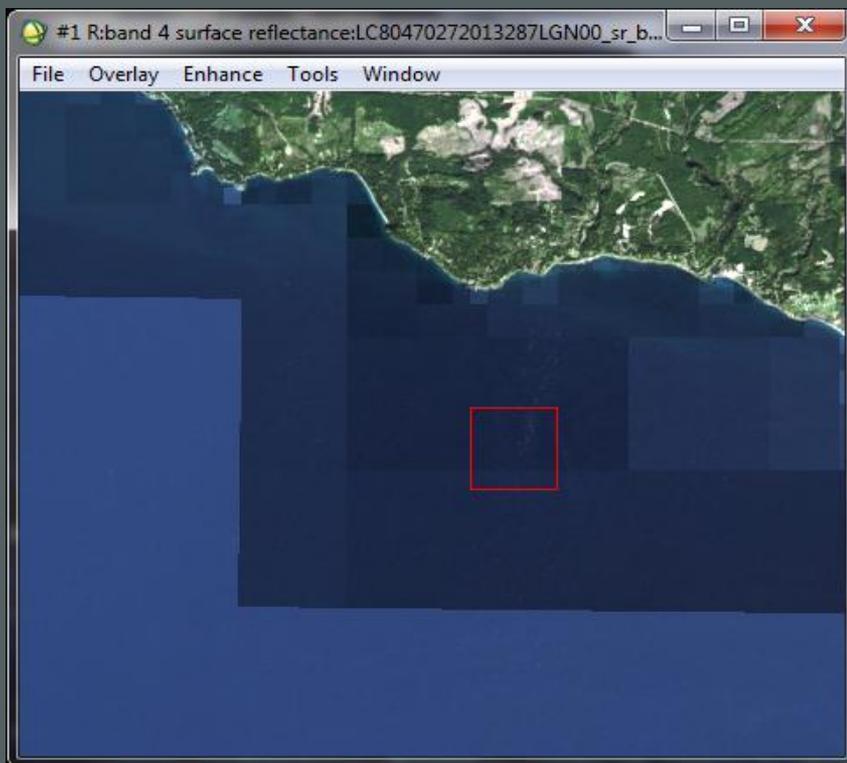
- Users and LSRD team have identified “blockiness” that occurs on the coastlines, forested regions, areas of significant terrain change, and general water bodies.
 - Blockiness along the coastlines is due to the fact the algorithm does not perform aerosol retrieval and correction over the water.
 - Better water detection helps resolve this issue.
 - Blockiness elsewhere is due to the aerosol retrieval.
 - Retrieval window surrounding the current pixel vs. window to the SE of the pixel helps resolve this issue.

“Blockiness” Examples



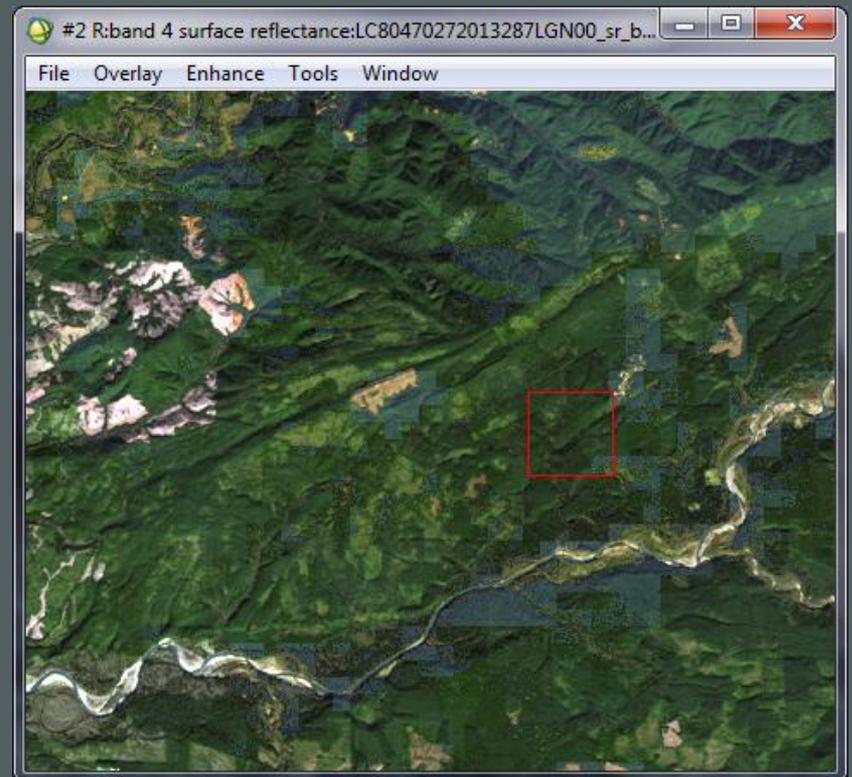
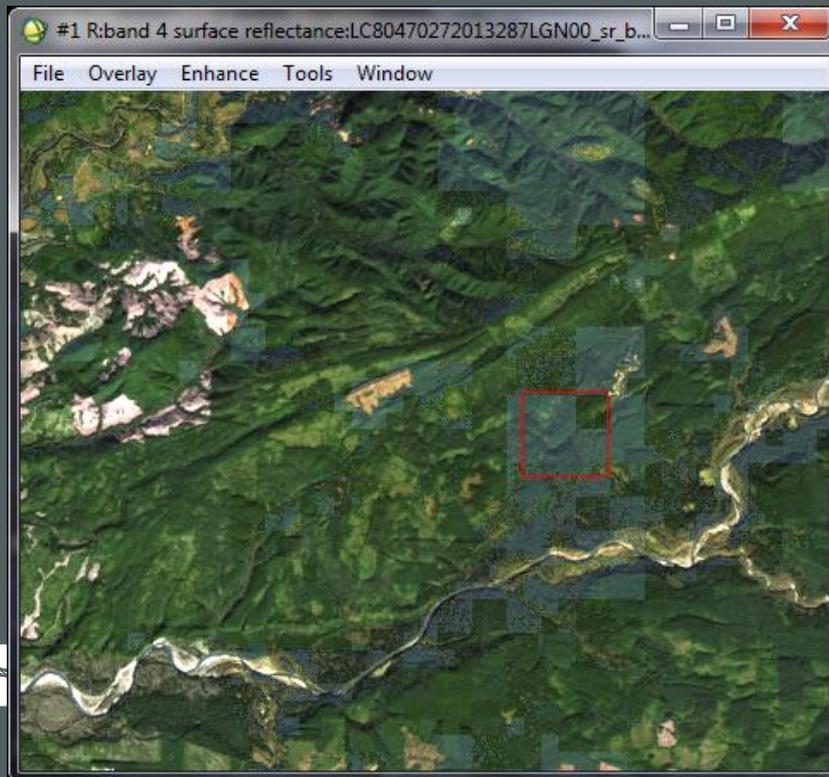
Adjustment for Better Water Identification

- LSRD made an adjustment to better classify water, given the fact that a global, coarse resolution DEM is currently being used to identify large-body water pixels. (left is before this adjustment, right is with the adjustment)



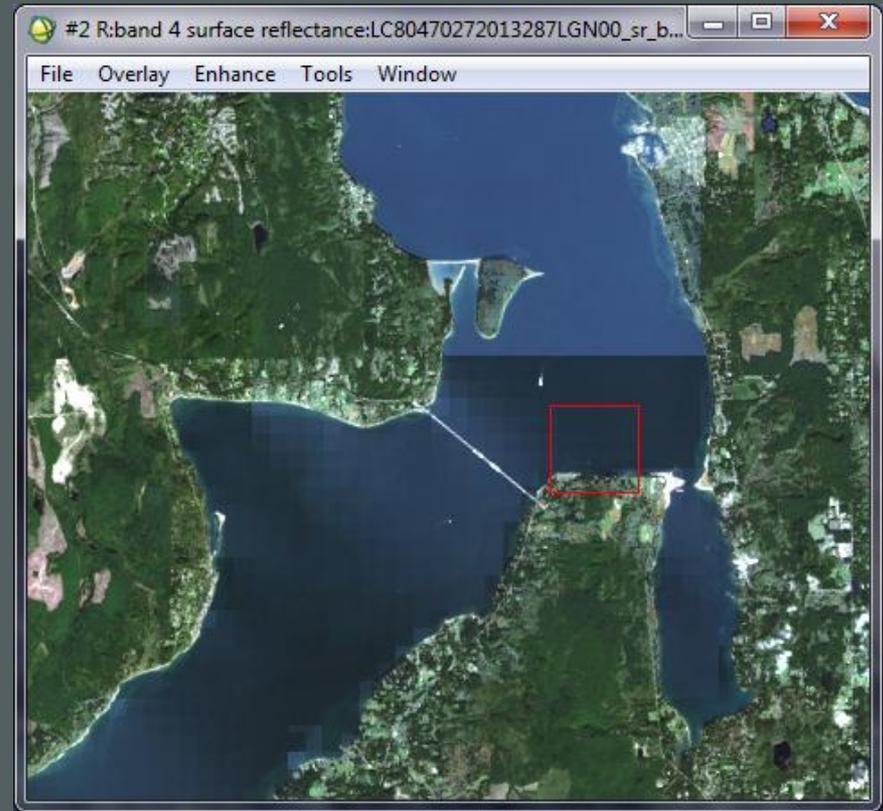
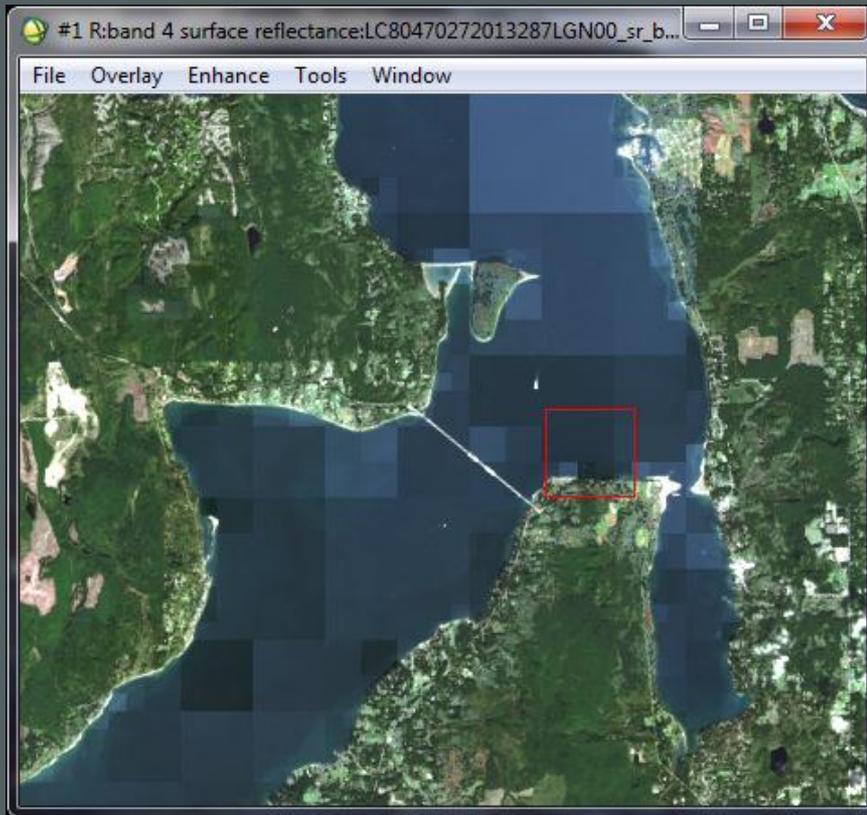
Adjustment for aerosol interpolation window surrounding the pixel

- LSRD made an adjustment to base the aerosol interpolation on a window surrounding the current pixel vs. on a window to the southeast of the current pixel. (left is before this adjustment, right is with the adjustment)



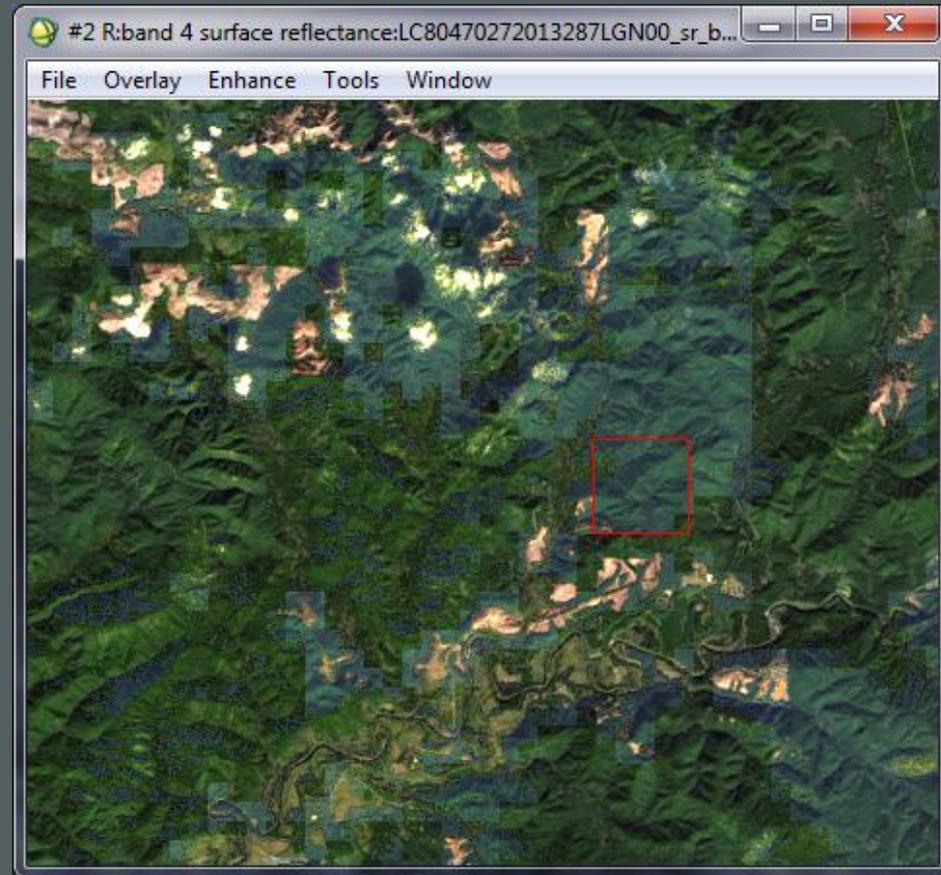
Water Corrections

- The last adjustment also makes smaller windows of aerosol interpolation over water bodies.



Some blockiness still occurs

- There are areas/conditions where the algorithm still does not apply aerosol corrections for one reason or another. These have been flagged for Eric Vermote.



Surface Temperature (TM/ETM+/TIRS)

- Cooperative Agreement (RIT) and Interagency Agreement (JPL) for vicarious calibration includes support for surface temperature development
 - RIT – atmospheric characterization, apparent temperature
 - JPL – ASTER emissivity, band pass adjustments
- Translating RIT code (Matlab) to C and reviewing for optimization
 - Implemented script to retrieve NARR data and will refine as cron to routinely update and maintain repository
 - There is a ~3-month lag in NARR data availability
 - Extracting NARR from repository and input to MODTRAN
 - Reading MODTRANS outputs for processing to generate transmission, down- and up-welled radiance for each NARR point
 - Validation of processing is underway...rest of the code remains.