1. Objectives

The final goal is to continue MODIS time series generated by the Canada Centre for Remote Sensing (CCRS) over Canada landmass since 2001 with perspective and advanced processing generated from MODIS data acquired by the Indian Ocean and the Pacific Ocean.

CCRS currently relies on the NASA’s Tropical Rainfall Measuring Mission (TRMM) satellite to provide MODIS-like imagery and 36-day swath MODIS-L1 data products.

The CCRS MODIS processing system (ACURS) will include MODIS-L1 and -2 data sets, and all products generated for generating, testing, and QC.

2. CCRS Product Features

- **MODIS imagery** includes three types of spatial scales: 250m, 500m, 1000m (@nadir)
  - 250m - B1 (red) and B2 (NIR)
  - 500m - all solar bands B1 (blue) to B7 (SWIR - 2.2µm)
  - 1000m - all bands B1 (blue) to B36 (TIR -14.2µm)

- **Geolocation**
  - Standard MODIS composite period – day and 10-day

3. Re-projection issues

MODIS swath projection over the polar and mid-latitude regions of North America reduces the image quality and spatial resolution of the MODIS products. This motivated us to start from L1-swath level and to develop a corresponding re-projection techniques suitable for in-house large-volume processing.

4. Examples of CCRS MODIS products

Canada @250m July 11-20, 2014

North America @250m

5. VIIRS Re-projection

VIIRS image in projection is based on MODIS imagery. Different products were developed at CCRS by Khlopenkov and Frolovnikov.

6. Current VIIRS Processing Chain at CCRS

- **Geolocation** is implemented in VIIRS swath projection (pixel-line)
- Procedure was developed based on CCRS CAPS AVHRR processing system
- Correlation matrix is computed between VIIRS and MODIS image chips (49x49 pixels)
- 250m for I-bands
- 500m for all solar bands
- 1000m for all bands

7. Geolocation Quality Control

- Geolocation control is implemented against MODIS monthly mean reflectance maps
- **1) geolocation errors do not affect CCRS composites**
- **2) VIIRS images are compatible with MODIS**

8. Geolocation Accuracy

- **Future Plans**
  - Testing and analysis of various components
  - Upgrading Status by implementing a scheme
  - Start developing new MODIS processing schemes (i.e., “at-day-end data products”)
  - Atmospheric correction

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