

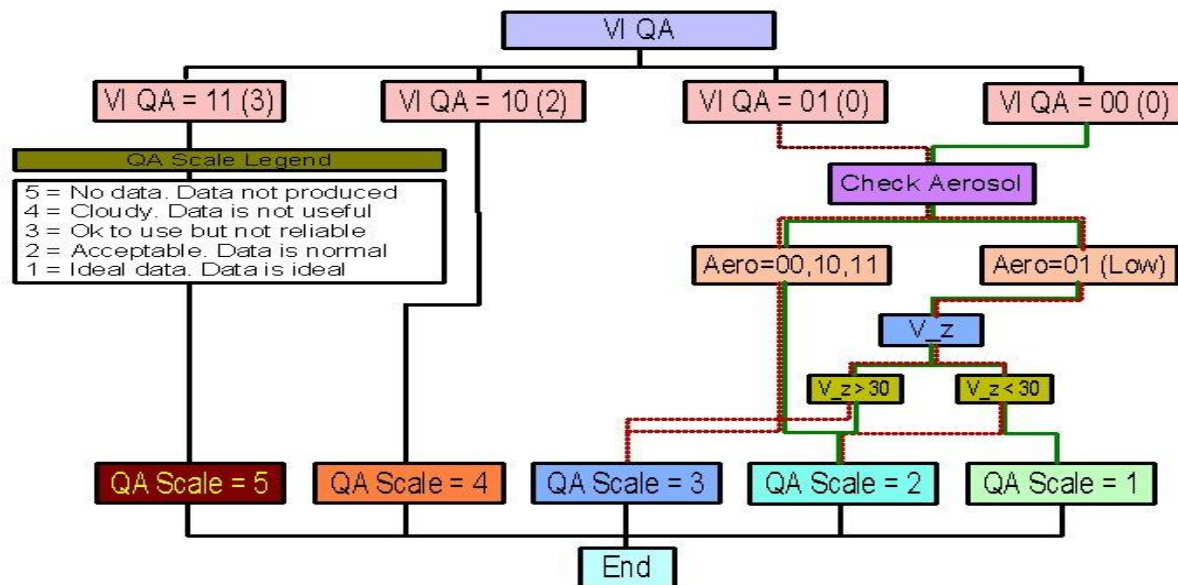
Filtered

Description

The input data is filtered to basically get rid of the bad quality data as a result of result of cloud cover, atmosphere contaminants, shadow and the less than ideal viewing geometry.

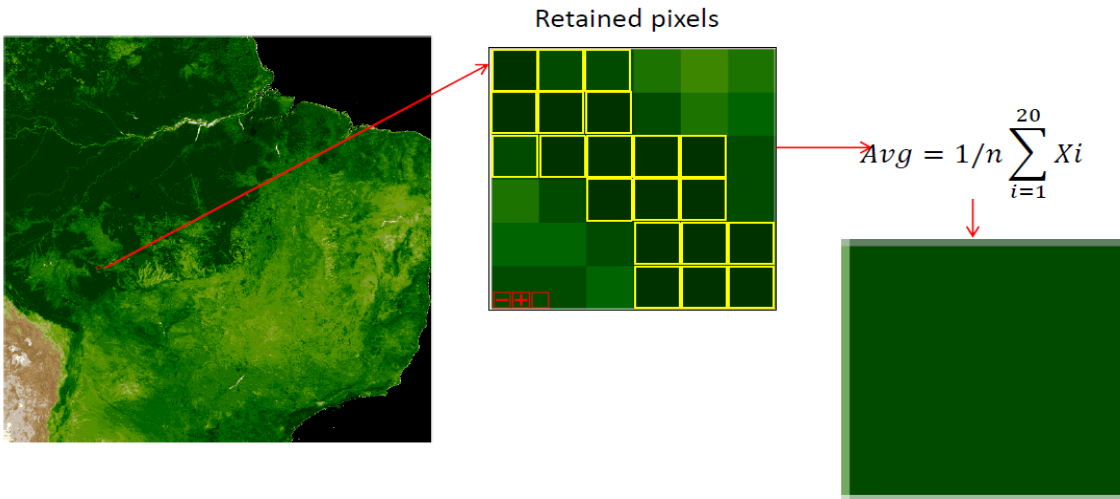
Process

The MODIS vegetation index quality application is used to filter the reflectance data. In order to obtain quality data, a combination of quality aspects is used. The first aspect is known as Modland Quality Assurance and it is a standard method that determines the effect of clouds in the quality of the data. In this method the pixels of the image are going to be categorized as 11 meaning no product, 10 meaning cloudy, 01 meaning need to be checked with other quality and 00 meaning the ideal product. The pixels which are categorized as 00 or 01 are taken to the next step where they are analyzed for aerosols which are normally the cause of poor quality when there are no clouds. Then, if the aerosols are low the data is evaluated to determine the influence of the view zenith and if it is larger than a pre -defined value (i.e. 30) this will mean that the data is negatively affected by this aspect. After this process is completed the reliability is determine using a scale that goes from 1 to 5, being 1 the ideal data, 2 the acceptable data, 3 the data that can be used but is not reliable, 4 the not useful data (cloudy) and 5 the data not produced [Didan et al. 2002].



Because SPOT daily data was provided at 1km resolution to harmonize these data record for continuity work, we resampled the SPOT record into a common CMG resolution grid. The Process is based on the MODIS VI CMG Algorithm. All ~6x6 finer resolution pixels are inspected for cloudiness another potential problems. Only data that passes this filter is retained for resampling. If all pixels are problematic, we average all of them for completeness and QA

label them. Finally we average the retained pixels only (or all pixels). The output QA is based on the dominant input QA (the input data records differ in their QA information). See the figure below.



Data Characteristics

| | |
|-------------------|--|
| Temporal Coverage | 1981-2010 |
| Area | Global |
| File Size | ~596 MB |
| Projection | Latitude/Longitude |
| Data Format | HDF-EOS |
| Dimensions | 3600 x 7200 rows/columns |
| Resolution | 0.05 degrees (5600 meters) |
| Location | /VIP/DATA/MEASURES/MODIS/ (For MODIS) /VIP/DATA/MEASURES/AVHRR/ (For AVHRR) VIP/DATA/MEASURES/SPOT/ (For SPOT) |

| Science Data Sets (HDF Layers) (21) | UNITS | BIT TYPE | FILL | VALID RANGE | MULTIPLY BY SCALE FACTOR |
|---|------------------|-------------------------|-------------|--------------------|---------------------------------|
| Coarse Resolution Surface Reflectance Band 1 (620–670 nm) | Reflectance | 16-bit signed integer | -28672 | -100–16000 | 0.0001 |
| Coarse Resolution Surface Reflectance Band 2 (841–876 nm) | Reflectance | 16-bit signed integer | -28672 | -100–16000 | 0.0001 |
| Coarse Resolution Surface Reflectance Band 7 (2105–2155 nm) | Reflectance | 16-bit signed integer | -28672 | -100–16000 | 0.0001 |
| Coarse Resolution Solar Zenith Angle | Degree | 16-bit signed integer | 0 | 0–18000 | 0.01 |
| Coarse Resolution View Zenith Angle | Degree | 16-bit signed integer | 0 | 0–18000 | 0.01 |
| Coarse Resolution Relative Azimuth Angle | Degree | 16-bit signed integer | 0 | -18000–180000 | 0.01 |
| Coarse Resolution Internal CM | Bit Field | 16-bit unsigned integer | 0 | 0–8191 | NA |
| Coarse Resolution State QA | Bit Field | 16-bit unsigned integer | 0 | 0–65535 | NA |
| NDVI | Vegetation Index | 16-bit signed integer | -15000 | -10000 - 10000 | 0.0001 |
| EVI | Vegetation Index | 16-bit signed integer | -15000 | -10000 - 10000 | 0.0001 |
| Rank | Ordinal | 8-bit signed integer | -2 | >0 | NA |

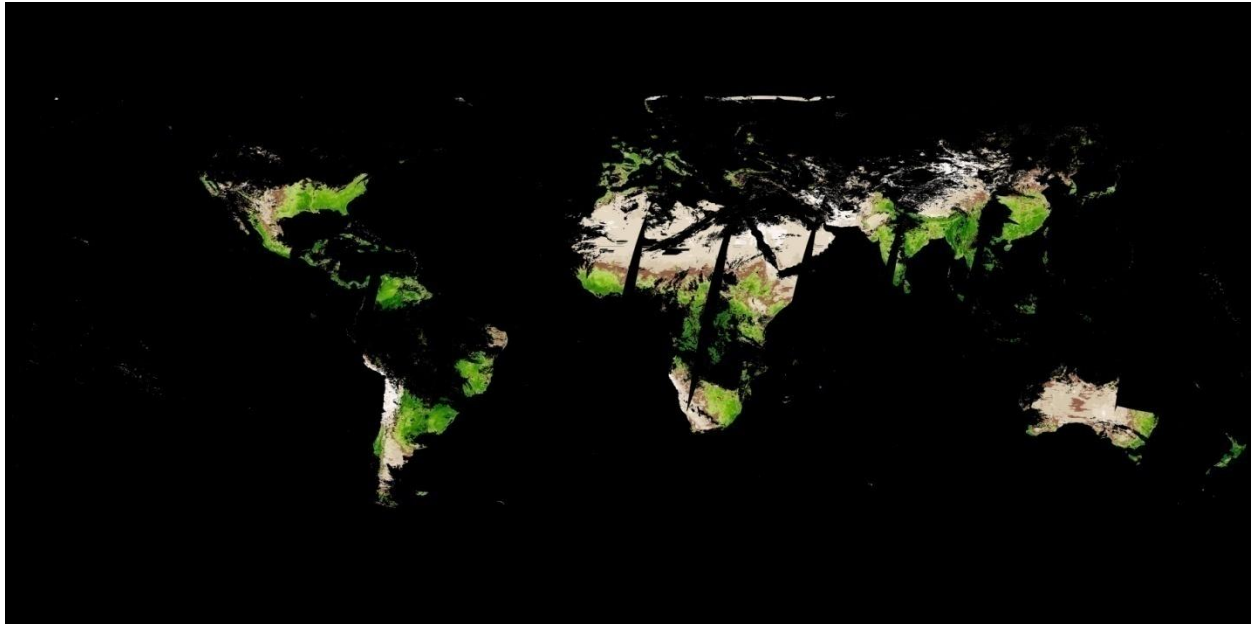


Figure 1: Filtered Data (NDVI)

Limitations

These data show gaps because they were filtered. The user can use the non-filtered data.

Reference

Didan K., and A. Huete, “MODIS Vegetation Index Product Series: Collection 5 Change Summary” (2006) (available at: http://landweb.nascom.nasa.gov/cgibin/QA_WWW/newPage.cgi?fileName=MODLAND_C005_changes).