Draft MODIS L1B QA Plan

- Introduction
- QA Data within the L1B Product
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- Trending and Consistency Analysis

Introduction

- The L1B Product includes
  - A 16 bit unsigned integer at each band and pixel
    - A set of scale factors per band to allow conversion to radiance.
      - Radiance(pixel) = Counts(pixel) * Slope(band) + Offset(band)
    - A set of scale factors per band to allow conversion to reflectance-cosine-theta (VIS/NIR bands)
    - A set of scale factors per band to allow conversion to effective DN (VIS/NIR bands)
  - A 4 bit unsigned integer at each band and pixel representing an uncertainty index

QA Data within the L1B Product

- Pixel Level Fill Data when no radiance or reflectance-cosine-theta product can be calculated
- Scan Level QA Flags
- Granule Level Metadata

Validation Index

- Value for each band
  - 0 - Unevaluated
  - 1 - Using Prelaunch Calibration
  - 2 - Calibrated with OBC data only
  - 3 - Consistent with Vicarious Data
  - 4 - Adjusted with Vicarious Calibration
  - 5 - Consistent with another MODIS
  - 6 - Best and Final Calibration
  - 7 - Known Problems
  - 8-16+ - Reserved for Future Use

Engineering Data Monitoring and Trending

- For each of the engineering data variables within each granule calculate the:
  - N, Number of observations
  - Mean, Mean value of the observations,
  - Sigma, Standard deviation of the observations,
  - Min, Minimum value recorded in the granule,
  - Max, Maximum value recorded in the granule
- Transfer to the Compute Resources of MCST (CROM) for trending and correlative analysis
- About 8 GB per instrument mission

Trending and Consistency Analysis

- The goal of each analysis is to study or verify an assumption about how the MODIS calibration algorithm works
- 32 analyses defined, 27 performed wholly within the CROM
- Examples: SRCA to SD radiometric comparison, Trapped radiation effects in the SV and SDSM, Using the heated blackbody to monitor thermal calibration nonlinearity, Correlation of EV and SV signals, ...