MODAPS + VIIRS Land SIPS Capability and Reprocessing Plan

Sadashiva Devadiga, Sadashiva.Devadiga-1@nasa.gov
Robert Wolfe, Robert.E.Wolfe@nasa.gov
Sources of Uncertainty in SIPS Planning

- **Center Operation status: soon moving to stage 1**
  - increased access to the Center for system administrators
  - Improvement in schedules for shipment and delivery of hardware.
- **Data delivery from SIP and data ingest at DAACs**
  - With two new PDR servers added during the C61 land reprocessing, SIPS now uses 3 PDR servers
  - Upper limit on delivery to and ingest at LP DAAC (export backlogs could result in reduced x-rate at SIPS)
- **System upgrades and maintenance**
  - Unexpected hardware failures
  - Hardware upgrades and software updates: transition to Ubuntu OS in progress
- **Delivery dates and changes to MODIS and VIIRS PGEs**
  - Increase in product volumes and computing requirement for new products are not known until start of reprocessing
Product delivery protocol changes

FTP was disallowed, and replaced by SFTP: Currently using SFTP (Secure file transfer protocol based on SSH) limited to IP addresses of DAACs and SIPS outside GFSC boundary. FTP is still allowed for system transfers within GSFC.

SDTP will soon replace SFTP: MODAPS has developed SDTP (Science Data Transfer Protocol) for use across EOSDIS for data transfer. Currently MODAPS uses SDTP to transfer data from and to ASIPS, and is in early testing of export to LPDAAC, NSIDC, and GIBS (GITC). Current RBD for sftp use expires in May.
- **Six processing instances used for standard processing**
  - Under normal processing scenario MODIS and VIIRS each use three processing instances: one each for forward processing, reprocessing and science testing.
  - Processing instances are reassigned from MODIS to VIIRS or vice versa if needed (e.g. C61 reprocessing used two processing instances towards the later half of 2021 to provide higher x-rate).
  - Additional memory and minions are added to these streams to increase the x-rate when needed. Minions are also reconfigured with larger memory for dedicated processing (e.g. to run PGEs requiring larger memory while processing tiles at higher latitude).

- **Two processing instances used for NRT processing (primary and secondary)**
  - Secondary processing stream is identical to the primary, serving as backup to the primary and also as test system for on-boarding the new products and changes to the operational PGEs.
- **L1 and Land Forward processing includes**
  - MODIS C6 and C61
  - VIIRS C1 and C2 L1
  - NRT processing: MODIS C61, VIIRS L1 C2 and Land C1

- **L1 and Land Reprocessing**
  - C61 MODIS land reprocessing completed for most products in Jan 2022. Reprocessing of Tier 2 products (MAIAC, VCF and LC) either currently processing or about to be started. C6 processing to be discontinued by end of year 2022
  - C7 MODIS L1 reprocessing expected to start end of 2022 or early 2023. C7 changes to land products currently under review at SCF
  - C2 VIIRS L1 reprocessing completed, Land reprocessing expected to start in Summer 2022
- SNPP C2 and J1/NOAA-20 C.1 L1 reprocessing completed and currently in forward processing

- C2 Land Science Test
  - Cross Calibration of SNPP and J1/NOAA-20 to produce continuity to Aqua MODIS is currently in science testing (April/May 2022)
    - Process 3-months of data from 2021, 2018 and 2012
  - Land Chain Test using cross calibration of SNPP and J1 L1 (Aug/Sept 2022)
    - Process land product suit for 3-months of winter and summer
  - Science test and C2 reprocessing run on Ubuntu system with Ubuntu version of PGEs deployed from Gitlab
MODIS C7 reprocessing Timeline (Tentative)

- **In-guide mission timing and reprocessing scenario**
  - End of science collection for Terra is Nov 2023 and Aqua is Jul 2023
  - Phase F will end in Nov 2025 for Terra and Jul 2025 for Aqua
  - C7 could be the last reprocessing, and could start after end of science collection for both Aqua and Terra MODIS

- **Over-Guide mission timing and reprocessing scenario**
  - End of science collection for Terra March 2027 and Aqua is Aug 2026
  - Likely have Phase F end for both mission by end of FY 2028
  - Plan C7 reprocessing to start in later 2023 or early 2024 and an end of mission reprocessing in the last year of Phase F.
Under Review: 20X Reprocessing for VIIRS may require two reprocessing streams for VIIRS C2 reprocessing.
Questions ?