MODAPS + VIIRS Land SIPS Capability and Planning

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Sources of Uncertainty in SIPS Planning

• Access to the Center for system administrators
• Approvals for IT purchases at GSFC slower than expected
• Impact of Covid-19 on delivery dates of hardware
• Upper limit on delivery to and ingest at LP DAAC
• Timeline for SIPS Protocol change
• Delivery dates and changes to MODIS and VIIRS PGEs
Timeline based on current system performance (SIPS and DAACs) and delivery schedules

**MODIS X-RATE:**
- Current operational

**VIIRS X-RATE:** Estimated to complete processing at the indicated date line except for products in Tier2. Assumes availability of resource and ingest capability at DAACS

**Tier2:** Products not ready for processing at start of collection reprocessing. Start date not available for these products.

- **J1 VIIRS NASA L1B C2** - AS 5200 at 10x
- **J1 VIIRS NASA L1B C2** - AS 5200 at 1x
- **J1 VIIRS Experimental C2** - AS 3194 at 1x
- **SNPP VIIRS NASA L1B C2** - AS 5200 at 10x
- **SNPP VIIRS C1** - AS5000 at 1x
- **SNPP VIIRS C2** - AS5000 at 1x
- **SNPP VIIRS NASA L1B C1** - AS 5110 at 1x
- **J1/N20 VIIRS C2**

For each mission:
- **MODIS – C6/C61**
  - 1x for each mission
- **J1 VIIRS Land C2** - Tier2
  - 2018095 - 2021090

Needed x-rate to complete these two C1 products by end of Sept:
- LBAN stream – 25x (2014001 – 2020270)
- BRDF CMG/DNB BRDF – 15x (2015097 – 2019273)

- **SNPP VIIRS C2 Teir2**
  - 2012019 - 2021192

- **SNPP VIIRS Land C2** - AS 5200 at 5x
- **SNPP VIIRS Land C2** - AS 5200 at 10x
- **SNPP VIIRS NASA L1B C2** - AS 5200 at 10x
- **J1 VIIRS Experimental C2** - AS 3194 at 1x
- **J1 VIIRS NASA L1B C2** - AS 5201 at 10x
- **J1 VIIRS NASA L1B C2** - AS 5200 at 1x

**C61 paused for 45 days**
- **Feb 06**
- **May 04**
- **June 18**
- **July 2021**
- **Discontinue C6**
- **MODIS – C61**
- **MAIAC on Tier2**
- **MODIS – C6 at 16x for each mission**
  - 2004192 - 2021192

Timeline based on current system performance (SIPS and DAACs) and delivery schedules
<table>
<thead>
<tr>
<th></th>
<th>Volume (GB/Data day)</th>
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<tbody>
<tr>
<td></td>
<td>Forward</td>
</tr>
<tr>
<td><strong>Current sustainable rate</strong></td>
<td></td>
</tr>
<tr>
<td>MODIS C6 Forward and C6.1 16X Reprocess</td>
<td>270</td>
</tr>
<tr>
<td>VIIRS SNPP C1 Forward and C2 10X Reprocess</td>
<td>192</td>
</tr>
<tr>
<td>VIIRS J1 C2.1 Forward and C2.1 5X Reprocess</td>
<td>190</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>652</td>
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<tr>
<td><strong>Upper bound SIPS delivery to LP</strong></td>
<td></td>
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<tr>
<td>MODIS C6 Forward and C6.1 32X Reprocess</td>
<td>270</td>
</tr>
<tr>
<td>VIIRS SNPP C1 Forward and C2 20X Reprocess</td>
<td>192</td>
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Product delivery protocol changes

For most of the mission: FTP was used in the SIPS protocol and limited to IP addresses of DAACs, SIPs and EDOS

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

Now SFTP will be disallowed and replaced by HTTPS: MODAPS has developed a new protocol (API and reference implementation) for use across EOSDIS for data transfer. Initial testing with GES DISC. The new protocol will enable better performance for data delivery but is 12-24 months before it will be in place at most DAACs.
Changes to current PDR server

- **PDR01** currently handles all data ingest and export for MODAPS between EDOS, Ocean SIPS, Atmosphere SIPS, LP DAAC and NSIDC DAAC. Current delivery rate of 8TB/day to LP DAAC won’t be sustainable with other data flow, e.g. Atmosphere SIPS product deliveries. PDR01 is currently is at 90% cpu utilized as a floor.

- Add two more PDR servers, **PDR03 and PDR04**, for VIIRS and MODIS C6.1 reprocessing product delivery to LP DAAC. PDR01 will retain all other ingest and delivery functions. **Timeline 1-2 months.**

- Replace SIPS protocol and transition all delivery except EDOS to new https protocol with significant improvement in performance. **Timeline 12-24 months.**
Changes to increase processing rates

• Add 40 R7425 (64 cores, 256GB), 20 R740 (12 cores, 128GB)  45 days
  • Getting system administrators on Center during Stage 4
• Add 100 R7425 (64 cores, 256GB), 100 R740 (12 cores, 128GB)  120 days
  • Delivery of hardware (switches and servers), excessing hardware to free up floor space and access to the Center during Stage 4