JPSS STAR (J-STAR)
JPSS-CPO TIM
VIIRS AEROSOL PRODUCTS SUMMARY FOR NOV. 18TH MEETING
SHOBHA KONDRAGRUNTA AND ISTVAN LASZLO
### S-NPP AOT Product Overview (1)

#### AOT - Land L1RDS Performance

<table>
<thead>
<tr>
<th>Condition</th>
<th>AOT550 &lt; 0.1</th>
<th>0.1 ≤ AOT550 ≤ 0.8</th>
<th>AOT550 &gt; 0.8</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Accuracy</strong></td>
<td>0.06</td>
<td>0.05</td>
<td>0.20</td>
</tr>
<tr>
<td><strong>Precision</strong></td>
<td>0.15</td>
<td>0.25</td>
<td>0.45</td>
</tr>
</tbody>
</table>

#### AOT - Water L1RDS Performance

<table>
<thead>
<tr>
<th>Condition</th>
<th>AOT550 &lt; 0.3</th>
<th>AOT550 &gt;= 0.3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Accuracy</strong></td>
<td>0.08</td>
<td>0.15</td>
</tr>
<tr>
<td><strong>Precision</strong></td>
<td>0.15</td>
<td>0.35</td>
</tr>
</tbody>
</table>

Large negative bias at high AOD seen in IDPS is reduced in EPS.

IDPS: Interface Data Processing Segment (current operational system)
EPS: Enterprise Processing System for NOAA Data Exploitation (NDE) operational system
• **Enterprise AOT Algorithm Status:**
  - Algorithm is ready
  - Scheduled for operational implementation in Spring 2017

• **Reprocessing:**
  - with EPS algorithm
  - 2015 completed
  - Output Data
    - Pixel-level retrieval and diagnostic outputs in compressed HDF5 format for each granule
    - Total size 7.7T (about 22G per day)
  - Provided data to users at
    - NOAA Earth System Research Laboratory (ESRL)
    - NOAA Joint Center for Satellite Data Assimilation (JCSDA);
    - NOAA National Centers for Environmental Prediction (NCEP) Environmental Modeling Center (EMC)
    - University at Albany, State University of New York
    - Naval Research Laboratory (NRL)
### S-NPP Aerosol Detection Product (ADP) Product Overview

<table>
<thead>
<tr>
<th>Product</th>
<th>L1RDS</th>
<th>Performance</th>
<th>Accuracy (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Land</td>
<td>Water</td>
</tr>
<tr>
<td>Smoke</td>
<td>70</td>
<td>98</td>
<td>94</td>
</tr>
<tr>
<td>Dust</td>
<td>80</td>
<td>84</td>
<td>95</td>
</tr>
<tr>
<td>Ash</td>
<td>60</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Both dust and smoke products meet requirements.

![SNPP VIIRS Dust Climatology 2013 - 2015](image)

- **Enterprise ADP Algorithm Status:**
  - Algorithm is ready
  - Scheduled for implementation in NDE in Spring 2017
- **Reprocessing:**
  - with EPS algorithm
  - 2015 completed; other years ongoing

![VIIRS aerosol detection product (top) is in good agreement with MISR (bottom) with respect to location of dust and smoke.](image)
The current operational (IDPS) AOT product meets requirements for operational user applications/needs.

The new Enterprise AOT product also meets requirements with additional benefits:
- Expanded measurement range (-0.05 to 5)
- Coverage over bright surfaces
- Coverage over inland water bodies

The current operational (IDPS) aerosol detection product does not meet requirements.

The new Enterprise aerosol detection product meets requirements.
VIIRS Aerosol Product Options

- Trade-off between latency and consistency of data products
- Need to know what general type of product you need (4 categories)
- Many places to find data! (details on following slides)
Direct Broadcast (DB) is the real-time transmission of satellite data to the ground. As the Earth is being observed by satellite instruments the data are formatted and transmitted to any users who have compatible ground receiving equipment and are in direct line of sight to the satellite. DB can provide end-users with VIIRS data in less than 1 hour.

For CONUS and Alaska, data can be obtained from:
Near Real-Time (NRT) data and imagery from VIIRS instrument are available much quicker than routine processing allows. Most data products are available within 3 hours from satellite while imagery are generally available 3-5 hours after observation.

Must fill out the Data Access Request Form to NOAA-NESDIS to get a subscription

http://www.ospo.noaa.gov/Organization/About/access.html
This is the standard processing stream for SNPP and VIIRS products. Latency is around 6 hours.

http://www.nsof.class.noaa.gov/saa/products/welcome
Science quality data have undergone quality checks and been scrutinized before being archived. The data are periodically reprocessed to include algorithm updates. Latency is months to years depending on versions of reprocessing.

Data access by sending a request to
Shobha.Kondragunta@noaa.gov or
Istvan.Laszlo@noaa.gov
Gridded Data on STAR Aerosol Cal/Val website:

http://www.star.nesdis.noaa.gov/smcd/emb/viirs_aerosol/products_gridded.php

Daily gridded EPS AOT from 2015 also available via ftp site