VIIRS VI Product Validation Methods

1. Global Inter-comparison with Aqua MODIS (or other sensors)

2. Validation using subsets
   a) Inter-comparison with Aqua MODIS
   b) Comparison with Aeronet-based surface reflectance
   c) Comparison with in situ reflectance (tower, UAV, airborne)
   d) Validation using FLUXNET productivity data
Global Comparison with Aqua MODIS

APU for the Month of July (DOY 192, 194, & 197) 2017

<table>
<thead>
<tr>
<th></th>
<th>TOA-NDVI</th>
<th>TOC EVI</th>
<th>TOC NDVI</th>
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</thead>
<tbody>
<tr>
<td><strong>Accuracy</strong></td>
<td>0.016</td>
<td>0.020</td>
<td>0.012</td>
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<tr>
<td><strong>Precision</strong></td>
<td>0.011</td>
<td>0.009</td>
<td>0.016</td>
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<tr>
<td><strong>Uncertainty</strong></td>
<td>0.019</td>
<td>0.022</td>
<td>0.020</td>
</tr>
</tbody>
</table>

Global APU Time Series Plots for 2017
Inter-Comparison of VI Profiles

Missouri Ozark (DBF)

Grignon, France (CRO)

Daly River Pasture (GRA)
Comparison with *in situ* VIs

Quality of VIIRS VI time series data were quantitatively evaluated by inter-comparing phenological metrics extracted from VIIRS VIs to those from MODIS and Tower VI time series data at 11 AmeriFlux sites located in the conterminous US.
Comparison with *in situ* VIs

Quality of VIIRS VI time series data were quantitatively evaluated by inter-comparing phenological metrics extracted from VIIRS VIs to those from MODIS and Tower VI time series data at 11 AmeriFlux sites located in the conterminous US.
Quality of VIIRS VI time series data were quantitatively evaluated by inter-comparing phenological metrics extracted from VIIRS VIs to those from MODIS and Tower VI time series data at 11 AmeriFlux sites located in the conterminous US.
Inter-Comparison of Start and End of Growing Seasons (SOS & EOS) Derived from VIIRS, MODIS, and Tower NDVI
Inter-Comparison of Length of Growing Season Derived from VIIRS, MODIS, and Tower VIs

Tower vs. MODIS (C6)  
\[ y = 0.99x + 0.81 \]  
\[ R^2 = 0.87 \]

Tower vs. VIIRS  
\[ y = 0.93x + 4.79 \]  
\[ R^2 = 0.89 \]

MODIS (C6) vs. VIIRS  
\[ y = 0.89x + 7.93 \]  
\[ R^2 = 0.83 \]