PROBA-V geometric Calibration/Validation Status

iskander.benhadj@vito.be

QWG 28/10/2015
Outline

- Absolute accuracy
- Interband accuracy
- Multitemporal
- Improvements
Absolute accuracy
Geometric error for all camera

Star tracker issue

Average ALE (m)
ABSOLUTE GEOMETRIC ERROR

Geometric error per camera

- cam Left
- cam Center
- cam Right
ABSOLUTE GEOMETRIC ERRORS

Geometric error for all cameras

Average ALE (m)

01/01/2015 16/01/2015 31/01/2015 15/02/2015 02/03/2015 17/03/2015 01/04/2015 16/04/2015 01/05/2015 16/05/2015 31/05/2015 15/06/2015 30/06/2015 15/07/2015 30/07/2015 14/08/2015 13/09/2015 28/09/2015 13/10/2015
ABSOLUTE GEOMETRIC ERRORS

Geometric error per camera

2015

Average ALE (m)
ABSOLUTE GEOMETRIC ERRORS  2014 VS 2015

2014 vs 2015

The graph compares the absolute geometric errors for the years 2014 and 2015. The x-axis represents the ALE (Absolute Local Error) ranges, while the y-axis represents the number of days. The data shows a comparison between the two years, highlighting the differences in error distribution.
Interband accuracy
Multitemporal accuracy
Multitemporal map for 2014

VNIR → 94.44%
SWIR/VNIR → 98.98%

Multitemp VNIR flag (0: novalue, 1: MultiTempNOK, 2: MultiTempOK)
Multitemporal map for 2015

VNIR  →  86.48%
SWIR/VNIR  →  96.97%

Multitemp VNIR flag (0: novalue, 1: MultiTempNOK, 2: MultiTempOK)
Multitemporal map for 2014 & 2015

VNIR → 88.06%
SWIR/VNIR → 97.05%

Multitemp VNIR flag (0: no value, 1: MultiTempNOK, 2: MultiTempOK)

https://www.google.fr/maps/@20.090623,44.9741683,136244m/data=!3m1!1e3
ICP files
### ABSOLUTE GEOMETRIC ERRORS  2014 VS 2015

<table>
<thead>
<tr>
<th>ICP files</th>
<th>Creation date</th>
<th>Applicability date</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROBAV_G_000_20140312_01.xml</td>
<td>24/03/2014</td>
<td>12/03/2014</td>
</tr>
<tr>
<td>PROBAV_G_000_20150420_01.xml</td>
<td>06/05/2015</td>
<td>20/04/2015</td>
</tr>
<tr>
<td>PROBAV_G_000_20150704_01.xml</td>
<td>09/07/2015</td>
<td>04/07/2015</td>
</tr>
<tr>
<td>PROBAV_G_000_20151003_01.xml</td>
<td>06/10/2015</td>
<td>03/10/2015</td>
</tr>
</tbody>
</table>
Improvements
CHANGE REQUEST (GLS 2010)

*Increased accuracy of geometric calibration tool using new set of chips derived from Landsat GLS2010*

» Implemented since May 26, 2015

» Advantages:
   » More GCPs
   » More recent data/scenes (2010)

» Results:
   » Increased accuracy for BLUE band
   » Same results for other bands

<table>
<thead>
<tr>
<th></th>
<th>GLS 2000</th>
<th>GLS 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pixel size</td>
<td>90 m</td>
<td>90 m</td>
</tr>
<tr>
<td>Chip size</td>
<td>91 pixels</td>
<td>91 pixels</td>
</tr>
<tr>
<td>DB size</td>
<td>35 GB</td>
<td>47 GB</td>
</tr>
<tr>
<td>Number of Scenes</td>
<td>8205</td>
<td>7790</td>
</tr>
<tr>
<td>#GCP per scene (BLUE)</td>
<td>83.8</td>
<td>98.1</td>
</tr>
<tr>
<td>#GCP per scene (RED)</td>
<td>97.7</td>
<td>106.5</td>
</tr>
<tr>
<td>#GCP per scene (NIR)</td>
<td>92.4</td>
<td>106.7</td>
</tr>
<tr>
<td>#GCP per scene (SWIR)</td>
<td>45</td>
<td>49.3</td>
</tr>
<tr>
<td>Avg Cloud cover %</td>
<td>2.4</td>
<td>2.8</td>
</tr>
</tbody>
</table>
CHANGE REQUEST 008

Using GLS 2000

Using GLS 2010