MODIS B26 Performance
Influence of B5 (1.2um) on B26 (1.38um)

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The OOB feature near B5 is the largest in the SWIR region.
An OOB feature near B5 may be contributing to B26 signal.
Dec 8, 2000
0215 UTC
Band 5
W. Australia
Dec 8, 2000
0215 UTC
Band 26
.005 influence
removed
Dec 8, 2000
0215 UTC
Band 26
.010 influence removed
Dec 8, 2000
0215 UTC
Band 26
.015 influence removed
Dec 8, 2000
0215 UTC
Band 26
.020 influence
removed
Dec 09, 2000
0215 UTC
Band 5
W. Australia
Dec 09, 2000
0215 UTC
Band 26
Detector
dependent
correction
Detector dependent correction of MODIS B26 (1.38um) imagery for B5 (1.24um) influence

\[ L_{26, i, \text{cor}} = L_{26, i, \text{unc}} - A_i \times L_{5, i} \]

\( L_{26,i} \) is B26 radiance for detector \( i \)
\( L_{5,i} \) is B5 radiance for detector \( i \)
\( A_i \) is influence coefficient for detector \( i \)
Detector based influence coefficients based on empirical assessment using data of:
Day 00343 0215 UTC (SW Australia)
Day 01085 1710 UTC (Gulf Coast, USA).
<table>
<thead>
<tr>
<th>MODIS Channel (Product Order)</th>
<th>B5 Influence Coefficients $A_i$ Day 00343, 01085 (V1)</th>
<th>B5 Influence Coefficients $A_i$ Day 01153 (V2)</th>
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</thead>
<tbody>
<tr>
<td>1</td>
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<td>.017</td>
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<td>2</td>
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<tr>
<td>10</td>
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</table>

Influence Coefficient estimation assumes that a regression relationship tracks through 0,0 origin point.
Band 26 Correction for Band 5 Influence

Day 01153, 1645 UTC; V3.X

- Channel 10 uncorrected
- Channel 6 (P.O.) uncorrected
- Channel 6 (P.O.) corrected by avg based coeffs
- Channel 10 (P.O.) corrected by avg based coeffs

B26 Radiance (W/m² sr um)

Band 5 Radiance (W/m² sr um)
Day 01111, 1610 UTC
Lake Balquash Region (Asia)
Apr 21, 2001
0610 UTC
Band 5
(Offender)
Reducing B26 striping increases the contrast between cirrus cloud and the underlying background surface.
Lowering the Cirrus Cloud detection threshold will capture much thinner cirrus (optical depth of 0.08 in this example).
B5 Influence on B26

• Anecdotal evidence suggests surface features and striping can be largely removed from B26 using a B5 based correction
• Atmospheric water vapor influence on B26 remains physical.
• Pre-launch OOB data for B26 suggests filter leak (pinhole?) near B5 spectral position
• Problem: As characterized by Pre-launch data, the pinhole leak is about a factor of 2-3 too small to fully explain B26 behavior.