Near-IR AOD validation and spatial variability studies in the Extended-MODIS-\(\lambda\) Validation Experiment (EVE)

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**EVE - experiment summary**

- Platform: CIRPAS Twin-Otter
- EVE flight domain and typical flight pattern
- EVE flight calendar

**Near-IR AOD validation of MODIS-Terra in EVE**

Examples of RGB and successful AOD retrievals

**Near-IR AOD validation of MODIS-Aqua in EVE**

Examples of RGB and successful AOD retrievals

**Progress + preliminary findings:**

1) In EVE, a total of 36 and 49 coincident AOD validation measurements were collected for Terra and Aqua respectively. These measurements were all taken over dark water, extending to the 1.24, 1.64 and 2.14\(\mu\)m MODIS wavelengths, and are for the smallest regular level 2 AOD retrieval scale of 10km.

2) A preliminary analysis indicates that for MODIS-Terra about 80% of the MODIS AOD retrievals are within the estimated uncertainty of \(\pm 0.03\pm0.05\times\)AOD, this is true for both the visible and near-IR retrievals.

3) A preliminary analysis indicates that for MODIS-Aqua about 50% of the MODIS AOD retrievals are within the estimated uncertainty of \(\pm 0.03\pm0.05\times\)AOD. The fraction of near-IR retrievals that fall within this uncertainty range is about 25%.

4) This difference is likely due to the fact that there was relatively more dust present during the Aqua validation days as evidenced by the smaller Ångstrom parameters.

5) The spatial variability as derived from the suborbital measurements during a few select flight segments is larger than that derived by MODIS, in particular in the near-IR. The analysis shows that only measurements within the scale of one retrieval box (~10km) can be used for such a comparison.