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*Supplement of*

## **Effect of surface BRDF of various land cover types on geostationary observations of tropospheric NO<sub>2</sub>**

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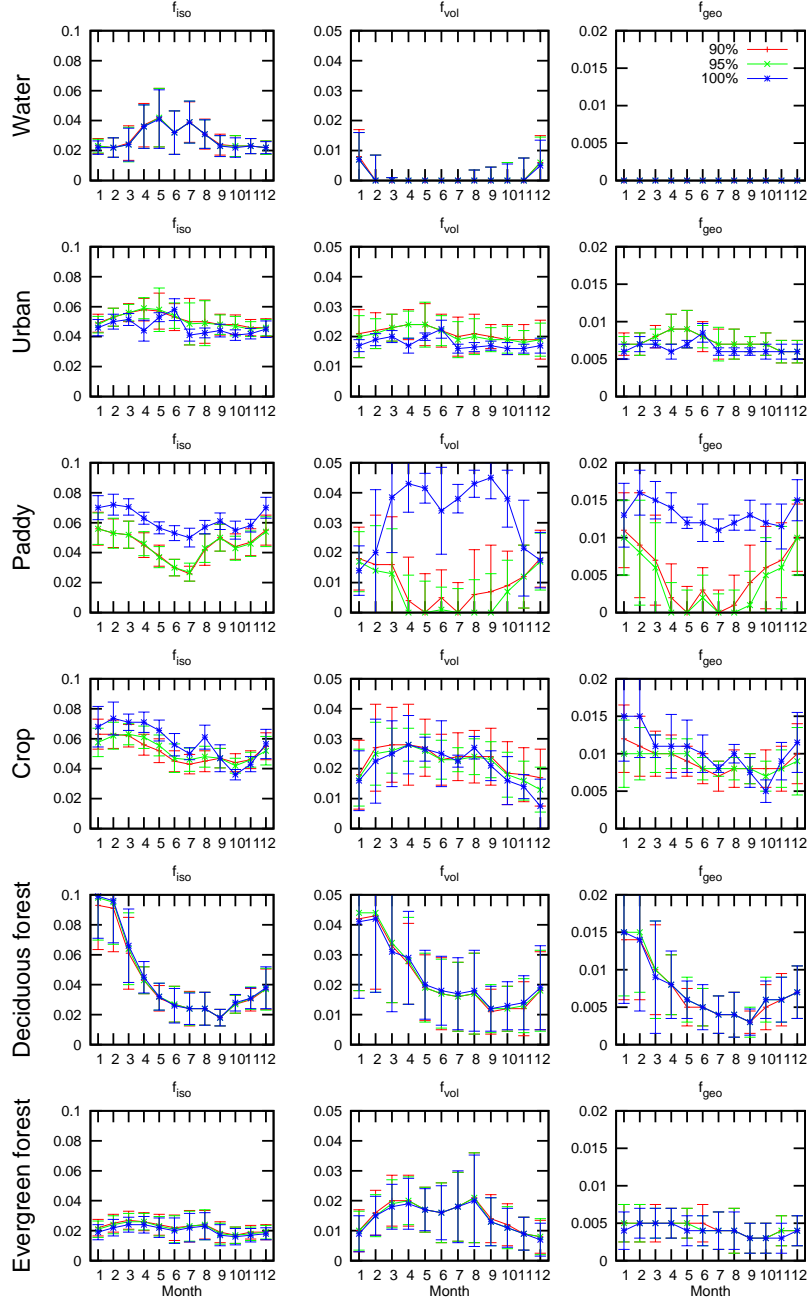


Figure 1: Monthly averages of the MODIS BRDF parameters,  $f_{iso}$ ,  $f_{vol}$  and  $f_{geo}$  for each land cover type derived by AVNIR-2. The percentage means the threshold of the most frequent AVNIR-2 land cover types (see text).

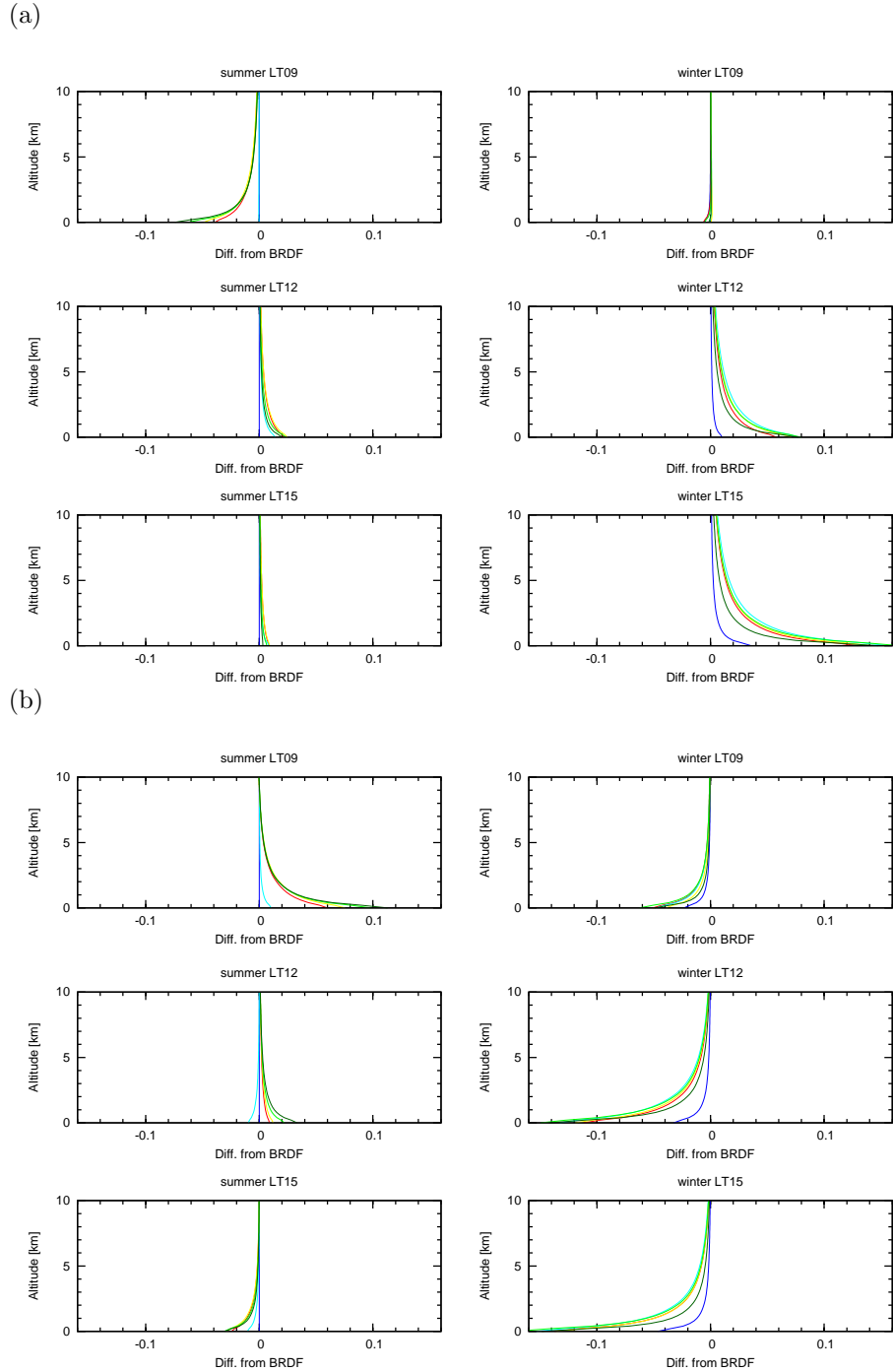
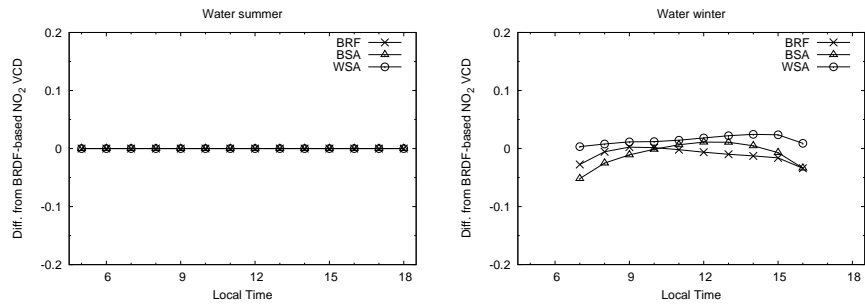
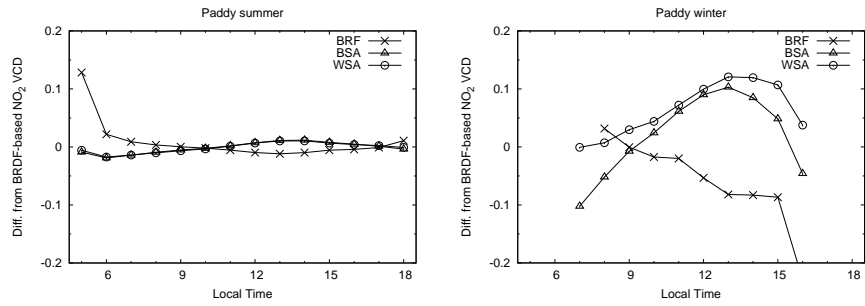


Figure 2: Relative difference of tropospheric  $\text{NO}_2$  BAMF for various land cover types from the tropospheric  $\text{NO}_2$  BAMF obtained using full BRDF treatment compared to results using (a) BRF and (b) WSA surface. Each of the cases includes a panel at local time (LT) 09, LT12 and LT15 for summer (left) and winter (right). The colors indicate land cover types: water (blue), urban (red), rice paddy (light blue), crop (yellow), deciduous forest (light green) and evergreen forest (green). An AOD of 0.2 is assumed.

(a) Water



(b) Paddy



(c) Crop

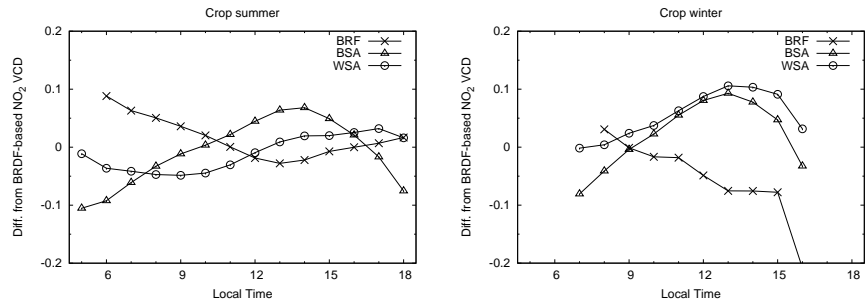
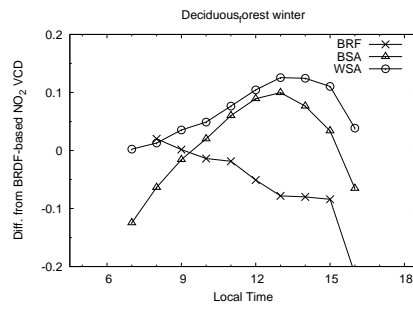
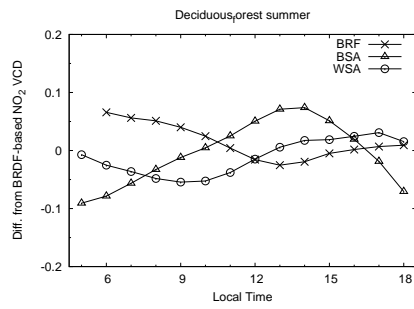
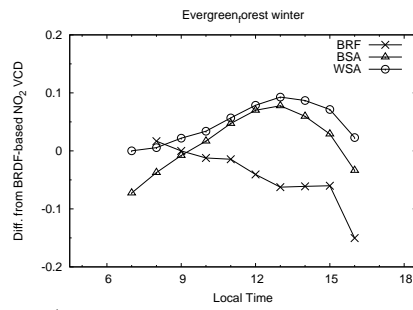
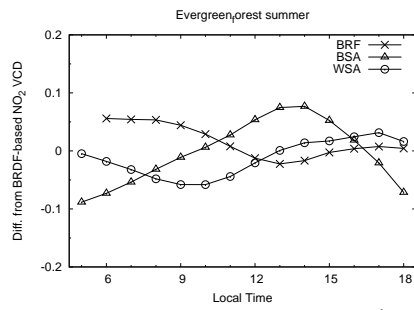


Figure 3: Difference of the tropospheric  $\text{NO}_2$  VCDs for BRF, BSA and WSA from that for BRDF. The VCD for BRDF is assumed to be the true value.

(c) Deciduous forest



(c) Evergreen forest



(continued.)