

**FlexBRDF: A Flexible BRDF Correction for Grouped Processing of Airborne Imaging Spectroscopy Flightlines**

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**Contents of this file**

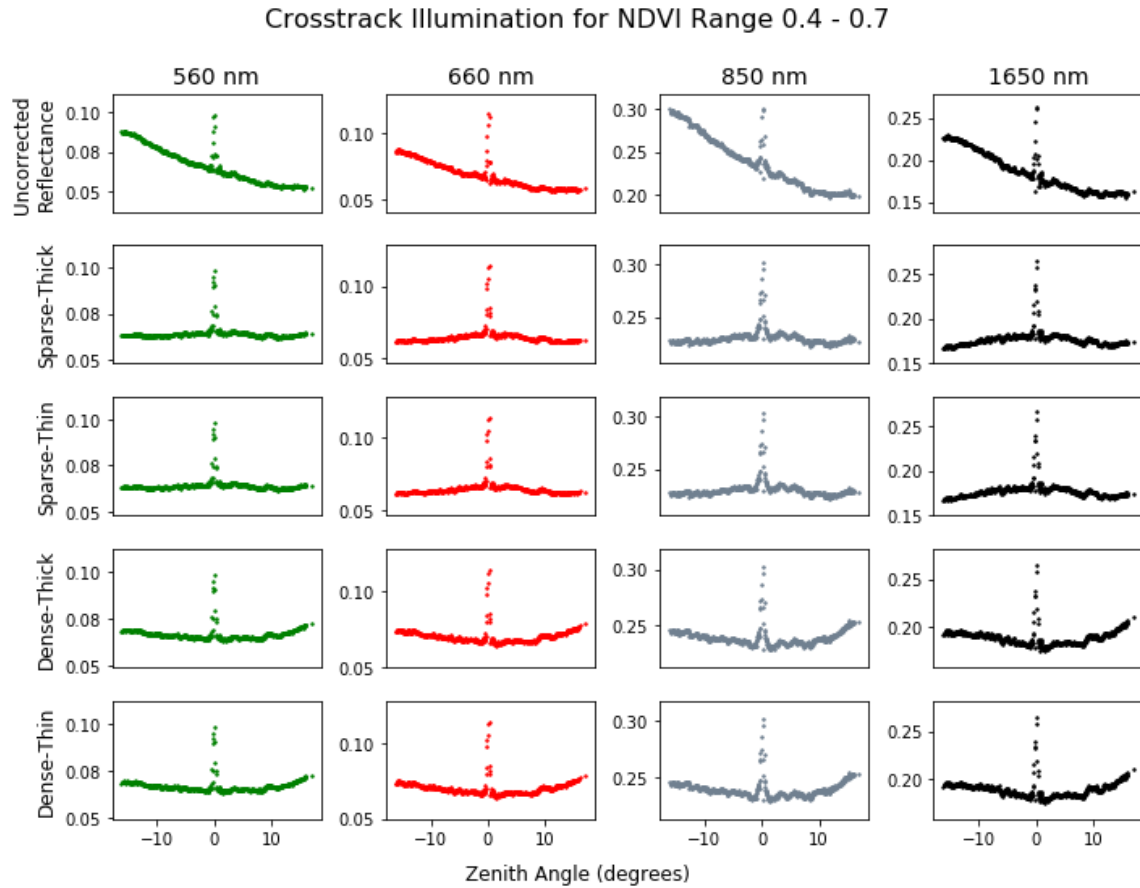
Figures S1 to S10

**Additional Supporting Information (Files uploaded separately)**

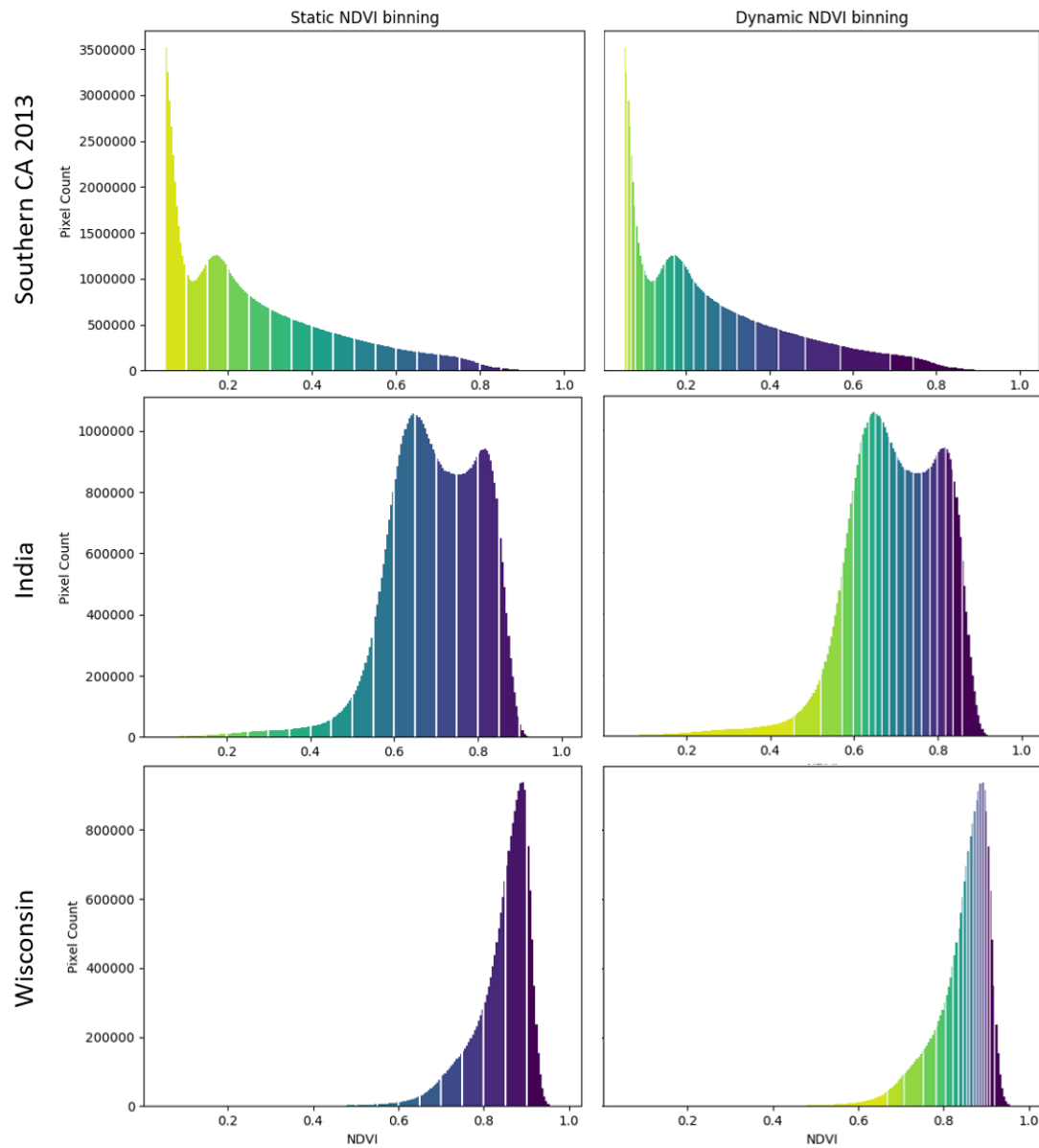
Captions for Tables S1 to S2

**Introduction**

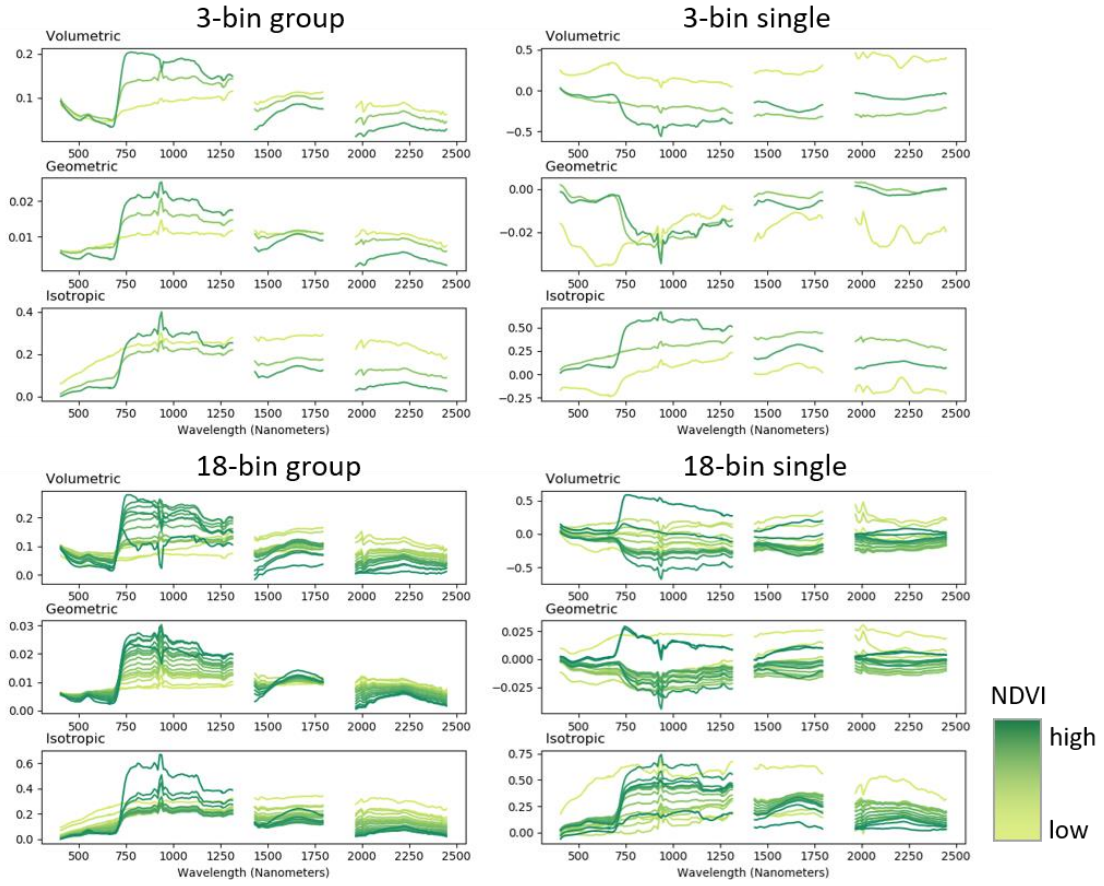
The supporting tables and figures show further data exploration of BRDF-corrected imagery that is not crucial to the conclusions of the paper but provides further context for processing decisions. These include illustration of kernel, smoothing, and NDVI binning effects. These also include extra visuals for additional transects and secondary sites.



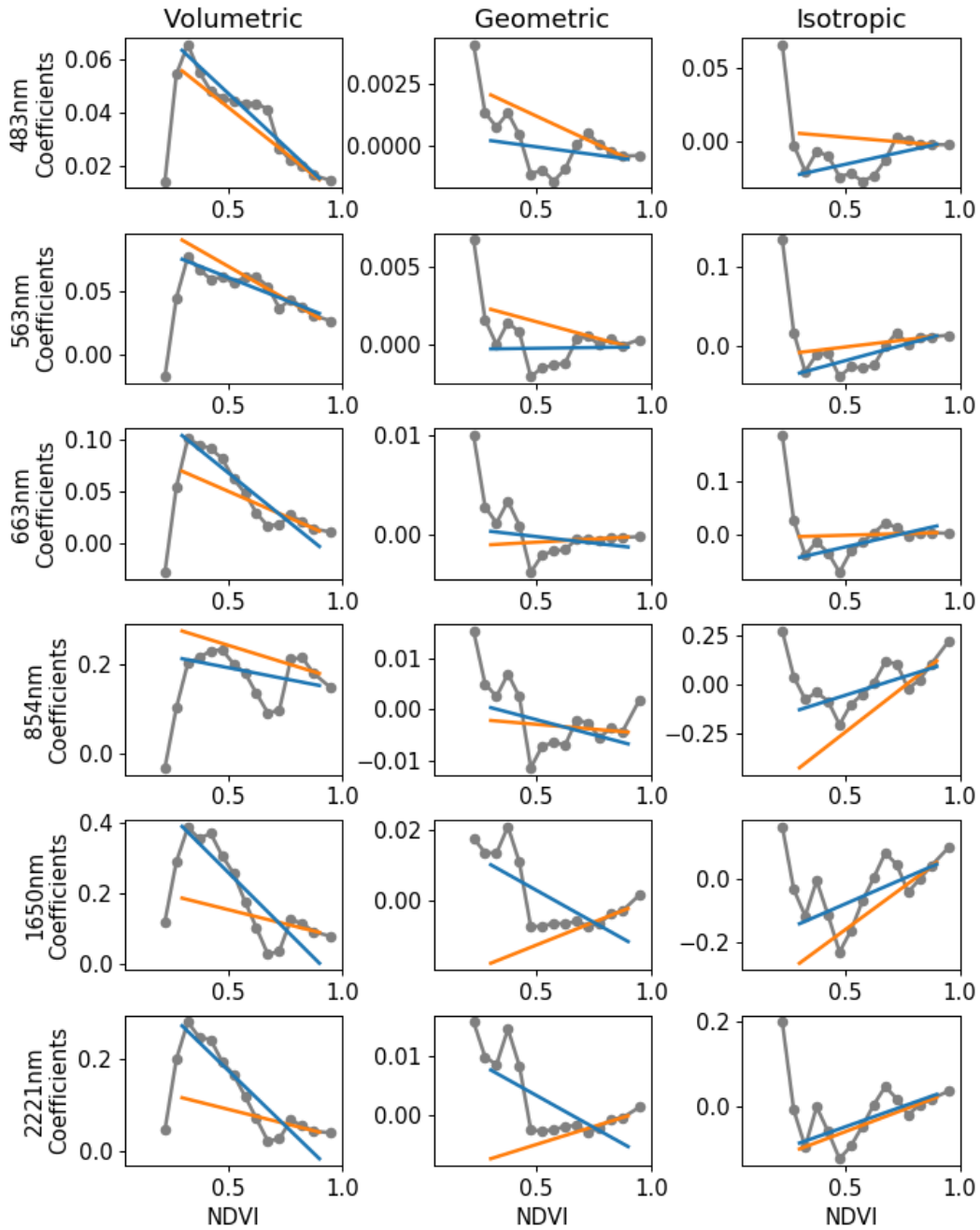
**Figure S1.** Reflectance values for four wavelengths within the 0.4 - 0.7 NDVI range for a flightline over Yosemite. The top row shows uncorrected reflectance plotted by sensor zenith angle, with a clear trend of decreasing reflectance from left to right across the image, the result of BRDF. Corrections using the dense kernel show an overcorrection, where pixels with sensor zenith angle > 0 trend upwards. Corrections using the sparse kernel show more level values across the image. The spike in reflectance at nadir (zenith angle 0) is an artifact of atmospheric correction.



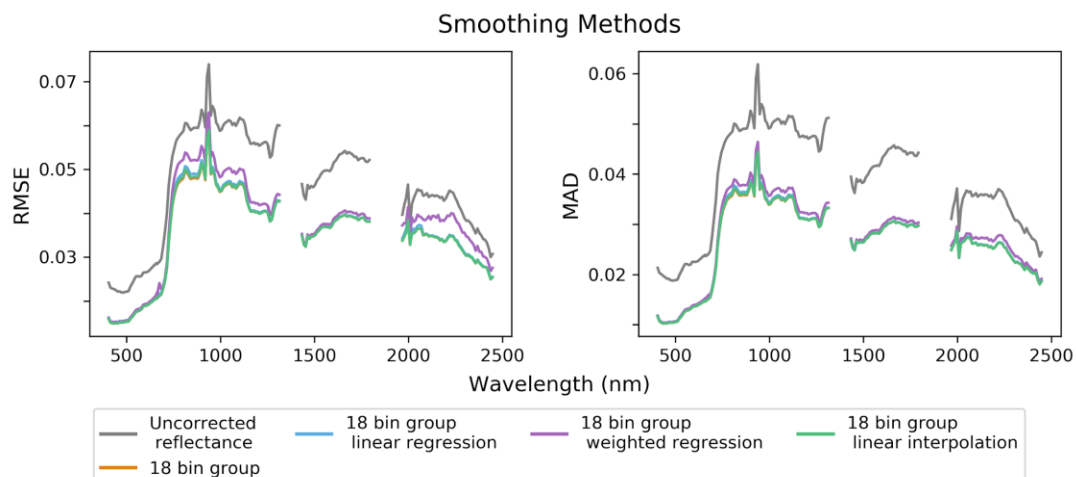
**Figure S2.** Dynamic bins were tested for images in the Wisconsin NEON box, where the NDVI range was largely restricted to upper values. The difference in NDVI divisions is shown for static and dynamic methods, and NDVI distribution is shown for Southern California 2013, Yosemite, and Wisconsin boxes.



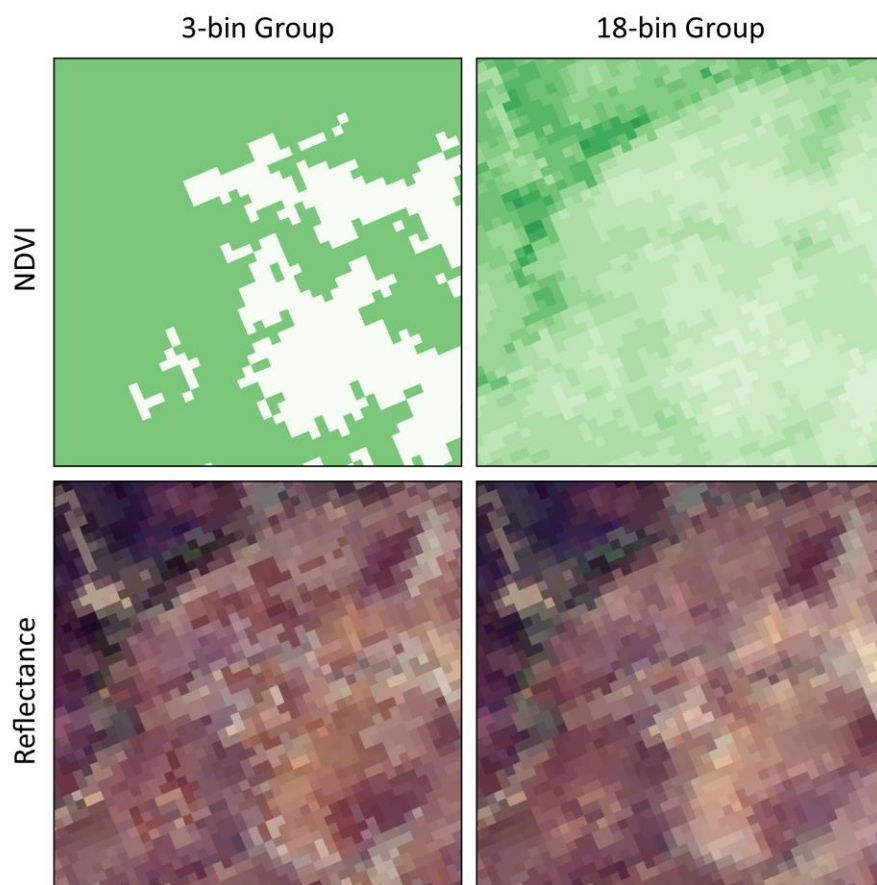
**Figure S3.** Geometric, volumetric, and isotropic coefficient values shown for single and grouping methods. BRDF coefficients for grouping methods more closely resemble a vegetation spectrum as NDVI increases.



**Figure S4.** Smoothing methods for the BRDF coefficients included linear regression (blue), weighted linear regression (orange), and linear interpolation (gray). These methods are visualized for six wavelengths for the Southern California 2013 flight box.

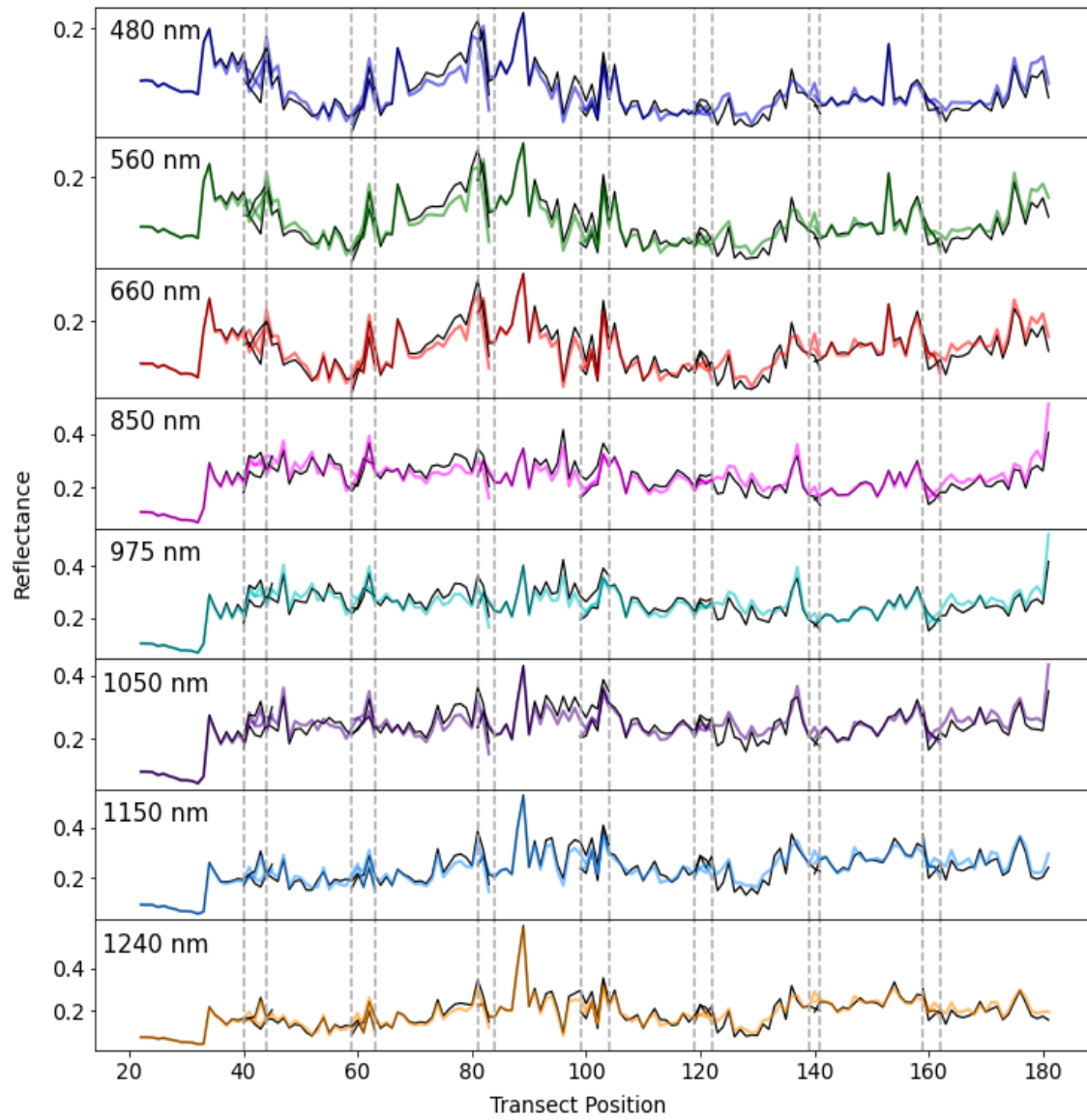


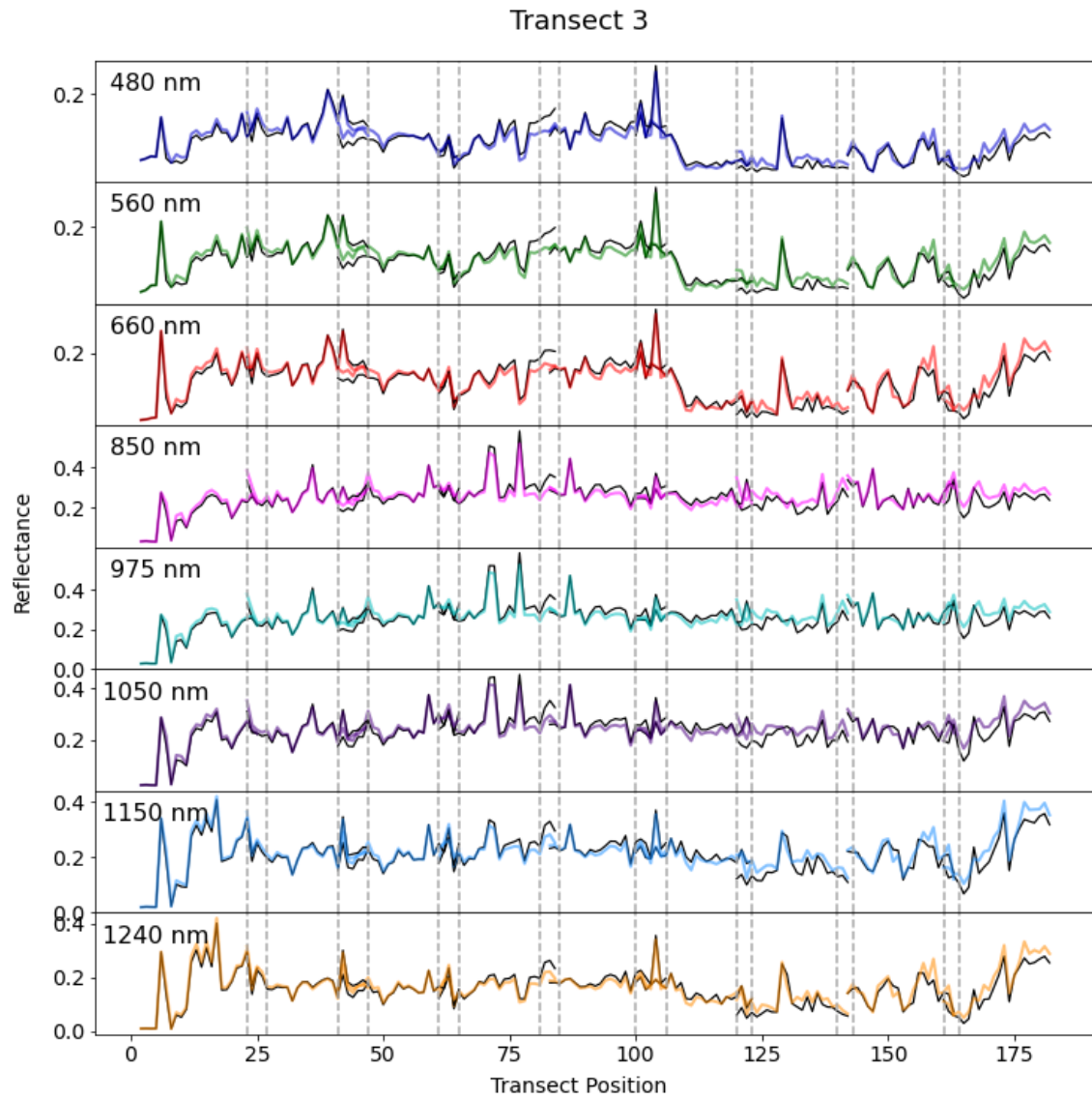
**Figure S5.** Smoothing methods showed little variation in overlap assessment metrics.



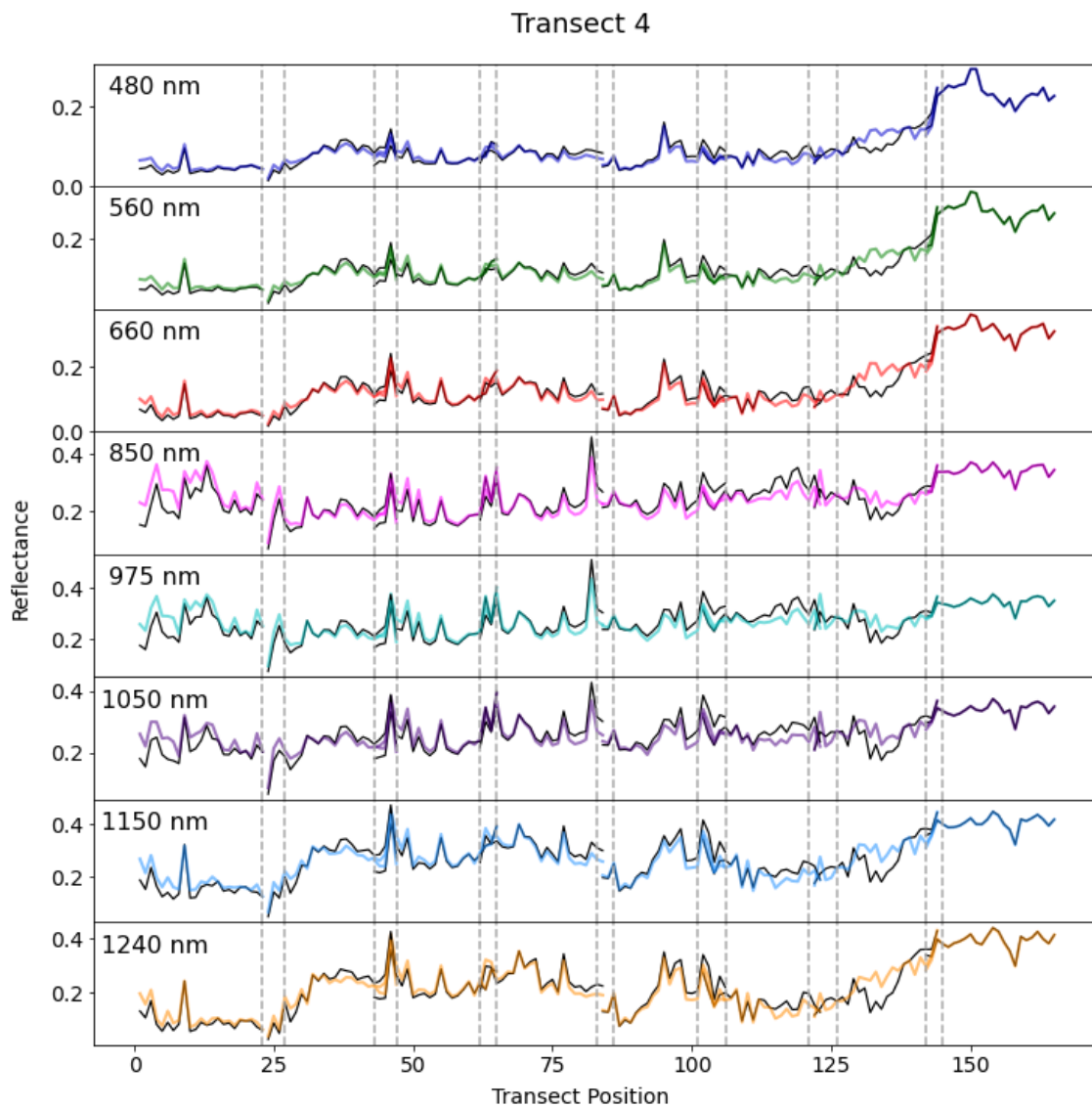
**Figure S6.** Sharper edges occur between NDVI bins in the 3-bin approach corrected image than the 18-bin approach. Darker green indicates higher NDVI, and the image stretch is identical for reflectance images.

## Transect 2

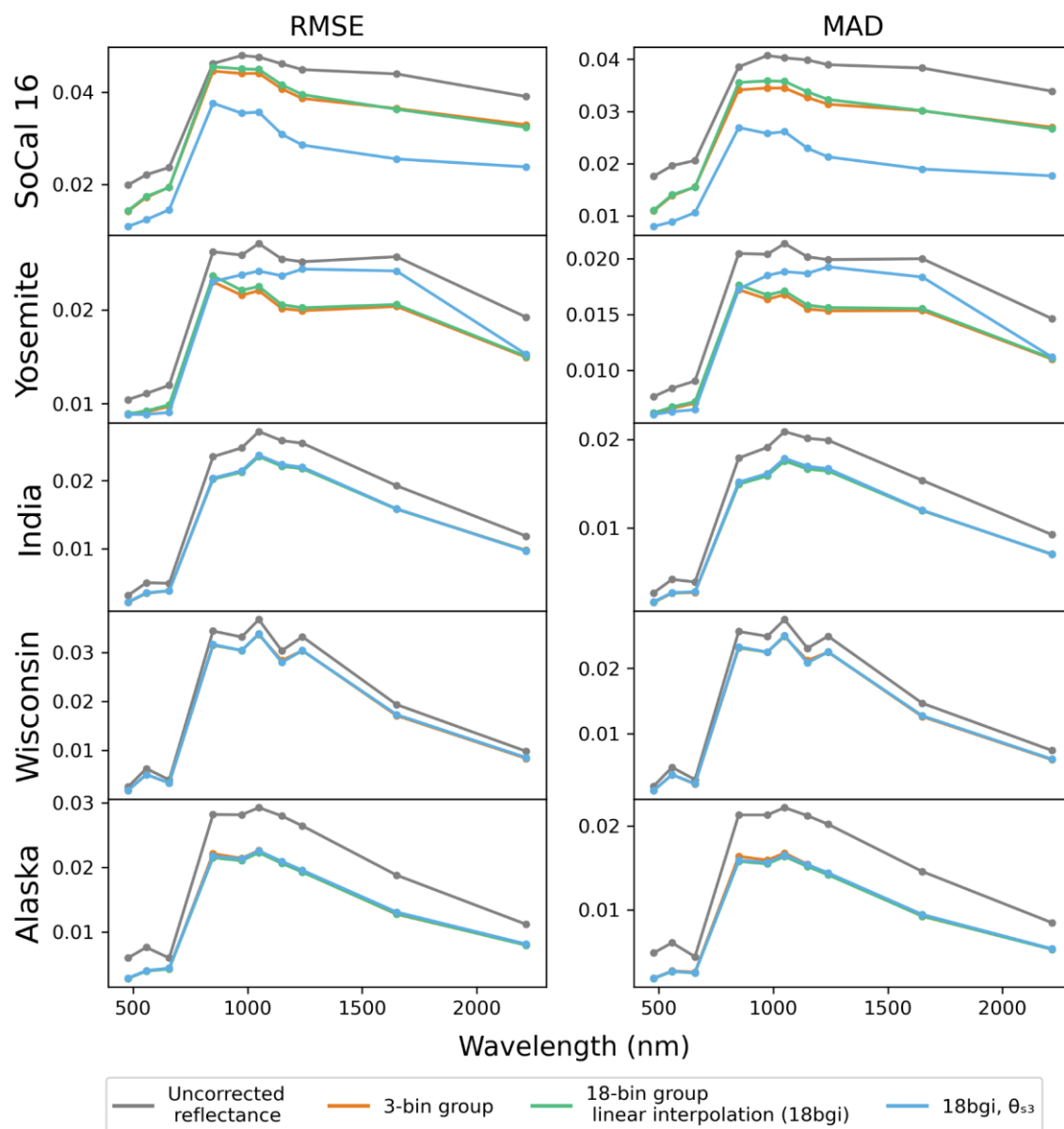




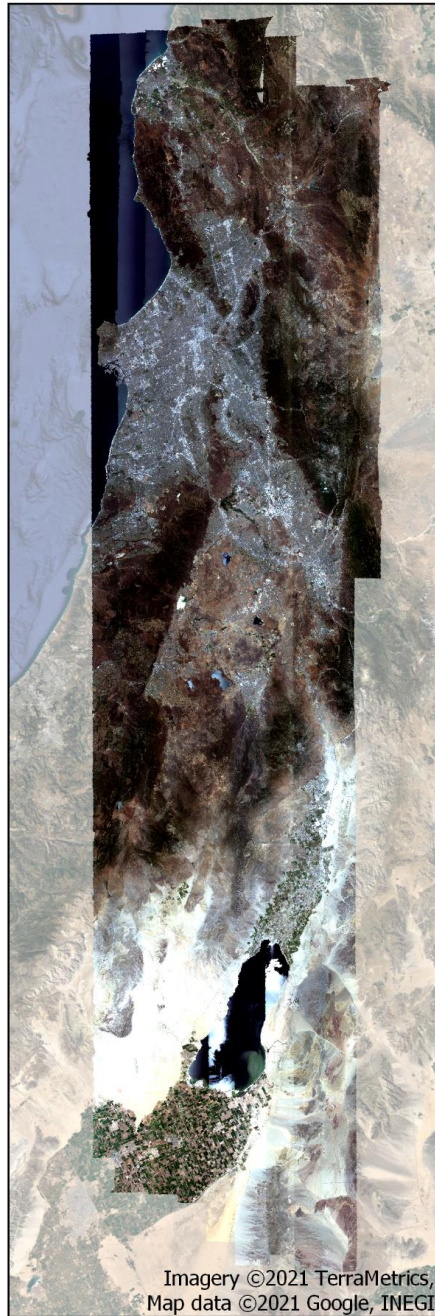
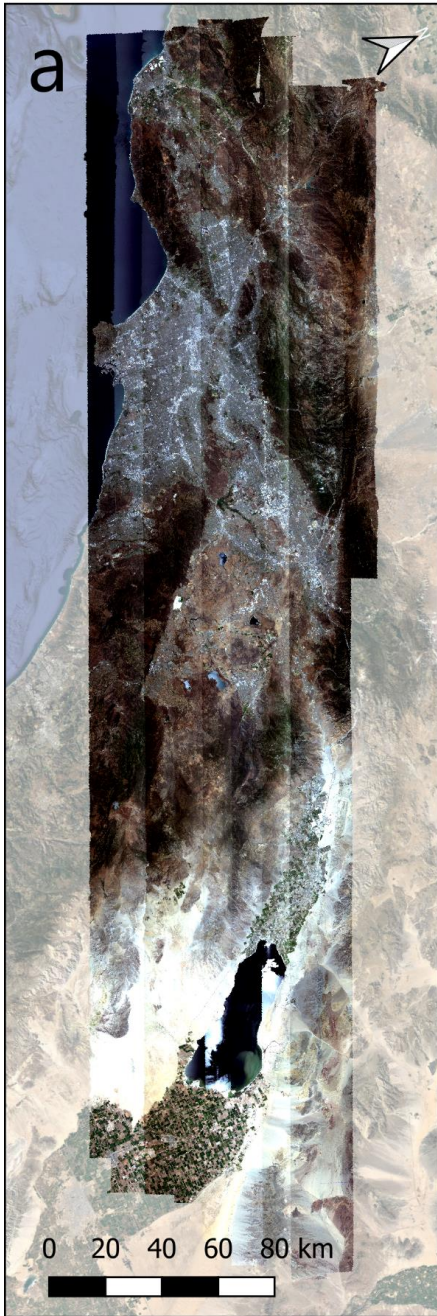




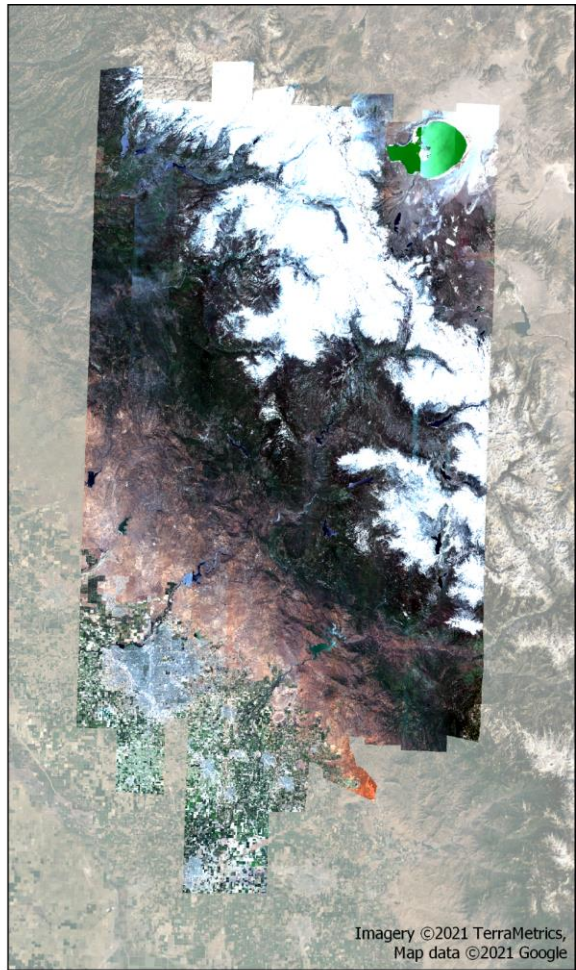
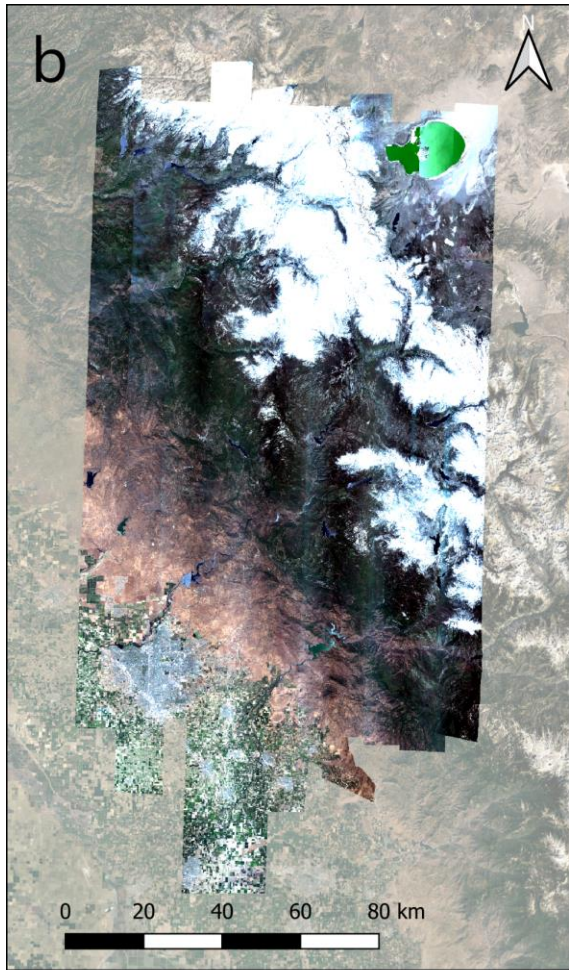
**Figure S7.** Remaining transects from corrected imagery (color) are more continuous or similar to transects from uncorrected imagery (black) in overlap areas (dashed gray).



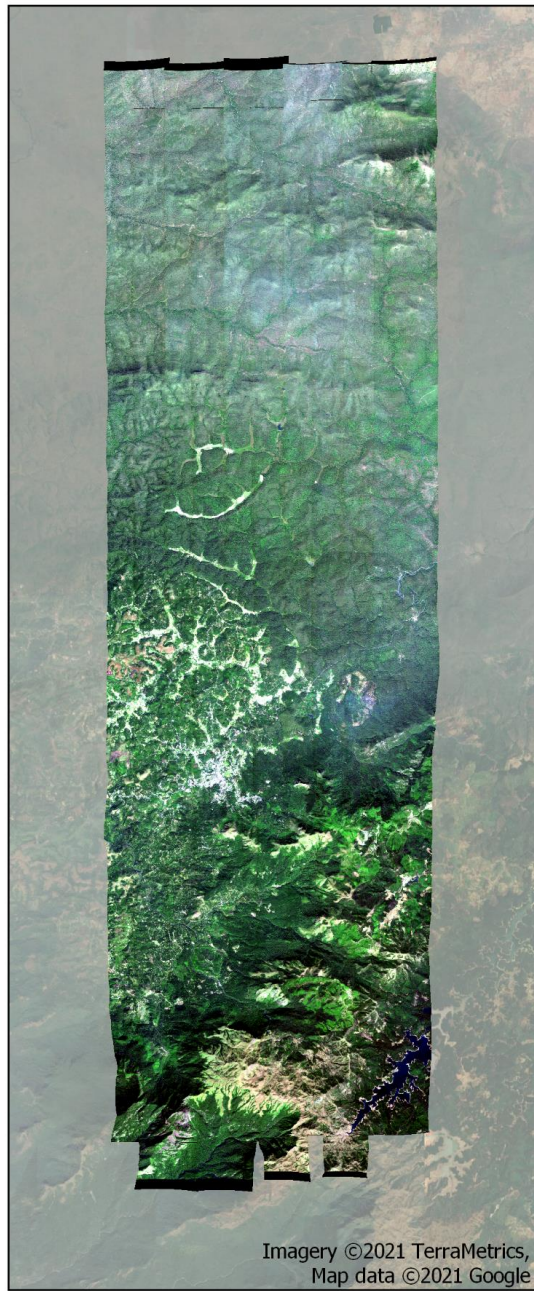
**Figure S8.** RMSE and MAD from overlapping areas across all sites shown for uncorrected reflectance and three BRDF correction methods. All corrections lowered RMSE and MAD, with little difference between methods.

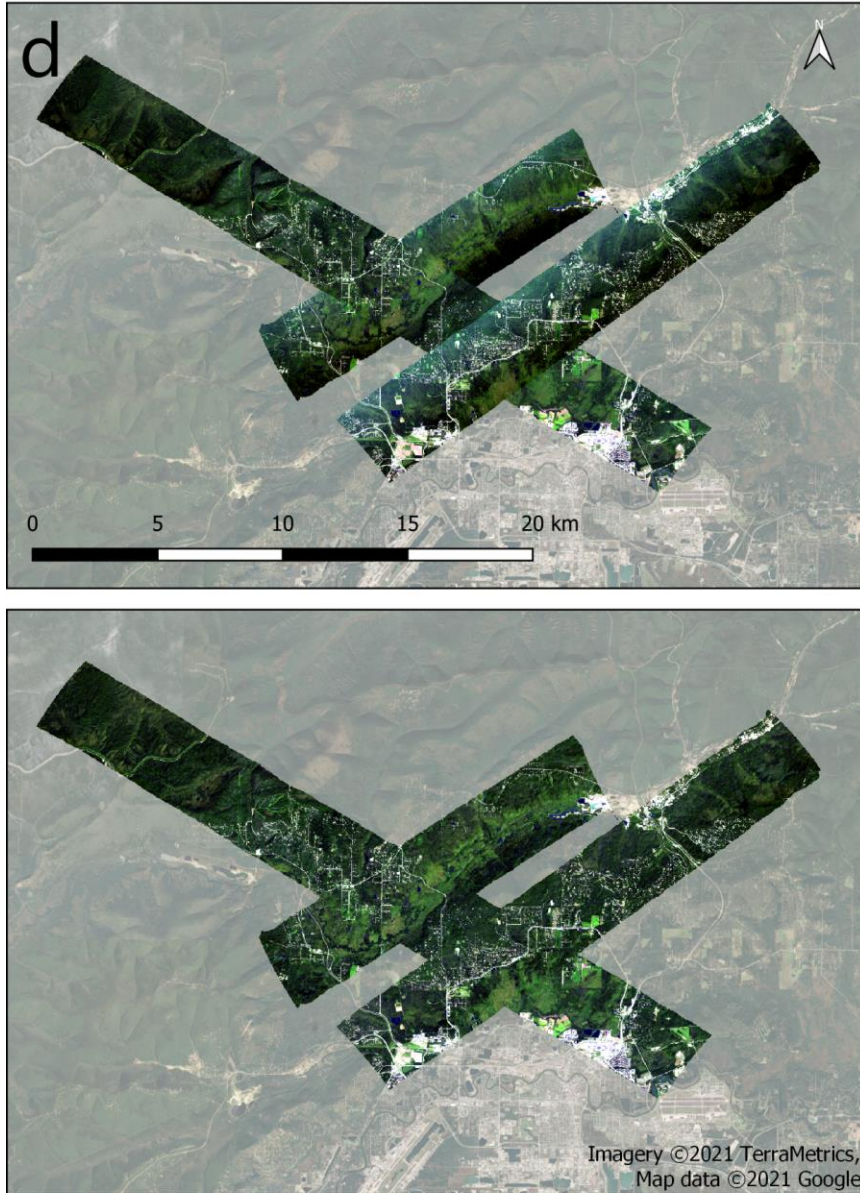




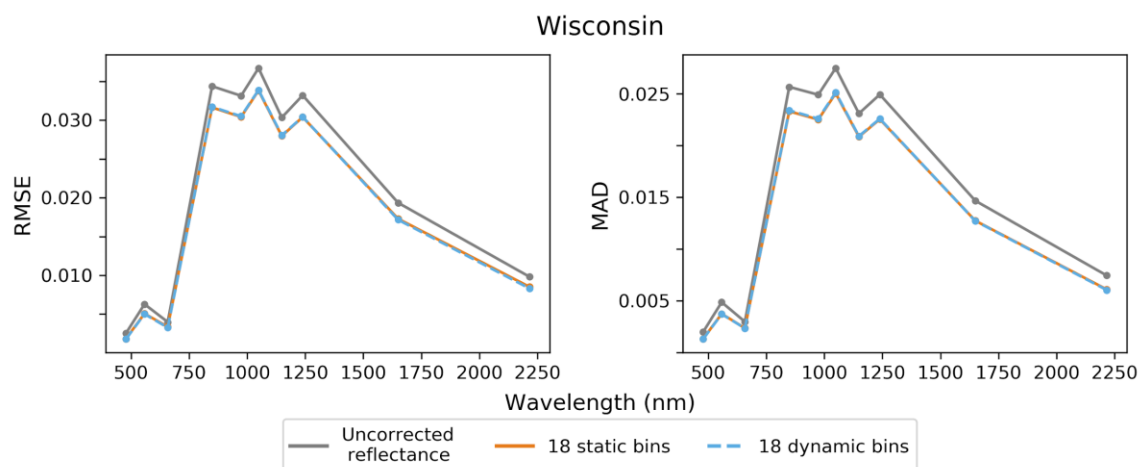








**Figure S9.** Before (left/top) and after (right/bottom) BRDF correction (18 bin group, interpolation,  $\theta_{s3}$ ) mosaics for Southern California 2016 (a), Yosemite (b), India (c), and Alaska (d).



**Figure S10.** RMSE and MAD derived from static vs. dynamic binning showed no significant difference for the NEON Wisconsin box.

**Table S1.** (Separate file) List of flightlines used from each flight box.

**Table S2.** (Separate file) Record of change in RMSE and MAD averaged across all overlap areas in a flight box for 10 bands. Images were corrected with 18-bin group, interpolation,  $\theta_{s3}$  approach. Negative values indicate lower RMSE/MAD in the corrected imagery compared to the uncorrected.