



## Processing Sentinel-2 data with ATCOR

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Atmospheric correction of satellite images is necessary for many applications of remote sensing. Among them are applications for agriculture, forestry, land cover and land cover change, urban mapping, emergency and inland water. ATCOR is a widely used atmospheric correction tool which can process data of many optical satellite sensors, for instance Landsat, Sentinel-2, SPOT and RapidEye. ATCOR includes a terrain and adjacency correction of satellite images and several special algorithms like haze detection, haze correction, cirrus correction, de-shadowing and empirical methods for BRDF correction.

The atmospheric correction tool ATCOR starts with an estimation of the vertical column Aerosol Optical Thickness (AOT<sub>550</sub>) at 550 nm. The mean uncertainty of the ATCOR-AOT<sub>550</sub>-estimation was estimated using Landsat and RapidEye data by direct comparison with sunphotometer data as a reference. For Landsat and RapidEye the uncertainty is  $\Delta\text{AOT}_{550\text{nm}} \approx 0.03 \pm 0.02$  for cloudless conditions with a cloud+haze fraction below 1%. Inclusion of cloudy and hazy satellite images into the analysis results in mean  $\Delta\text{AOT}_{550\text{nm}} \approx 0.04 \pm 0.03$  for both RapidEye and Landsat imagery. About  $\frac{1}{3}$  of the samples perform with the AOT uncertainty better than 0.02 and about  $\frac{2}{3}$  perform with AOT uncertainty better than 0.05. An accuracy of the retrieved surface reflectance of  $\pm 2\%$  (for reflectance < 10%) and  $\pm 4\%$  reflectance units (for reflectance > 40%) can be achieved for flat terrain, and avoiding the specular and backscattering regions.

ATCOR also supports the processing of Sentinel-2 data. First results of processing S2 data and a comparison with AERONET AOT values will be presented.