# Haze compensation and atmospheric correction for Sentinel-2 data

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Sentinel-2 data offer the opportunity to analyse landcover at a high spatial accuracy together with a wide swath. Nevertheless, the high data volume requires a per granule analysis. This may lead to border effects (difference in the radiance/reflectance values) between the neighbouring granules during atmospheric correction. Especially in case of high variations of the aerosol optical thickness (AOT) across the granules, especially in case of haze, the atmospherically corrected mosaicked products often show granule border effects.

To overcome these artefacts a dehazing prior to the atmospheric correction is performed. The dehazing compensates only for the haze thickness keeping the AOT fraction for further estimation and compensation in the atmospheric correction chain. This approach results in a smoother AOT map estimate and a corresponding bottom of atmosphere (BOA) reflectance with low or no border artefacts.

Using digital elevation models (DEMs) allows a better labelling of haze and a higher accuracy of the dehazing. The DEM analysis rejects high elevation areas where bright surfaces might erroneously be classified as haze, thus reducing the probability of misclassification.

The dehazing and atmospheric correction are implemented in the DLR's ATCOR software. An example of a numeric evaluation of atmospheric correction products (AOT and BOA reflectance) is given. It demonstrates a smooth transition between the granules in the AOT map leading to a proper estimate of the BOA reflectance data.