

TOA NDVI:

Top of the Atmosphere (TOA) Normalized Difference Vegetation Index (NDVI) is calculated using the aggregated TOA reflectance, which include TOA reflectance in VIIRS bands I1 and I2 for a VIIRS granule, at 1-km and 4-km resolutions respectively.

$$NDVI = \frac{\rho_{NIR} - \rho_{red}}{\rho_{NIR} + \rho_{red}}$$

The system produces the daily, weekly and bi-weekly TOA NDVI products, respectively, at the global (0.036-degree resolution) and regional (0.009-degree resolution) gridded scales

TOC NDVI:

Top of the Canopy (TOC) Normalized Difference Vegetation Index (NDVI) is calculated using the aggregated TOC reflectance, which include TOC reflectance in VIIRS bands I1, I2, and M3 for a VIIRS granule, at 1-km and 4-km resolutions respectively.

$$NDVI = \frac{\rho_{NIR} - \rho_{red}}{\rho_{NIR} + \rho_{red}}$$

The system produces the daily, weekly and bi-weekly TOC NDVI products, respectively, at the global (0.036-degree resolution) and regional (0.009-degree resolution) gridded scales

TOC EVI:

Top of the Canopy (TOC) Enhanced Vegetation Index (EVI) is calculated using the aggregated TOC reflectance at 1-km and 4-km resolutions respectively.

$$EVI = G \frac{\rho_{NIR} - \rho_{red}}{\rho_{NIR} + C_1 \rho_{red} - C_2 \rho_{blue} + L}$$

And two-band EVI (EVI2) without a blue.

$$EVI2 = 2.5 \frac{\rho_{NIR} - \rho_{red}}{\rho_{NIR} + 2.4 \rho_{red} + 1}$$

If the red/blue ratio is less than 1.25, or the blue reflectance is larger than 0.3, or EVI is larger than 0.9 or smaller than 0, then the EVI values are replaced by EVI2 values.