

Data basis:

Based on the following Sentinel 2- satellite images, the dNBR (Differenced Normalized Burn Index) for the burn areas near Treuenbrietzen and Jüterbog was calculated using the formulas below [1,2] whereas NIR = band 8 and SWIR = band 12. The NBR was calculated for the five files indicated below and the dNBR for different pre/post combinations depending on the dates when fires occurred (combinations see below)

$$[1] \quad NBR = \frac{NIR-SWIR}{NIR+SWIR}$$

$$[2] \quad dNBR \text{ or } \Delta NBR = PrefireNBR - PostfireNBR$$

Sentinel-2 data files (acquisition date in bold letters in file name)

Apr. 2018: S2A_MSIL2A_**20180422**T102031_N0207_R065_T33UUT_20180422T141352

Juli 2018: S2A_MSIL2A_**20180731**T102021_N0208_R065_T33UUT_20180731T132903

Sep. 2018: S2A_MSIL2A_**20180919**T102021_N0208_R065_T33UUT_20180919T132226

Apr. 2019: S2A_MSIL2A_**20190417**T102031_N0211_R065_T33UUT_20190417T130913

Sep. 2019: S2A_MSIL2A_**20190921**T101031_N0213_R022_T33UUT_20190921T130515

Resulting in the files:

The TIFF files of the dNBR were then cut to the respective study area by layer mask. For this purpose, the partial areas of the burn area near Jüterbog were divided into three groups and extracted from the shapefile (TB_Waldbrand_field, JB_Waldbrand).

Fire event **Treuenbrietzen**:

⑩ Juni 2018: *dNBR_TB.tif* (Juli-September '18)

Fire event **Jüterbog**:

⑩ Juli 2018: *dNBR_JB2018a.tif* (April-Juli '18)

⑩ August 2018: *dNBR_JB2018b.tif* (Juli-September '18)

⑩ Juni 2019: *dNBR_JB2019.tif* (April-September '19)

Using the "SAGA mosaic raster layer" function, the above result maps were merged into one file (*mosaicSAGA_dNBR.tif*).

The style file dNBR.txt contains a scaling based on the defined fire intensities of the United States Geological Survey (USGS), which can be loaded in QGIS via single-channel pseudocolor.

Table 1: Classification of dNBR values as applied by USGS [1].

Severity Level	dNBR Range (scaled by 10^3)	dNBR Range (not scaled)
Enhanced Regrowth, high (post-fire)	-500 to -251	-0.500 to -0.251
Enhanced Regrowth, low (post-fire)	-250 to -101	-0.250 to -0.101
Unburned	-100 to +99	-0.100 to +0.99
Low Severity	+100 to +269	+0.100 to +0.269
Moderate-low Severity	+270 to +439	+0.270 to +0.439
Moderate-high Severity	+440 to +659	+0.440 to +0.659
High Severity	+660 to +1300	+0.660 to +1.300

source [1]: <https://un-spider.org/advisory-support/recommended-practices/recommended-practice-burn-severity/in-detail/normalized-burn-ratio>