# BAND CONVERSION TABLE: FOR SENTINEL-2, SENTINEL-3 AND LANDSAT-8

| Wavelenght | | SENTINEL-2-MSI Swath:100km;Revisit:5d.;Resolution:10-60m | | | | | | | LANDSAT-8-OLI Swath:185km;Revisit:16d. Resolution:15-60m | | | | | Sentinel-3-OLCI Swath:1270km;Revisit:4d Resolution:300m | | | | *This whole table is under verification* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | #order | Sentinel-2A (2015-06-23+) | | | Sentinel-2B (2017-03-07+) | | | | (2013-05-30+) | | | | (2016-01-16+) | | | |
| (nm) | | BAND | Min. | Central Wave L. | Max. | Min. | Central W.L. | Max. | Sp. Res | BAND* | Min. | Central Wave L. | Max. | Sp. Res | BAND | Min. | Central Wave L. | Max. | Purposes (S1/L8/S3): |
| 400 | Aerosol | | | | | | | | | | | | | | B01 | 392.5 | **400.0** | 407.5 | //Coastal aerosol, correction |
| 420 | Aerosol | | | | | | | | | | | | | | B02 | 407.5 | **412.5** | 417.5 | //Yellow subs.,detrital pig. (turbidity) |
| 440 | Aerosol | #12-B01 | 432.2 | **442.7** | 453.2 | 431.7 | **442.2** | 452.7 | 60 | #3-B01 | 433.0 | **443.0** | 453.0 | 30 | B03 | 437.5 | **442.5** | 447.5 | Aerosol//Chlorophyll abs., vegetation |
| 480 | *BLUE* | #1-B02 | 459.4 | **492.4** | 525.4 | 459.1 | **492.1** | 525.1 | 10 | #2-B02 | 450.0 | **482.5** | 515.0 | 30 | B04 | 485.0 | **490.0** | 495.0 | SoilxVeg.,water/Bathym./Chlorophyll MAX. |
| 500 | Nat | | | | | | | | | | | | | | B05 | 505.0 | **510.0** | 515.0 | //Chlorophyll, sedim., turbid., red tide |
| 560 | *GREEN* | #3-B03 | 541.8 | **559.8** | 577.8 | 541.0 | **559.0** | 577.0 | 10 | #6-B03 | 525.0 | **562.5** | 600.0 | 30 | B06 | 555.0 | **560.0** | 565.0 | Turbidity,oil//Chlorophyll MIN. |
| 590 | Nat | | | | | | | | | #1-B08 | 500.0 | **590.0** | 680.0 | 15 | | | | | L-8 Panchromatic // |
| 600 | Nat | | | | | | | | | | | | | 30 | B07 | 615.0 | **620.0** | 625.0 | //Sediment loading |
| 660 | *RED* | #5-B04 | 649.1 | **664.6** | 680.1 | 649.4 | **664.9** | 680.4 | 10 | #5-B04 | 630.0 | **655.0** | 680.0 | 30 | B08 | 660.0 | **665.0** | 670.0 | Soil,veg//2nd Chl.MAX,sedim.,yellow subs. |
| 670 | RedEdge | | | | | | | | | | | | | | B09 | 670.0 | **673.8** | 677.5 | //Improved fluorescence,Surface Mix.Layer |
| 680 | RedEdge | | | | | | | | | | | | | | B10 | 677.5 | **681.3** | 685.0 | //Chlorophyll fluorescence peak |
| 700 | RedEdge | #6-B05 | 696.6 | **704.1** | 711.6 | 695.8 | **703.8** | 711.8 | 20 | | | | | | B11 | 703.8 | **708.8** | 713.8 | Vegetation//Chl.fl.basel. |
| 740 | RedEdge | #8-B06 | 733.0 | **740.5** | 748.0 | 731.6 | **739.1** | 746.6 | 20 | | | | | | B12 | 750.0 | **753.8** | 757.5 | Vegetation//O2 abs.,clouds,veg. |
| 760 | RedEdge | | | | | | | | | | | | | | B13 | 760.0 | **761.3** | 762.5 | //O2 abs.,clouds,veg.;aerosol corr. |
| 765 | RedEdge | | | | | | | | | | | | | | B14 | 762.5 | **764.4** | 766.3 | //Atmospheric correction |
| 767 | RedEdge | | | | | | | | | | | | | | B15 | 766.3 | **767.5** | 768.8 | //Cloud top press.,fluore.over land |
| 780 | RedEdge | #9-B07 | 772.8 | **782.8** | 792.8 | 769.7 | **779.7** | 789.7 | 20 | | | | | | B16 | 771.3 | **778.8** | 786.3 | Vegetation//Atmos.corr. |
| 830 | NIR | #2-B08 | 779.8 | **832.8** | 885.8 | 779.9 | **832.9** | 885.9 | 10 | | | | | | | | | | Vegetation |
| 860 | NarrNIR | #10-B8A | 854.2 | **864.7** | 875.2 | 853.0 | **864.0** | 875.0 | 20 | #4-B05 | 845.0 | **865.0** | 885.0 | 30 | B17 | 855.0 | **865.0** | 875.0 | Vegetation//Atmos.aeros.corr.,clouds |
| 880 | | | | | | | | | | | | | | | B18 | 880.0 | **885.0** | 890.0 | Vegetation//Water vapour reference; SLSTR |
| 900 | | | | | | | | | | | | | | | B19 | 895.0 | **900.0** | 905.0 | //Water vapour abs.,Veg.(max.reflect.) |
| 940 | SWIR | #13-B09 | 935.1 | **945.1** | 955.1 | 932.7 | **943.2** | 953.7 | 60 | | | | | | B20 | 930.0 | **940.0** | 950.0 | //Water vapour abs.,Atmos.aeros.corr. |
| 1300 | SWIR | #4-B10 | 1358.0 | **1373.5** | 1389.0 | 1361.9 | **1376.9** | 1391.9 | 60 | #9-B09 | 1360.0 | **1375.0** | 1390.0 | 30 | B21 | 1000.0 | **1020.0** | 1040.0 | Cirrus cloud detection//Atmos.aeros.corr. |
| 1600 | SWIR | #7-B11 | 1568.2 | **1613.7** | 1659.2 | 1563.4 | **1610.4** | 1657.4 | 20 | #8-B06 | 1560.0 | **1610.0** | 1660.0 | 30 | | | | | Snow/ice/cloud disc>0.025;moist.soil-veg.// |
| 2200 | SWIR | #11-B12 | 2114.9 | **2202.4** | 2289.9 | 2093.2 | **2185.7** | 2278.2 | 20 | #7-B07 | 2100.0 | **2200.0** | 2300.0 | 60 | | | | | Fire/Snow/ice/cloud>0.015;moist.soil-veg.// |
| | | | | | | | | | | #10-B10 | TIRS1 | | | 100 | | | | | /Thermal map, soil moist/ |
| | | | | | | | | | | B11 | TIRS2 | | | 100 | | | | | /Improved thermal map/ |
| BAND OFFSET TIME: | | B02 to B12: 2.09s / 12 tracks | | | | | | | | 0.96s / 14 tracks (FPM) | | | | | | | | | |
| Examples of indices conversion: | | | | | | | | | | | | | | | | | | | |
| NDVI | | (B08-B04)/(B08+B04) | | | | | | | | (B05-B04)/(B05+B04) | | | | | (B17-B08)/(B17+B08) | | | | |
| NDWI2 | | (B03-B08)/(B03+B08) | | | | | | | | (B03-B05)/(B03+B05) | | | | | (B06-B17)/(B06+B17) | | | | |

Sources:

https://www.usgs.gov/faqs/what-are-best-landsat-spectral-bands-use-my-research?qt-news_science_products=0#qt-news_science_products
https://en.wikipedia.org/wiki/Sentinel-2
https://sentinel.esa.int/web/sentinel/technical-guides/sentinel-2-msi/msi-instrument
https://www.sentinel-hub.com/develop/documentation/eo_products/Sentinel2EOproducts
https://sentinel.esa.int/web/sentinel/user-guides/sentinel-3-olci/resolutions/radiometric

COMPOSITIONS: See List of composites

*L8:The along-track spectral band separation leads to an approximately 0.96-second time delay between the leading and trailing bands.
This time delay creates a small but significant terrain parallax effect
https://earth.esa.int/web/eoportal/satellite-missions/content/-/article/landsat-8-ldcm