MULTI SATELLITE SPECTRAL BANDS CONVERSION TABLE

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Version:04
This whole table is under tests / verification

SATELLITE		SENTINEL-2-MSI				LANDSAT-8-OLI				RGBN								MULTISPECTRAL													
		Swath:100km; Revisit:5d				Swath:185km;Revisit:16d.				CBERS - INPE						SKYMAP50-SOAR/SV1		JL1GP - CGSat				Sentinel-3-OLCI				Sentinel-3-SLSTR			
		Sentinel-2A (~2B)				Res:15-60m				Orbit H: 628,6 km						Swath:12km; Revisit:2d.						Swath:1270km;Revisit:4d				Swath:1400km;Revisit:2d			
WaveLenght		#order	(2015-06-23+)			(2013-05-30+)				4A			Wave		3 e 4	Resolution: 0.5m / 2m						Resolution:300m				Resolution:500/1000m			
										('2019-12-20+)			Lenght		(2014+)	(2013-05-30+)						(2016-01-16+)							
(nm)		BAND #order:	Min.	Max.	RES: m	BAND #order:	Min.	Max.	RES: m	WPM 2 - 8m	MUX 17m	WFI 55m	Min.	Max.	IDEM 5-80m	BAND	Min.	Max.	RES: m	BAND	Wave L. nm		RES: m	BAND	Min.	Max.	BAND	Central W.L.		MULTIPLIER	COMMENTS: Purposes (S2/L8/S3):
400	Aerosol									31d	31d	5d			26-5d					B1	403-423		5	B01	392,5	407,5					//Coastal aerosol, correction
420	Aerosol									92Km	95Km	684K			60-866km		=CBERS			B2	433-453		5	B02	407,5	417,5					//Yellow subs.,detrital pig. (turbidity)
440	Aerosol	#12-B01	432,2	453,2	60	#3-B01	433	453	30	B0-PAN			450	900		B0-P	450	890	0,5	B0	450-800		5	B03	437,5	447,5					Aerosol//Chlorophyll abs., vegetation
460	*BLUE*	#1-B02	459,4	525,4	10	#2-B02	450	515	30	B1-B	B05	B13	450	520		B1	450	520	2	B3	450-515		5	B04	485	495	reflect				SoilxVeg.,water/Bathym./Chlorophyll MAX.
530						#1-B08	500	680	15											B7	485-495		10	B05	505	515	500m				//Chlorophyll, sedim., turbid., red tide
560	*GREEN*	#3-B03	541,8	577,8	10	#6-B03	525	600	30	B2-G	B06	B14	520	590		B2	520	590	2	B4	525-600		5	B06	555	565	S1	554,27	1		Turbidity,oil//Chlorophyll MIN.
590																				B8	615-625		10								L-8 Panchromatic //
600																				B5	630-680		5	B07	615	625					//Sediment loading
630	*RED*	#5-B04	649,1	680,1	10	#5-B04	630	680	30	B3-G	B07	B15	630	690		B3	630	690	2	B9	650-680		10	B08	660	670	S2	659,47	1		Soil,veg//2nd Chl.MAX,sedim.,yellow subs.
670																				B14	660-670		20	B09	670	677,5					//Improved fluorescence,Surface Mix.Layer
690																				B15	678-685		20	B10	677,5	685					//Chlorophyll fluorescence peak
700	RedEdge	#6-B05	696,6	711,6	20															B10	699-719		10	B11	703,75	713,75					Vegetation//Chl.fl.basel.
740	RedEdge	#8-B06	733	748	20															B11	733-748		10	B12	750	757,5					Vegetation//O2 abs.,clouds,veg.
760	RedEdge																			B16	750-758		20	B13	760	762,5					//O2 abs.,clouds,veg.;aerosol corr.
765	RedEdge																			B17	759-763		20	B14	762,5	766,25					//Atmospheric correction
767	RedEdge																			B12	773-793		10	B15	766,25	768,75					//Cloud top press.,fluore.over land
780	NIR	#9-B07	772,8	792,8	20					B4-N	B08	B16	770	890		B4-NIR	770	890	2	B6	785-900		5	B16	771,25	786,25					Vegetation//Atmos.corr.
830	NIR	#2-B08	779,8	885,8	10																										Vegetation
860	NarrNIR	#10-B8A	854,2	875,2	20	#4-B05	845	885	30											B13	855-875		20	B17	855	875	S3	868	1		Vegetation//Atmos.aeros.corr.,clouds
880																				B18	935-955		20	B18	880	890					Vegetation//Water vapour reference; SLSTR
900																				B19	1000-1040		20	B19	895	905					//Water vapour abs.,Veg.(max.reflect.)
940	SWIR	#13-B09	935,1	955,1	60															SW1	1195-1225		100	B20	930	950					//Water vapour abs.,Atmos.aeros.corr.
1300	SWIR	#4-B10	1358	1389	60	#9-B09	1360	1390	30											SW2	1360-1390		100	B21	1000	1040	S4	1374,8	3		Cirrus cloud detection//Atmos.aeros.corr.
1600	SWIR	#7-B11	1568,2	1659,2	20	#8-B06	1560	1660	30				1550	1750	SWIR1					SW3	1550-1590		100				S5	1613,4	3		Snow/ice/cloud disc>0.025;moist.soil-veg.//
2200	SWIR	#11-B12	2114,9	2289,9	20	#7-B07	2100	2300	60				2080	2350	SWIR2					SW4	1610-1690		100				S6	2250,7	3		Fire/Snow/ice/cloud>0.015;moist.soil-veg.//
																											S7/F1	3742	.001		// IR 1km
						#10-B10	TIRS1		100				10400	12500	TH					MW	3700-4950		150				S8/F2	10850	.001		Thermal map, soil moist/
						B11	TIRS2		100											LW	7500-13500		150				S9	12020,5	.001		Improved thermal map/
BAND OFFSET TIME:		B02-B12: 2.09s 12 tracks				0.96s / 14 tracks (FPM)																									

INDICES CONVERSION:			R,G,B,NIR only:	(FOLLOW SENTINEL-2 COMPOS)		NOTES:
NDVI (NDNR)	(B08-B04)/(B08+B04)	(B05-B04)/(B05+B04)	(N-R)/(N+R) // SimpleDiff.: N/R (DVI)		(B17-B08)/(B17+B08)	Normalized Difference Vegetation Index
Burn Ratio	(B08-B12)/(B08+B12)	(B05-B07)/(B05+B07)			(B08-S6)/(B8+S6)	Vegetation
NDMI	(B08-B11)/(B08+B11)	(B03-B05)/(B03+B05)			(B06-B17)/(B06+B17)	Water on Leaves
NDWI (NDGN)	(B03-B08)/(B03+B08)	(B03-B05)/(B03+B05)	(G-N)/(G+N) // SimpleDiff.: G/N		(B06-B17)/(B06+B17)	Water Bodies: Normalized Difference Water Index
NDSI	(B03-B11)/(B03+B11)	(B03-B06)/(B03+B06)				Cut mask near (S2NDSI>0.2 & B03>0.15)
GEOAlteration	B11/B12	B06/B07			B20/B21	Geology
FeOx	B11/B08	B06/B05			B20/B17	Geology
IOx (R/B)	B04/B02 - Alternative: B05/B01	B04/B02	R/B		B08/B04	Geology: Iron Oxide Index R/B
Clouds	~ B01>0.3 || B09>0.1 || B10>0.01		G > .3 (?)			Clouds(any)
Brovey(Sharp)	Br1;2;3 : Bx / (B04+B03+B02)		B (1 to 4) / (B1+B2+B3+B4) // *B0(PAN)			Simple Color Sharpening or Pan-Sharpening

BAND COMBINATIONS: S-2 SENTINEL		LANDSAT-8-OLI	CBERS04A - INPE: 3 / 4 / 4A	SKYMAP50-SOAR/SV1		Sentinel-3-OLCI	Sources:
NATURAL	B04*3, B03*3, B02*3	B04*3, B03*3, B02*3	R, G, B			(B08+B09+B10)*1, B06*3, (B04+B05)*1.5	https://www.usgs.gov/faqs/what-are-best-landsat-spect
FALSE NIR (RED VEG)	B08*2,B04*3,B03*3	B05*2,B04*3,B03*3	N, R, G (~R, N, G) N, G, B			B17*2, (B08+B09+B10)*1, (B04+B05)*1.5	https://en.wikipedia.org/wiki/Sentinel-2
NATURAL ENHANCED	B04*2+B05*.2,B03*2+B08*.4,B02*4	B04*3,B03*2+B05*.5,B02*3	IOX(R/B), N, G N, G, IOX(R/B)			(B08+B09+B10)*1+B11*.3, B06*2+(B16+B18)*.5, (B04+B05)*1.5	https://www.sentinel-hub.com/develop/documentation/e
FALSE COL. URBAN - SWIR	B12*2,B11*3,B04*3	B07*2,B06*3,B04*3	N, NDRG((R-G)/(R+G)), B				https://sentinel.esa.int/web/sentinel/technical-guides/se
F.SWIR-NIR (SWIR)	B12*3,B8A*3,B04*3	B07*3,B05*3,B04*3	DVI(N/R), G, B				https://sentinel.esa.int/web/sentinel/user-guides/sentine
FALSE COL.GEOLOGY	B12*3,B04*3,B02*3	B07*3,B04*3,B02*3					leading and trailing bands.
GEOLOGY ENHANCED	B04*1+B12*1.5,B05*1.5+B08*0.5,B02*2.8	B07*2,B04*1.5+B05*0.5,B02*2.8				B20*.15+B08*1.7,B06*1.6+B17*.2,B04*2-B21*.1	parallax effect
AGRICULTURE	B11*3,B08*3,B02*3	B06*3,B05*3,B02*3	N/G				https://earth.esa.int/web/eoportal/satellite-missions/cont
BATHYMETRIC	B04*3,B03*3,B01*3	B04*3,B03*3,B01*3	(R-B)/(R+B) IOX(R/B), N, G			(B08+B09+B10)*1, B06*3, (B02+B03)*1.5	http://www.cbers.inpe.br/sobre/cameras/cbers04a.php
							http://www2.dgi.inpe.br/catalogo/explore