



ICIMOD

Empowering Women in Geospatial Information Technology

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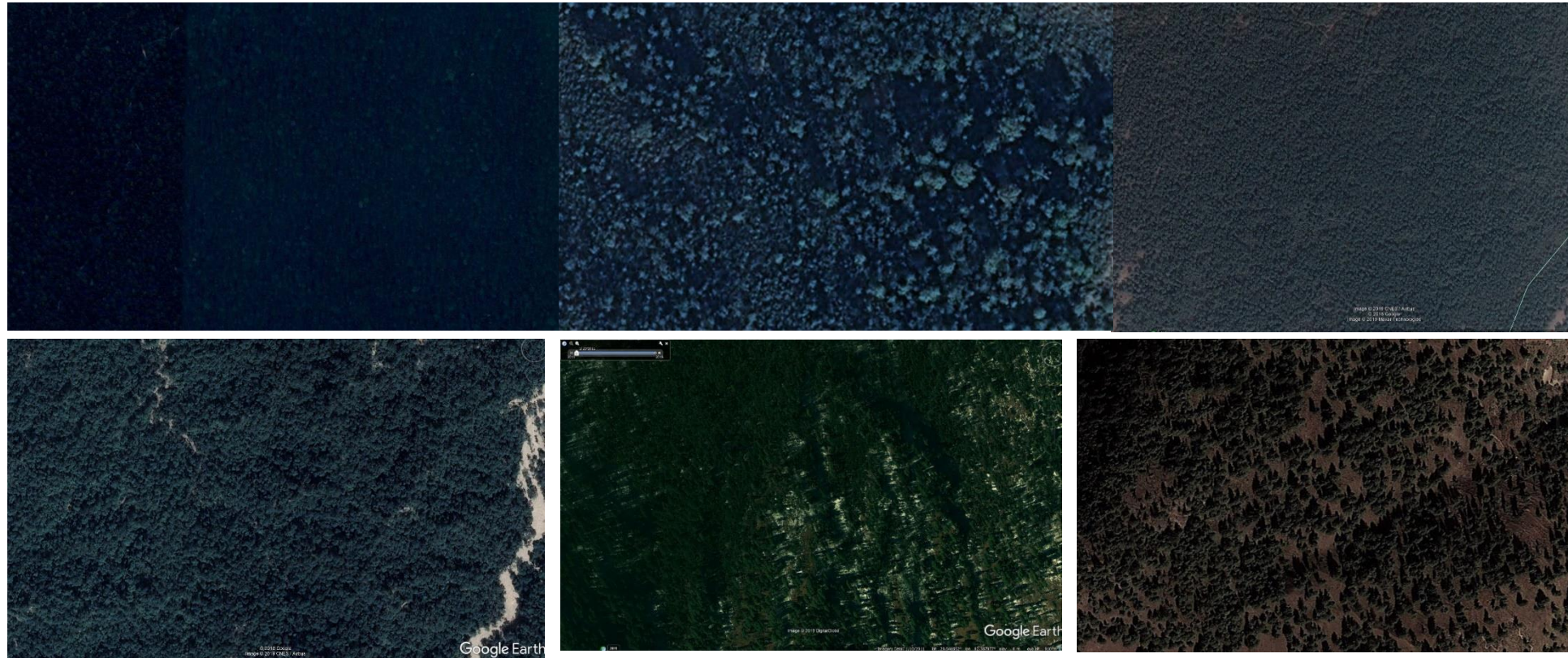
Poonam Tripathi

21th June 2021

Satellite data visualization and interpretation

Satellite data visualization and interpretation

Forests on the image



Satellite data visualization and interpretation

Agriculture/cropland on the image



Satellite data visualization and interpretation

Water body on the image



Satellite data visualization and interpretation

Grassland on the image



Satellite data visualization and interpretation

Grassland on the image



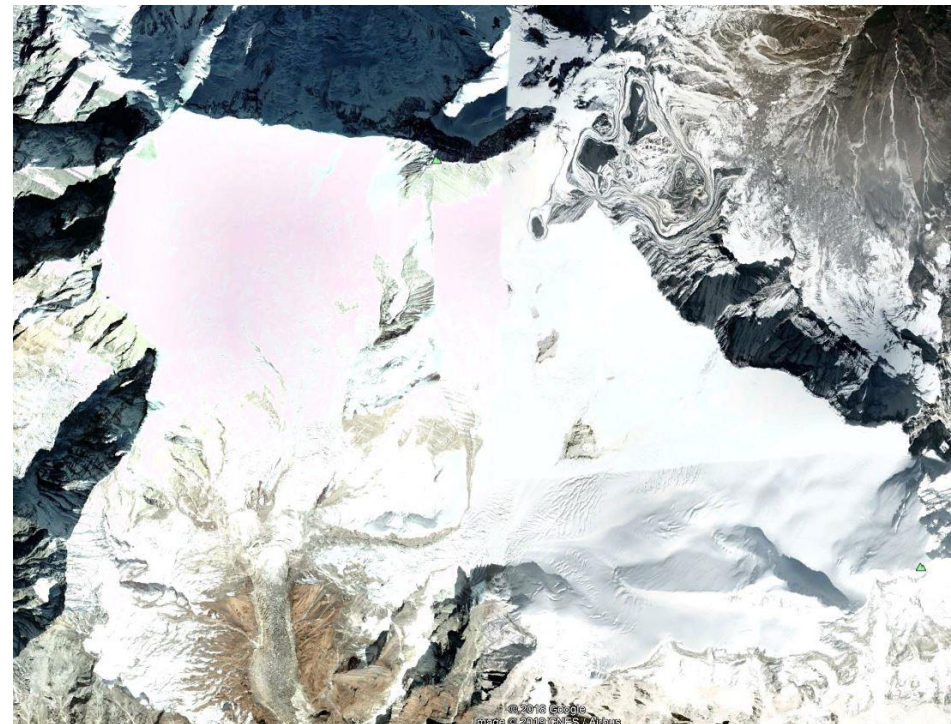
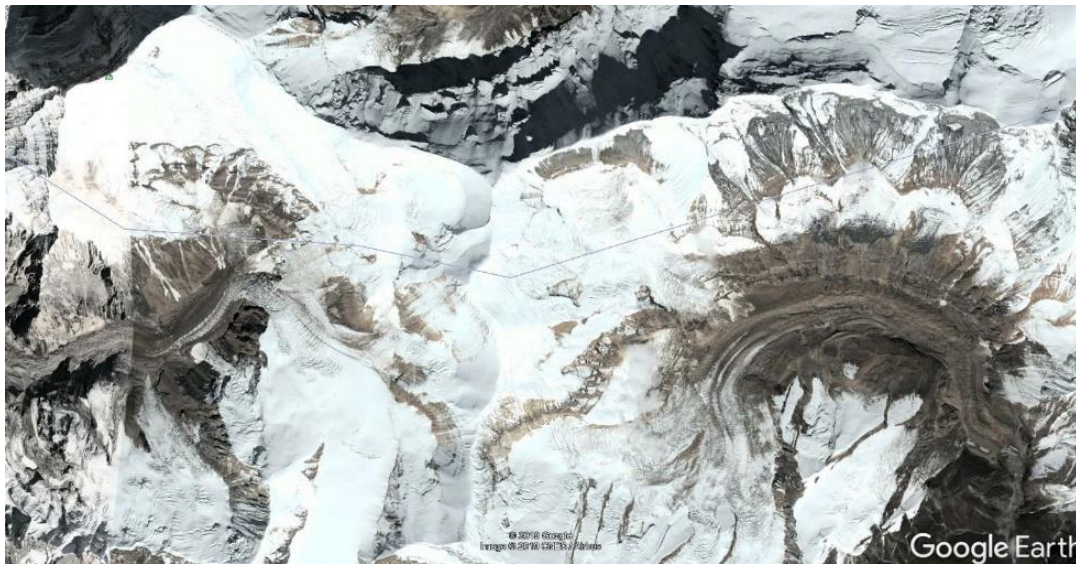
Satellite data visualization and interpretation

Built-up on the image



Satellite data visualization and interpretation

Snow/glacier on the image



Satellite data visualization and interpretation

Features in Sentinel-2A satellite bands

Spectral bands for the Sentinel-2 sensors^[15]

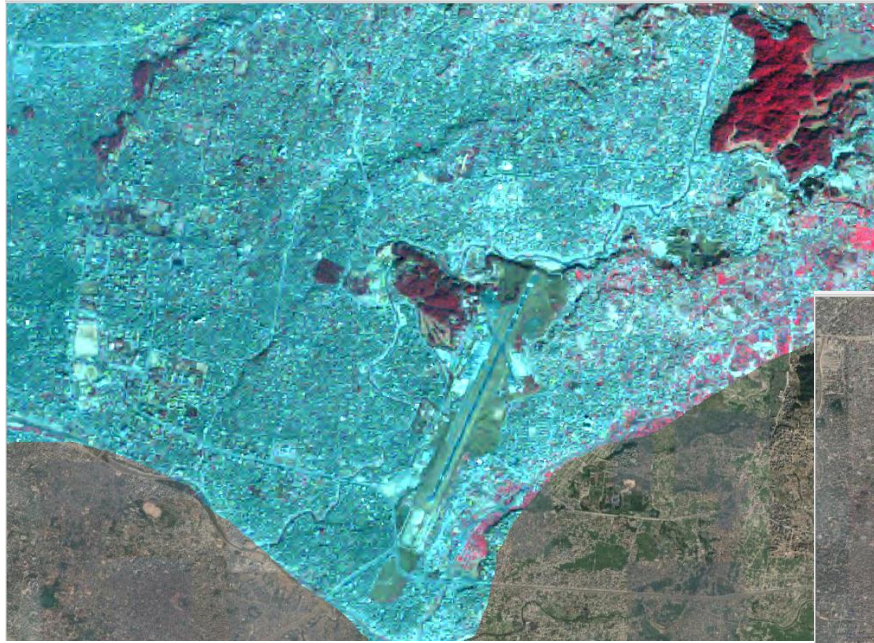
Sentinel-2 bands	Sentinel-2A		Sentinel-2B		Spatial resolution (m)
	Central wavelength (nm)	Bandwidth (nm)	Central wavelength (nm)	Bandwidth (nm)	
Band 1 – Coastal aerosol	442.7	21	442.2	21	60
Band 2 – Blue	492.4	66	492.1	66	10
Band 3 – Green	559.8	36	559.0	36	10
Band 4 – Red	664.6	31	664.9	31	10
Band 5 – Vegetation red edge	704.1	15	703.8	16	20
Band 6 – Vegetation red edge	740.5	15	739.1	15	20
Band 7 – Vegetation red edge	782.8	20	779.7	20	20
Band 8 – NIR	832.8	106	832.9	106	10
Band 8A – Narrow NIR	864.7	21	864.0	22	20
Band 9 – Water vapour	945.1	20	943.2	21	60
Band 10 – SWIR – Cirrus	1373.5	31	1376.9	30	60
Band 11 – SWIR	1613.7	91	1610.4	94	20
Band 12 – SWIR	2202.4	175	2185.7	185	20



Satellite data visualization and interpretation

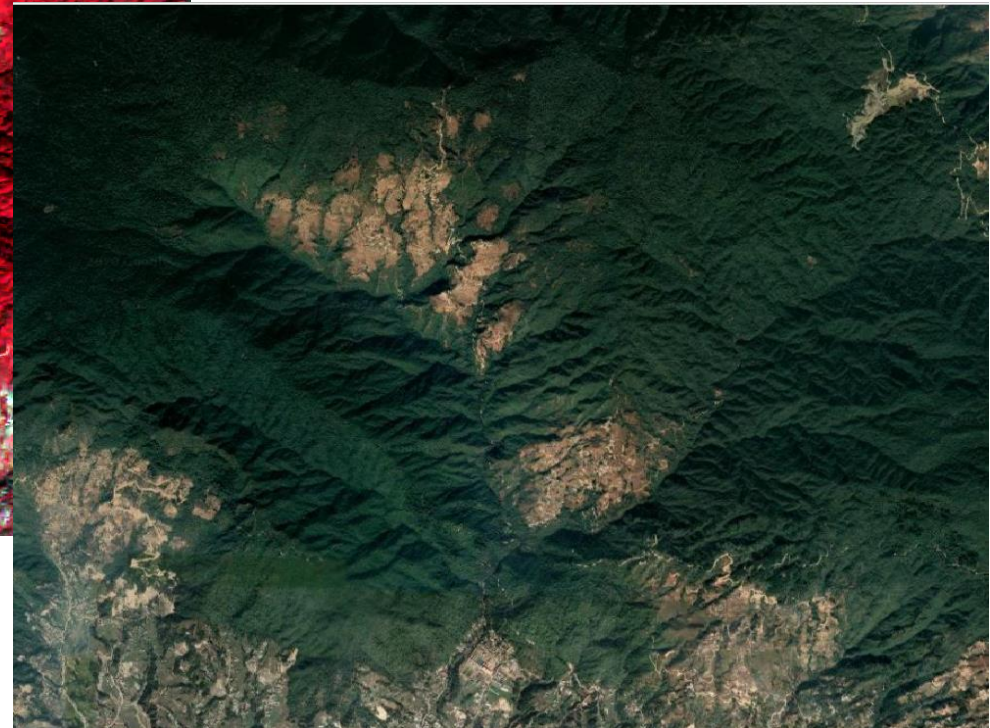
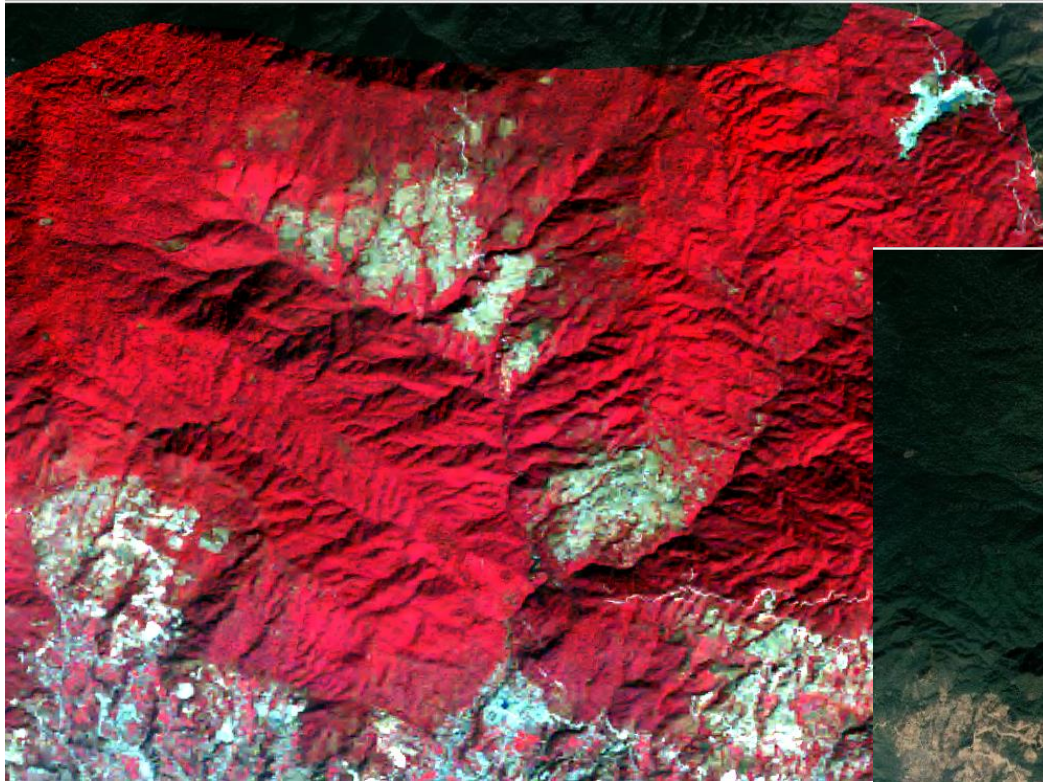
Urban

Airport



Satellite data visualization and interpretation

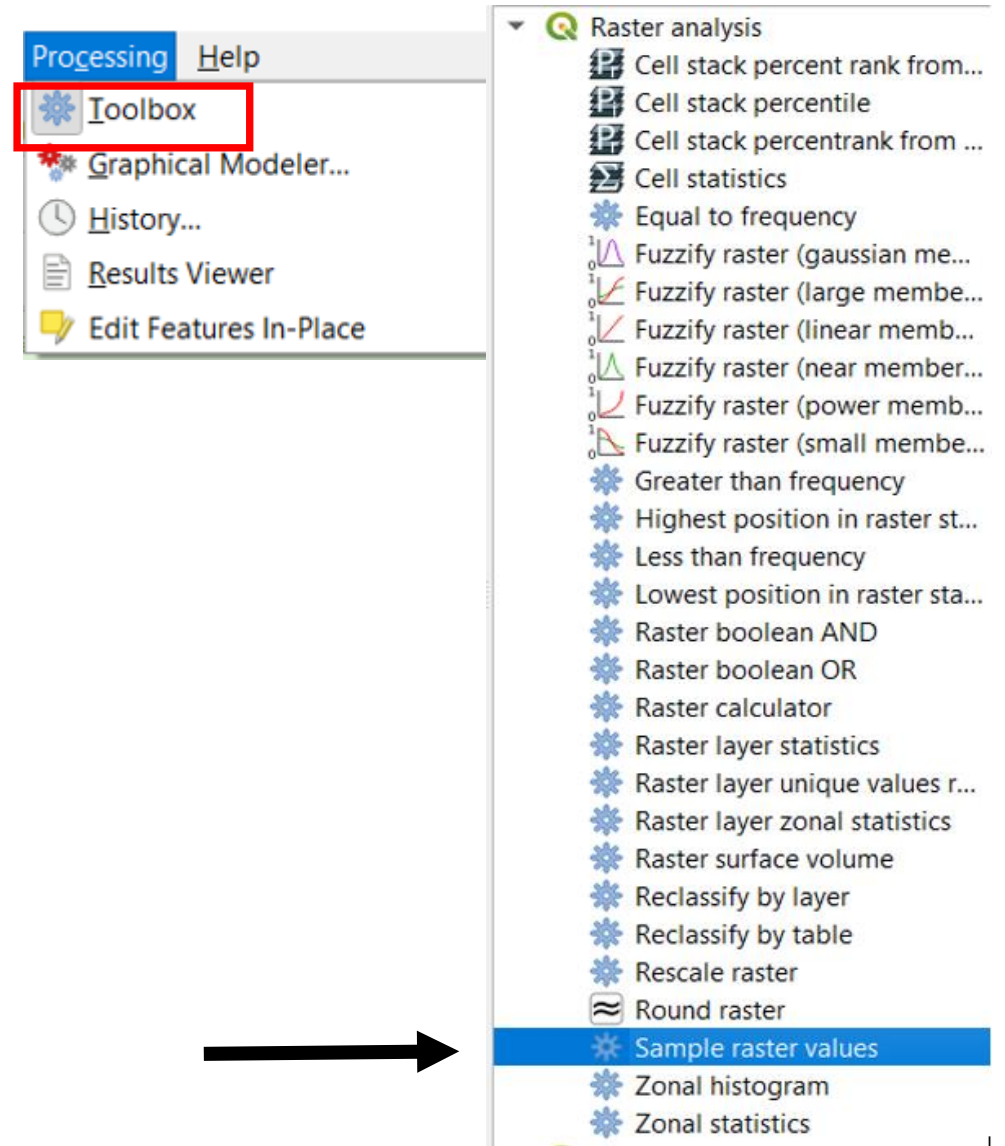
Forest



Satellite data visualization and interpretation

Extracting information

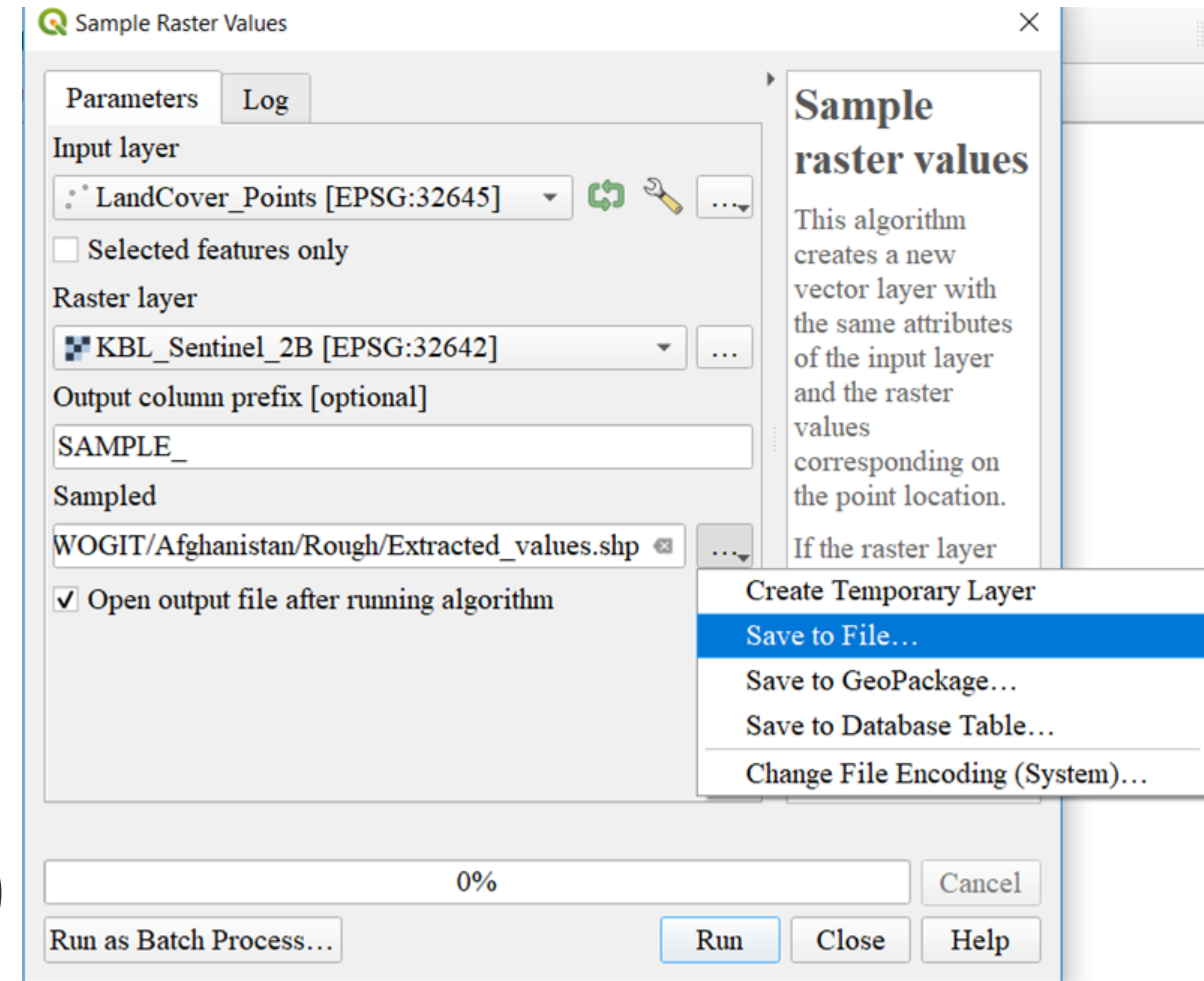
- ADD the **KBL_Sentinel_2B.tif** & **LandCover_Points.shp** file from **Day 2\Exercise 2**
- Click on **Processing Menu** and Click **Toolbox**
- Click the **Sample raster values** tool



Satellite data visualization and interpretation

Extracting information

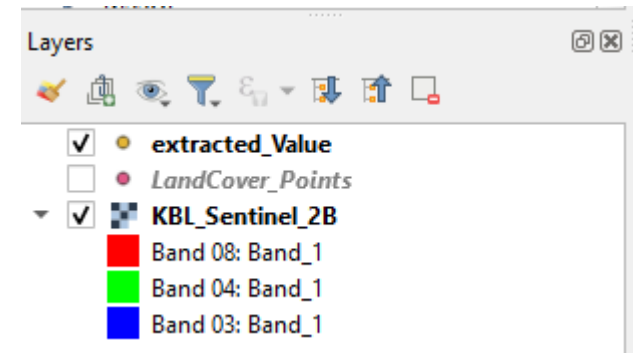
- Select the LandCover_Points.shp as Input layer
- Select the Raster Layer from which the values are to be extracted (In this case KBL_Sentinel_2B)
- Give the Output Prefix as a “Band”
- Specify Output Name (**extracted_values.shp**)



Satellite data visualization and interpretation

Extracting information

- A new layer with extracted values is added in the layer panel



- Open the attribute table
- Extracted reflectance values are added in the attribute table for the selected bands

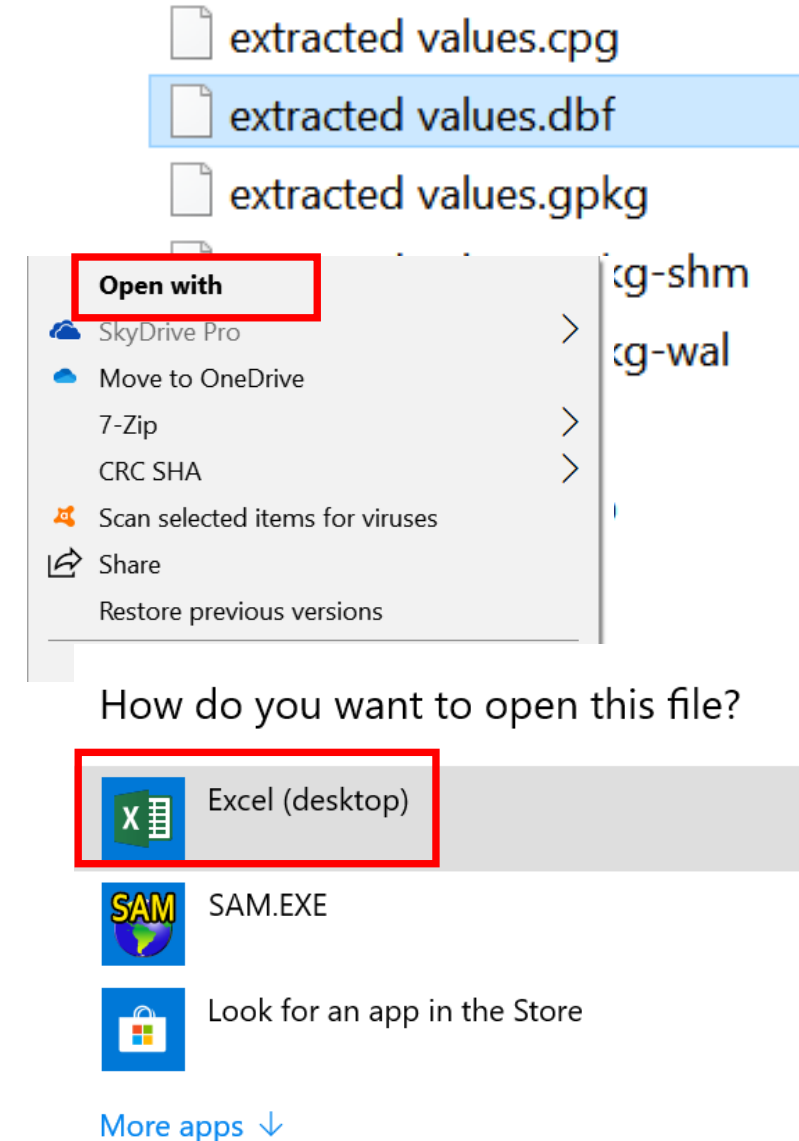
The screenshot shows the QGIS attribute table for the 'extracted_Value' layer. The table has columns for 'id', 'Classes', 'Band1', 'Band2', 'Band3', 'Band4', 'Band5', 'Band6', and 'Band7'. The first row is highlighted in green, and the columns from 'Band1' to 'Band5' are highlighted in red. An arrow points from the 'Open the attribute table' step to the 'id' column.

id	Classes	Band1	Band2	Band3	Band4	Band5	Band6	Band7
1	0 Agriculture	337	336	1004	1117	1106	2073	2
2	0 Agriculture	448	716	1047	1237	1508	1874	2
3	0 Agriculture	287	524	818	874	1305	2034	2
4	0 Agriculture	327	619	980	1049	1504	2262	2
5	0 Agriculture	157	379	554	766	912	1083	1
6	0 Agriculture	157	402	671	786	1218	2049	2
7	0 Snow	12165	11928	11858	11837	11824	11572	11
8	0 Snow	7123	4844	4188	3703	3670	3488	3
9	0 Snow	10662	9760	9309	8968	8888	8575	8
10	0 Snow	10523	10144	9813	9538	9450	9182	8
11	0 Urban	1463	1933	2372	2701	2763	2741	2
12	0 Urban	1429	1753	2101	2342	2385	2407	2
13	0 Urban	1224	1618	2006	2270	2356	2341	2
14	0 Urban	1120	1486	1767	1982	2132	2136	2

Satellite data visualization and interpretation

Result Interpretation

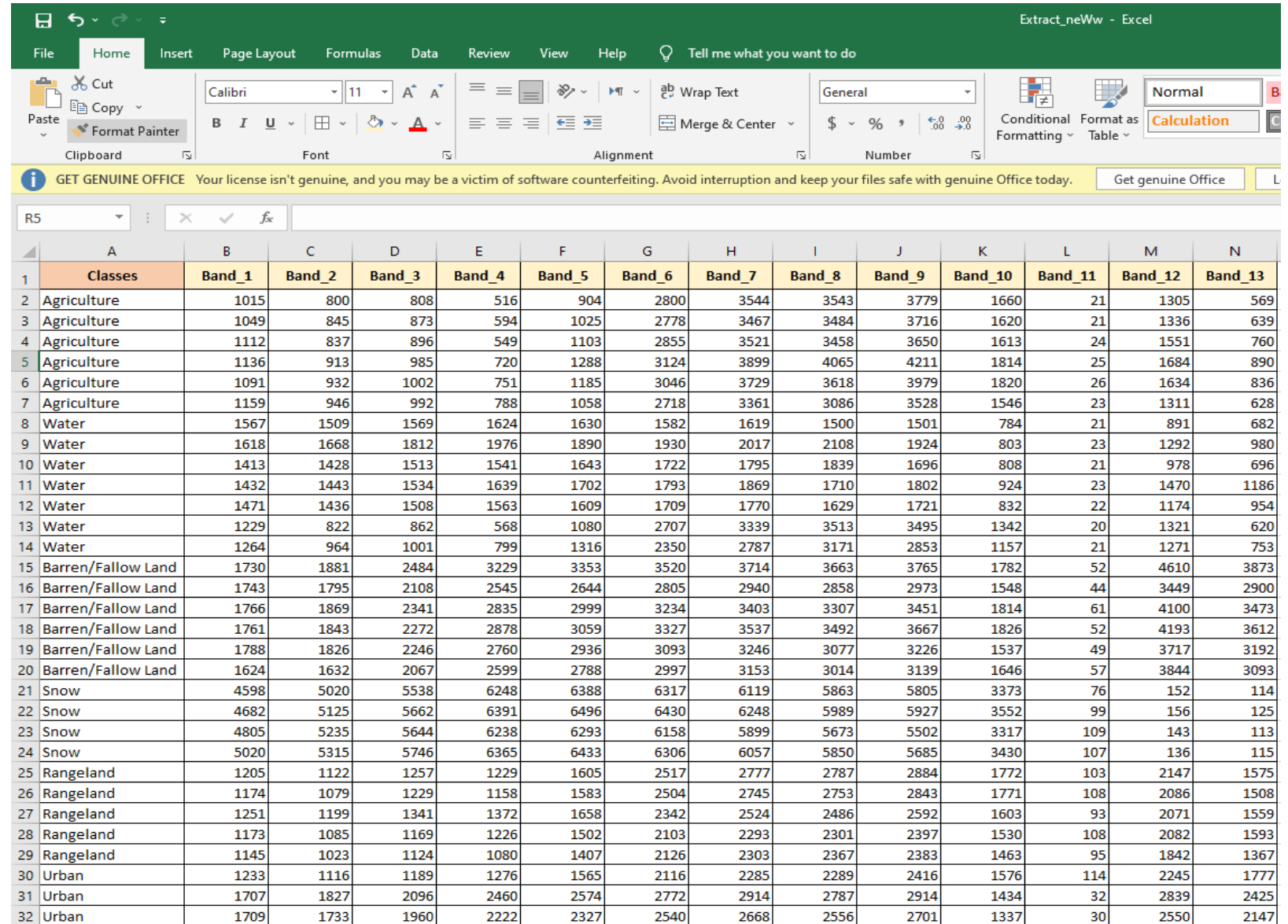
- Go to the folder where you saved the **extracted_values.shp** file
- Right click on the **.dbf** file-> open with Excel sheet



Satellite data visualization and interpretation

Result Interpretation

- Analyze the results for each LULC



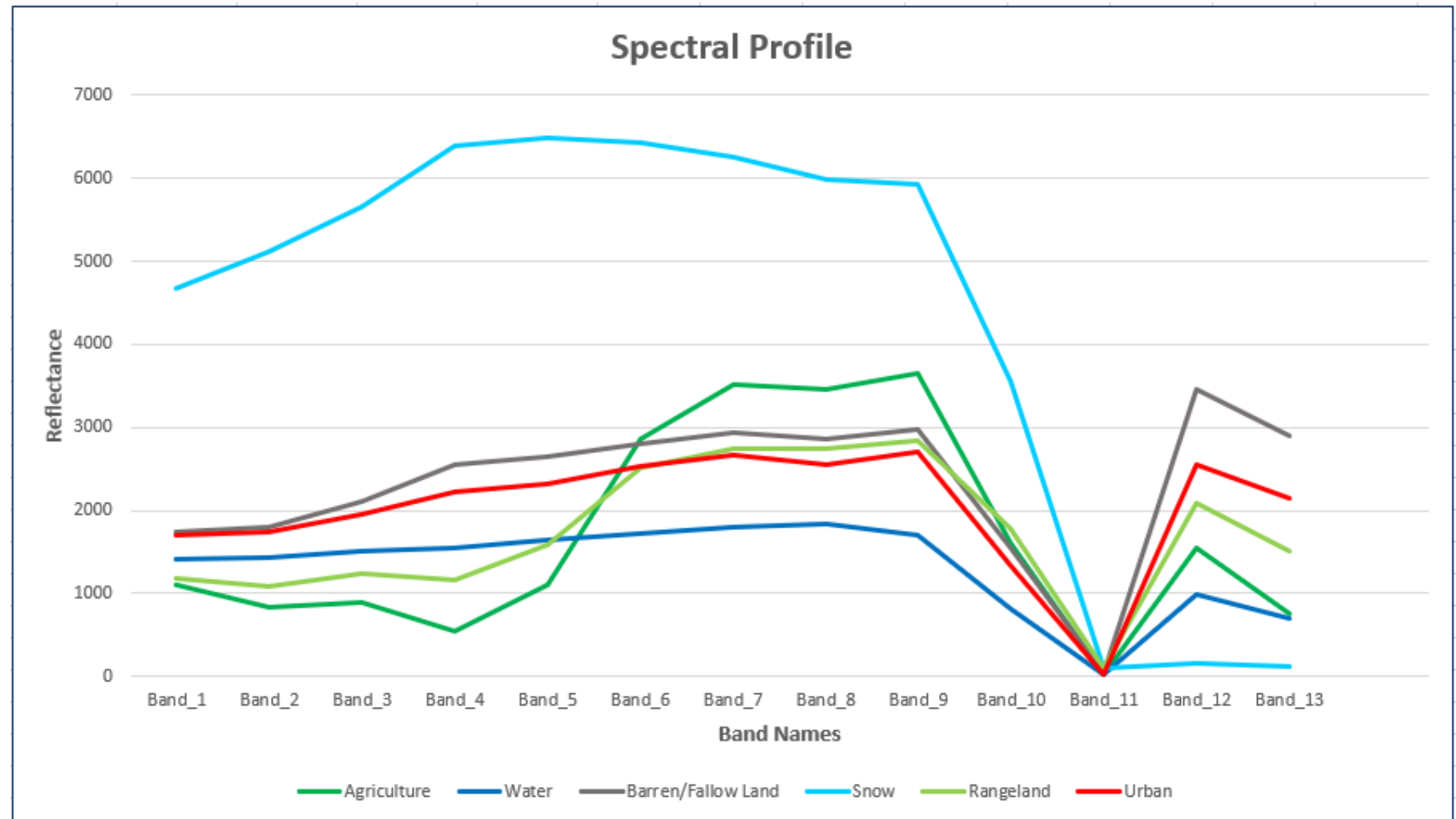
	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	Classes	Band_1	Band_2	Band_3	Band_4	Band_5	Band_6	Band_7	Band_8	Band_9	Band_10	Band_11	Band_12	Band_13
2	Agriculture	1015	800	808	516	904	2800	3544	3543	3779	1660	21	1305	569
3	Agriculture	1049	845	873	594	1025	2778	3467	3484	3716	1620	21	1336	639
4	Agriculture	1112	837	896	549	1103	2855	3521	3458	3650	1613	24	1551	760
5	Agriculture	1136	913	985	720	1288	3124	3899	4065	4211	1814	25	1684	890
6	Agriculture	1091	932	1002	751	1185	3046	3729	3618	3979	1820	26	1634	836
7	Agriculture	1159	946	992	788	1058	2718	3361	3086	3528	1546	23	1311	628
8	Water	1567	1509	1569	1624	1630	1582	1619	1500	1501	784	21	891	682
9	Water	1618	1668	1812	1976	1890	1930	2017	2108	1924	803	23	1292	980
10	Water	1413	1428	1513	1541	1643	1722	1795	1839	1696	808	21	978	696
11	Water	1432	1443	1534	1639	1702	1793	1869	1710	1802	924	23	1470	1186
12	Water	1471	1436	1508	1563	1609	1709	1770	1629	1721	832	22	1174	954
13	Water	1229	822	862	568	1080	2707	3339	3513	3495	1342	20	1321	620
14	Water	1264	964	1001	799	1316	2350	2787	3171	2853	1157	21	1271	753
15	Barren/Fallow Land	1730	1881	2484	3229	3353	3520	3714	3663	3765	1782	52	4610	3873
16	Barren/Fallow Land	1743	1795	2108	2545	2644	2805	2940	2858	2973	1548	44	3449	2900
17	Barren/Fallow Land	1766	1869	2341	2835	2999	3234	3403	3307	3451	1814	61	4100	3473
18	Barren/Fallow Land	1761	1843	2272	2878	3059	3327	3537	3492	3667	1826	52	4193	3612
19	Barren/Fallow Land	1788	1826	2246	2760	2936	3093	3246	3077	3226	1537	49	3717	3192
20	Barren/Fallow Land	1624	1632	2067	2599	2788	2997	3153	3014	3139	1646	57	3844	3093
21	Snow	4598	5020	5538	6248	6388	6317	6119	5863	5805	3373	76	152	114
22	Snow	4682	5125	5662	6391	6496	6430	6248	5989	5927	3552	99	156	125
23	Snow	4805	5235	5644	6238	6293	6158	5899	5673	5502	3317	109	143	113
24	Snow	5020	5315	5746	6365	6433	6306	6057	5850	5685	3430	107	136	115
25	Rangeland	1205	1122	1257	1229	1605	2517	2777	2787	2884	1772	103	2147	1575
26	Rangeland	1174	1079	1229	1158	1583	2504	2745	2753	2843	1771	108	2086	1508
27	Rangeland	1251	1199	1341	1372	1658	2342	2524	2486	2592	1603	93	2071	1559
28	Rangeland	1173	1085	1169	1226	1502	2103	2293	2301	2397	1530	108	2082	1593
29	Rangeland	1145	1023	1124	1080	1407	2126	2303	2367	2383	1463	95	1842	1367
30	Urban	1233	1116	1189	1276	1565	2116	2285	2289	2416	1576	114	2245	1777
31	Urban	1707	1827	2096	2460	2574	2772	2914	2787	2914	1434	32	2839	2425
32	Urban	1709	1733	1960	2222	2327	2540	2668	2556	2701	1337	30	2550	2147



Satellite data visualization and interpretation

Result Interpretation

- Analyze the results for each LULC





Thank you

Let's protect
the pulse.