**Area of Interest:**DeeporBeel, Guwahati, Assam

**Data Used:** LISS III (Spatial Resolution: 24m) from **Bhuvan**

**Software Used:** QGIS 3.16

**Raster Layer Stacking:**

* Go to **Raster Tab >> Miscellaneous >> Merge**.
* In the Dialog Box, input the bands to be stacked.
* Select the checkbox “Place Each input file in Separate Band”.
* Select **Output Data Type** as **Float32**.
* Save the File in **Merge** and name the File.
* Click Run, the Stacked Image is ready.

**NDWI (Normalized Difference Water Index):**

* Open the Stacked Image, now go to **Raster >> Raster Calculator**.
* In the Dialog box, Select the bands according to following algorithm:

**(Green Band – NIR Band) / (Green Band + NIR Band)**

* Click OK, the NDWI is Ready, the readings will be from **-1 to +1**.

**Supervised Classification:**

* Go to **Plugins >> Manage and Install Plugins**.
* Select “All” and search “**Semi-Automatic Classification Plugin (SCP)**” and install it.
* After Installation, add the Band layers in QGIS which needed to be Stacked.
* After Installing the plugin, a new tab named “**SCP**” will be created.
* Go to **SCP >> Band Set**, Refresh the “**Single Band List**”, select the bands and Click Add Icon.
* Select the Checkbox named “**Create Raster of Band Set (stack bands)**” and press Run.
* Go to **View Tab >> Panels >>SCP Dock**, select “Training Input”.
* Now click on “Create new Training Input Icon”, name the file and save.
* Now add the Training Inputs and the number of classes using the ROI Polygon Icon from the SCP Toolbar that was created after the installation of SCP Plugin.
* After Adding the Training Inputs, go to **SCP >> Band processing >> Classification**.
* Select the Band set number if you are using Multiple Band Sets and then select the Algorithm as “**Maximum Likelihood**”.
* Now click Run and Save the File.
* The Classified Image is Created according the Number of classes provided while adding the Training Inputs.

**Results:**According to the Classified Maps of Deepor Beel:

|  |  |  |
| --- | --- | --- |
| **Features** | **Area (km2) on 11th Nov 2011** | **Area (km2) on 3rd Nov 2017** |
| Lake | 6.996 | 7.771 |
| Vegetation | 41.451 | 34.676 |
| Built-Up | 3.680 | 8.715 |
| Open Land | 15.526 | 16.491 |
| **Total** | **67.653** | **67.653** |

**Red Colour shows decrease and green colour shows increase in area.**

**CONCLUSION:-**

Urbanization is an inevitable process. As need increases more and more village areas get included into urban periphery. Ecological and environmental degradation is outcome of urbanization. Stress on ecology, food, environment even shear on the fresh available air is getting low day by day. Ecological conservation is must to protect the human culture-to preserve the proud modernization. Proper conservation measures as well as awareness generation among the citizen to reduce environmental degradation reuse of resources, sustainable and wise use of nature resources can lead to a healthy and sustainable human society. The zoning and proposals designed by the GMDA must be implemented and constant feed backing and monitoring must be done.