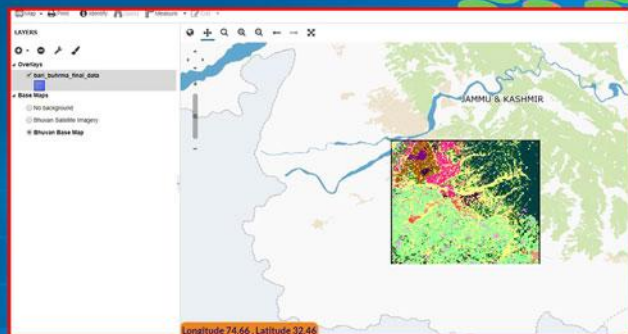


BHUVAN - SUVIDHA

A Geospatial Content Management System

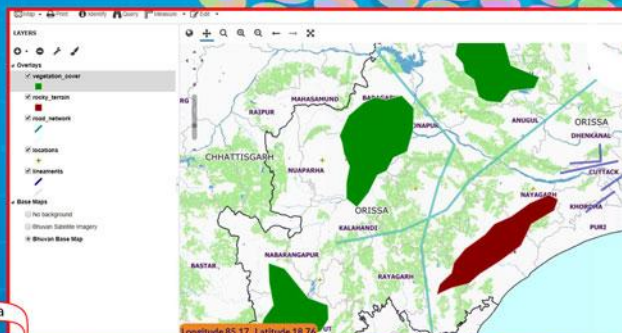


Upload your data

User Manual



Style data



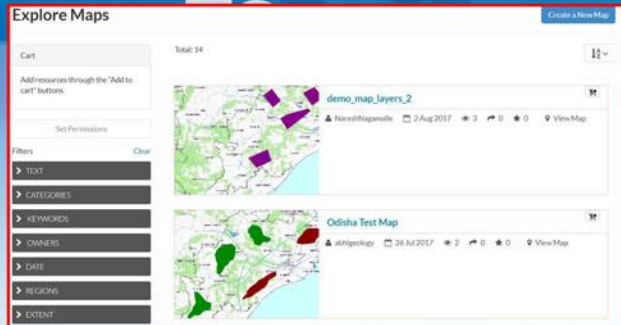
Create and Edit data



Share

Rate

Comment



Create Maps

BHUVAN - SUVIDHA

web application for creating and sharing geospatial data and maps for non-gis experts



4 Layers

Click to search for geospatial data published by other users, organizations and public sources. Download data in standard formats.

Explore layers »



4 Maps

Data is available for browsing, aggregating and styling to generate maps which can be shared publicly or restricted to specific users only.

Explore maps »



28 Users

Registered users to easily upload geospatial data in shapefile and GeoTIF. And users can also create/edit style the features using GUI

See users »



Document Control Sheet



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<p>Abstract: This document is a user manual describing the detailed procedural steps for on-line publishing of Spatial data, Edit, Style, Share with registered users of Bhuvan using BHUVAN–SUVIDHA. This user manual elaborates the procedures of accessing the SUVIDHA Portal, Publishing of Spatial Data, Editing of Features, Styling using GUI, Creation of Maps and Sharing. It also discusses many other tools provided like Query Shell, Download, Adding Meta Data, Embed Map etc.</p>					

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1. Introduction

The purpose of this user manual is to develop the capacity of Bhuvan partners/stakeholders and Non-GIS Experts to share information through the BHUVAN-SUVIDHA (Spatial data Upload, Visualize, Integrate, Download, Host, Analyze) Web Application. This manual is designed by the site administrator to provide the basics, enough for registered users to get started. For more information, user may contact the Bhuvan administrator bhuvan@nrsc.gov.in. All registered users can share the information with registered users, groups of SUVIDHA application; however, to share with all, user need to contact Bhuvan administrator. Each user is allocated 25 MB storage, however in case of more storage requirements user may contact Bhuvan administrator.

1.1 Facilities

- ✓ Uploading of Spatial-data
- ✓ Editing/Creation of features
- ✓ Graphical User Interface for Styling the Data
- ✓ Adding Meta data
- ✓ Create Maps with Uploaded data and Existing layers
- ✓ Sharing of datasets in various modes - public/private/groups/specific users
- ✓ Upload and Linking of Non –spatial(Documents)
- ✓ Uploading OGC SLD(Style Layer Descriptor) file along spatial data
- ✓ Downloading of datasets and corresponding styles
- ✓ Querying the data based on attributes (Query Shell)
- ✓ Comments & Rating on datasets
- ✓ Sharing visualization links with Social Networking sites like Face Book, Twitter, etc.
- ✓ Embedding the datasets along with Bhuvan base Layers to integrate in third party applications
- ✓ Catalogue search (Extent, Regions, Keywords, Categories, Date, Owners)
- ✓ Map Composer and tools for map management

Note:

- Uploading of spatial data in shapefile and Geotiff only
- Recommended Naming convention for data - Country/StateCode_theme_(source)_(yyyymmdd)
- Recommended Projection /Co-ordinate System: (EPSG:4326)

❖ **Important:**

User (or user's agency) is responsible for the upkeep of the information user published. i.e. the reliability, timeliness, accuracy and data contained within user's layers or documents must be managed/maintained by the user or group uploading information. BHUVAN/ISRO/NRSC is not responsible for quality, accuracy, correctness of user/partners uploaded information.

2. BHUVAN SUVIDHA Home Page and Registration.

Type the following URL: <https://bhuvan-suvidha1.nrsc.gov.in/> in the browser, it will direct user to BHUVAN SUVIDHA home page. BHUVAN - SUVIDHA Homepage offers a few options to start navigating the system. There are three useful quick-links at the bottom of the page: Explore Data, Explore Maps and See Users. There are four main links at the top of the homepage: Layers, Maps, Documents and People. These links are permanent, allowing user to easily navigate between different interfaces without necessarily returning to the

to the

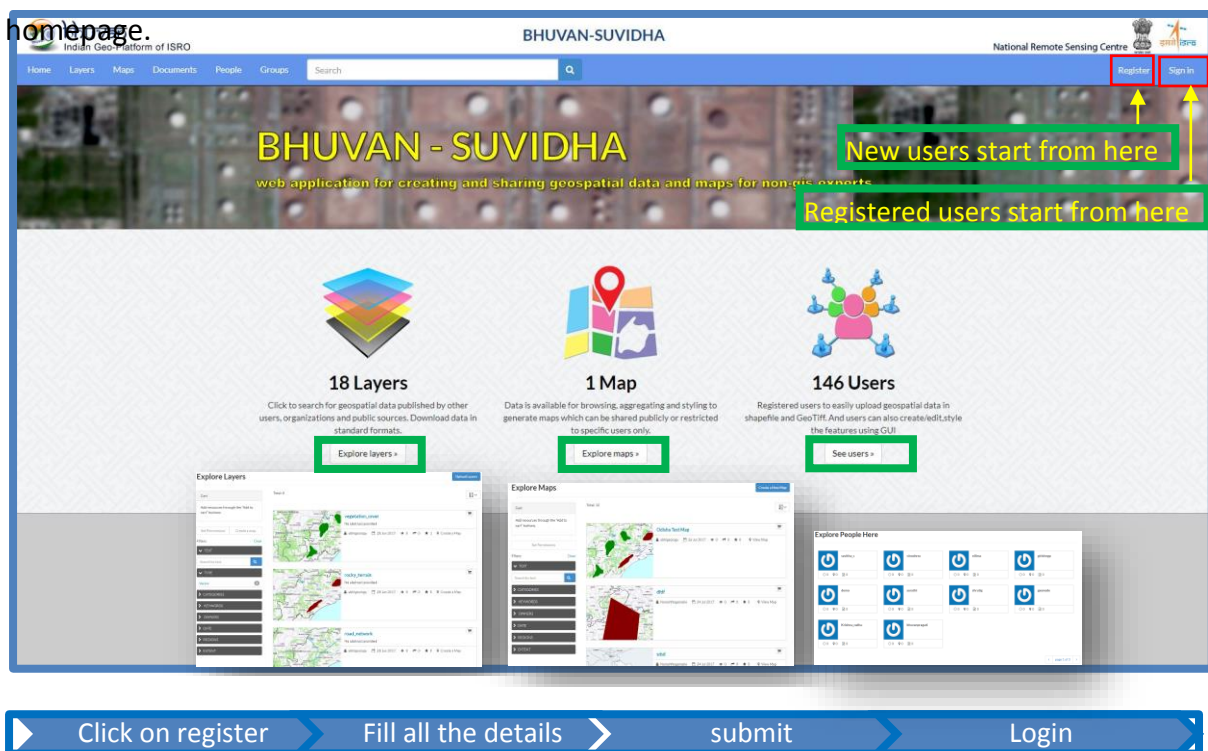


Figure 1. Welcome screen

2.1 Explore Maps

To access maps stored in SUVIDHA user can use the quick-link Explore Maps at the bottom of the homepage, or the Maps in the permanent tab section. If user is looking for specific maps user can use the Search-field at the top of the homepage by typing in e.g. the name of a country or thematic area. Using either of these methods to access maps, a list of results will appear sorted according to when the data was shared (Most recent and Less recent) as well as alphabetically (**A-Z** and **Z-A**) and in order of importance (**Most Popular**). User can also filter the results according to **Text**, **Categories**, **Regions**, **Keywords**, **Date**, or **Extent** using the left-side panel.

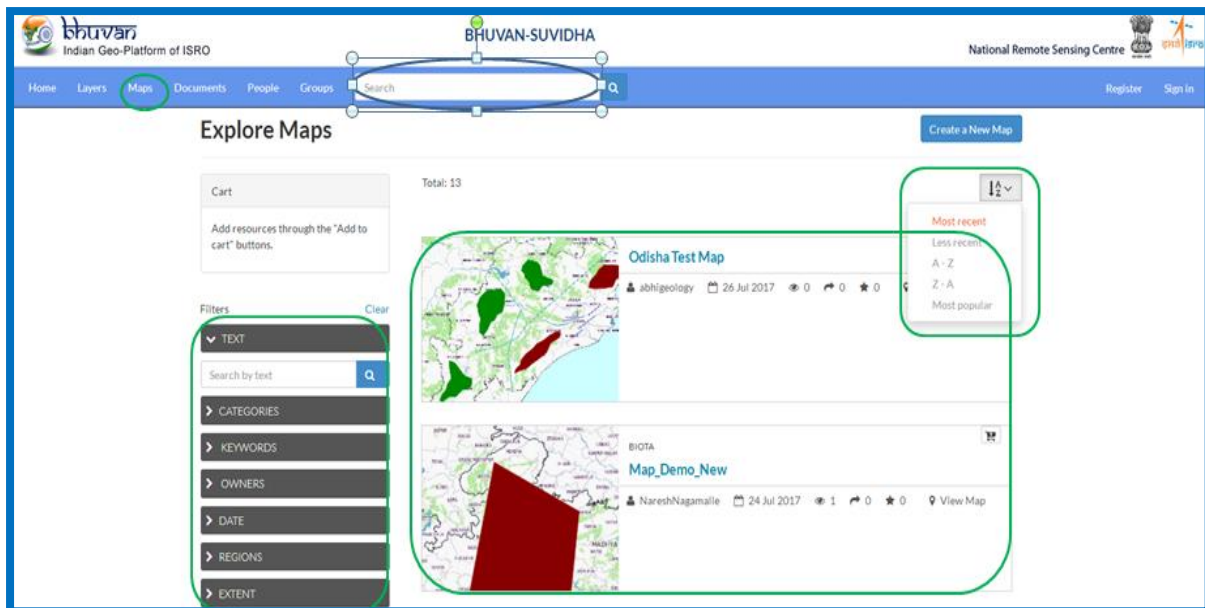


Figure 2. Map layer interface

2.1.1 Access map information

Click on the title of a map to visualize the map and to access more detailed information. It is then possible to pan the map by holding down the mouse button and moving the cursor, or by using the arrows and zoom-tools on the left side of the map. There is a tab section below the map where user can view more **Info** on the map such as all the metadata, **Share** the map through **Social media**, use the **Ratings** and leave **Comments**. On the right side under **Map Layers** there is a list of the data layers used for composing the map. At the top of the page, use **Download Map** (will be available based on access privileges) to extract all the data layers used for composing the map and save it on user's computer.

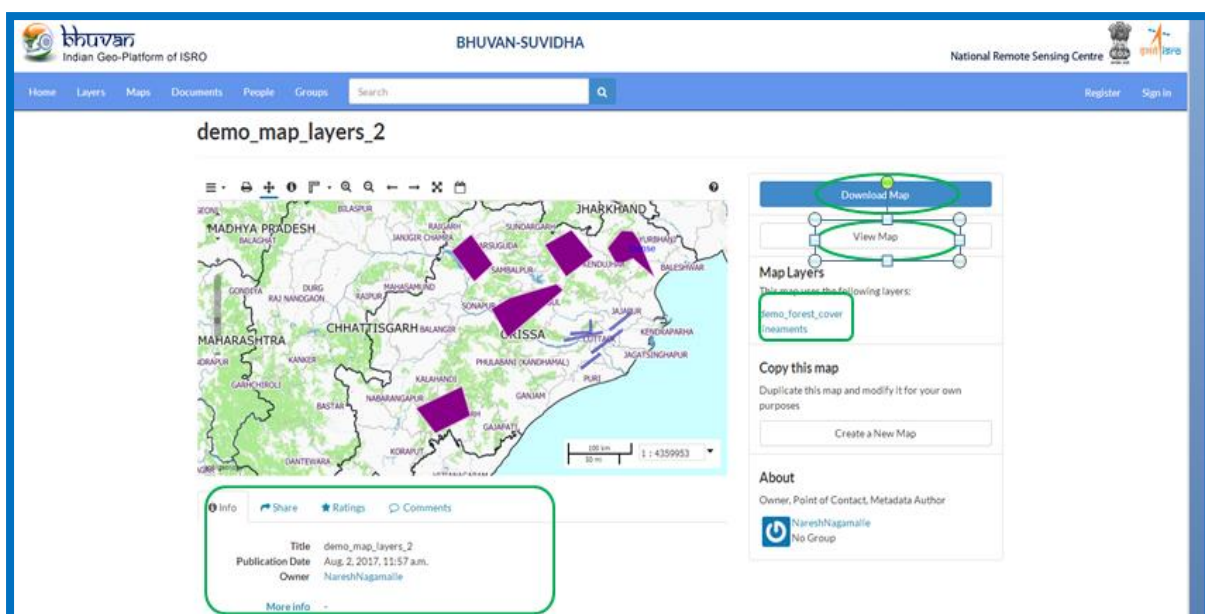


Figure 3. Map visualization and download window

2.1.2 Map Composer and tools for map management

By clicking **View Map** a larger version of the map will appear, as well as tools for changing the map and a list of layers used for that specific map. For the sake of clarity this interface is called “Map Composer”.

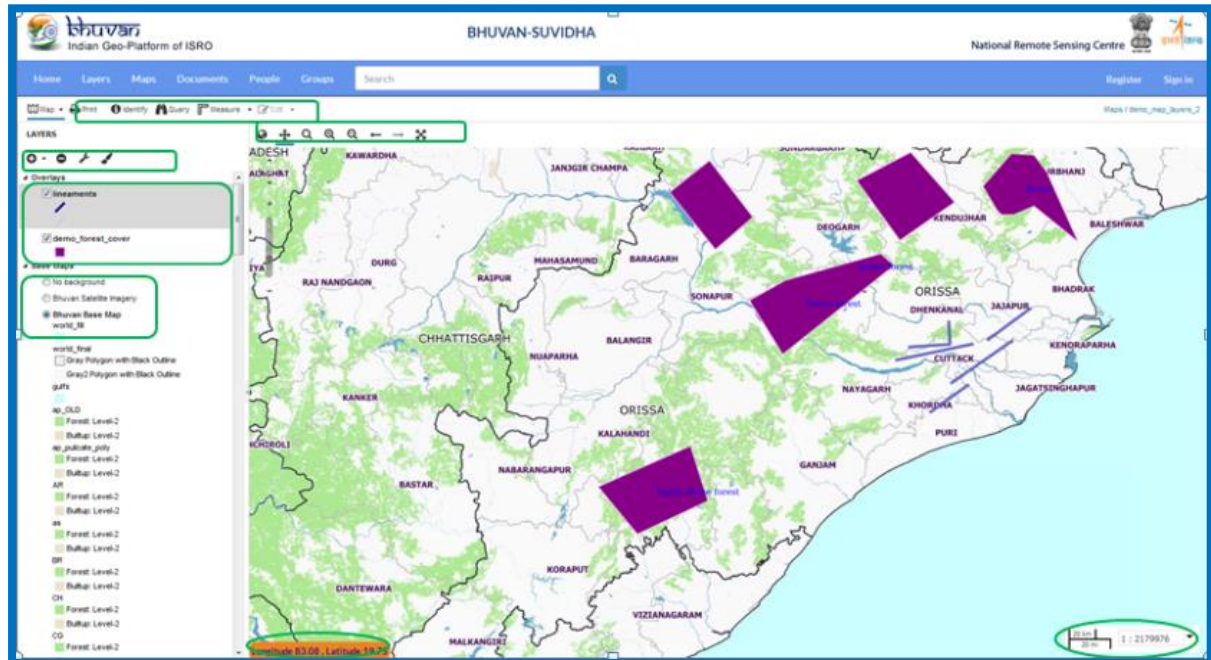


Figure 4. Map composer window

- ❖ The toolbar just above the map is used to easily navigate between different extents and scales



Figure 5. Map navigation toolbar

- ❖ The toolbar on the top-left side is used for editing and managing the map.

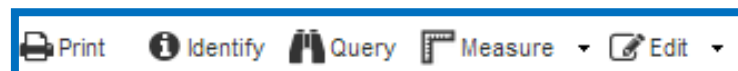


Figure 6. Map editing and managing toolbar

- ❖ **Save** or **Publish** the map on a website by using **Map** (only for registered users),
- ❖ **Print** the map by saving it in pdf-file format
- ❖ View feature attributes on a selected location on the map by using **Identify**,
- ❖ View attribute table of a selected layer and search for specific values using **Query**,
- ❖ **Measure** a specific length or area on the map, and
- ❖ **Edit** the value of selected features (depending on permissions).

- ❖ User find various pre-set **Base Maps** in the panel on the left side of the page, which can be altered depending on how user would like the base layer to be displayed.

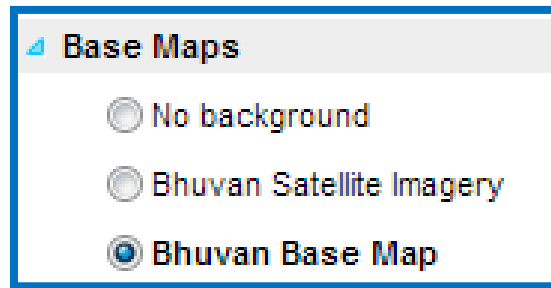


Figure 7. Base map layers window

- ❖ The **Overlays** are the layers used for composing the map. By ticking the box on the left side of a layer title user can turn it on, or off, in order to either display it, or hide it, on the map. The layers are displayed on the map according to their order in the panel list, where layers on top have visual precedence in ascending order. To change the display order of the layers, simply drag-and-drop them up or down.

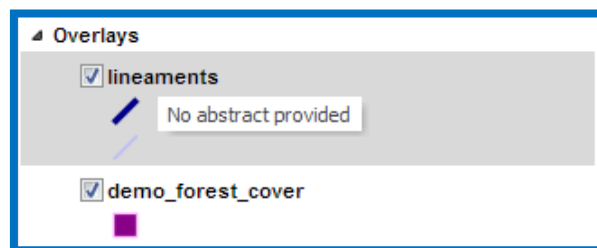


Figure 8. Map composition overlay window

- ❖ The toolbar at the top allows user to **Add** or **Remove Layers** and change **Layer Properties**. The **Style** palette option available for add/modify the style



Figure 9. Layer managing tools

- ❖ By right-clicking on a layer and using **Layer Properties** it is possible to adjust and save the display of that layer in the *Map Composer* without changing the original style of the layer. This function is useful if e.g. user do not have permissions to save or edit a layer but still would like to modify the appearance of a layer for a specific map user is creating.
- ❖ Under the tab **About**, user can provide a title for the display of the layer as well as a description. Under the **Display** tab user can modify the transparency of a layer by

defining the **Opacity** percentage, as well as constrain certain aspects of the layer by using **Limit with filters** and **Limit by scale**.

2.2 Explore Layers

To find the data layers stored in SUVIDHA user can use the quick-link **Layers** at the top of the homepage. It is also possible to **Search** for data layers using the search-field.

2.2.1 View Layers

Click on the title of the data layer to visualize the layer and access more detailed information. The interface is very similar to the map interface, including the navigation toolbar and information about the owner. However; there is an additional tab in the tab section below the map for all the **Attributes** associated with the layer. Moreover, on the right side under **Maps using this Layer** user can quickly navigate to the maps where the layer is being applied, as well as **Create a map** using the current layer. It is possible to extract the data of a vector layer in different file formats (KML, GeoJson, Excel, CSV or Zipped Shapefile) as well as the data of a raster layer (GeoTIFF, ArcGrid, KML, PNG or JPEG), by using the blue button **Download Layer** (will be visible based on privileges) at the top right corner. This is useful in case user would like to send the data, or need to use the data offline with other GIS software such as QGIS or ArcGIS.

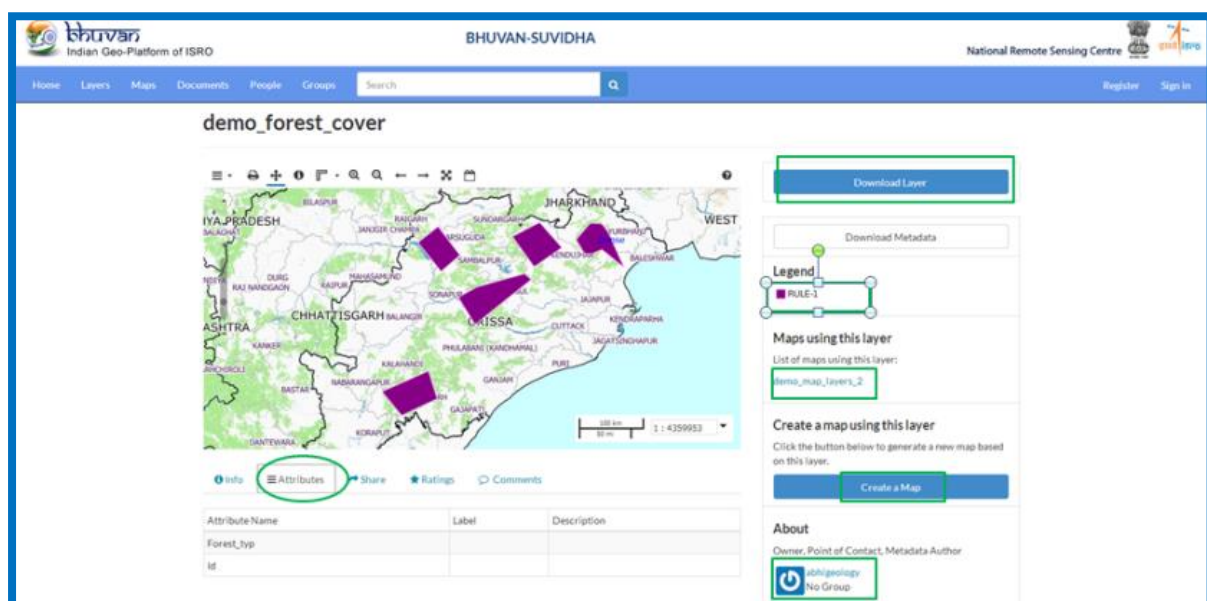


Figure 10. Layer visualization window

2.3 Explore Users

To find the People/Users of SUVIDHA one can use the quick-link, **See Users** at the bottom of the homepage, or the link **People** in the permanent tab section.

2.4 Registration Process:

It is free to register. Once the user has Signed Up with a username, password and email, they become part of the system as an active user: If a person already registered with Bhuvan, same user name, password can be used.

- a) Click on Register button.
- b) Fill all the mandatory details.
- c) Press submit button.

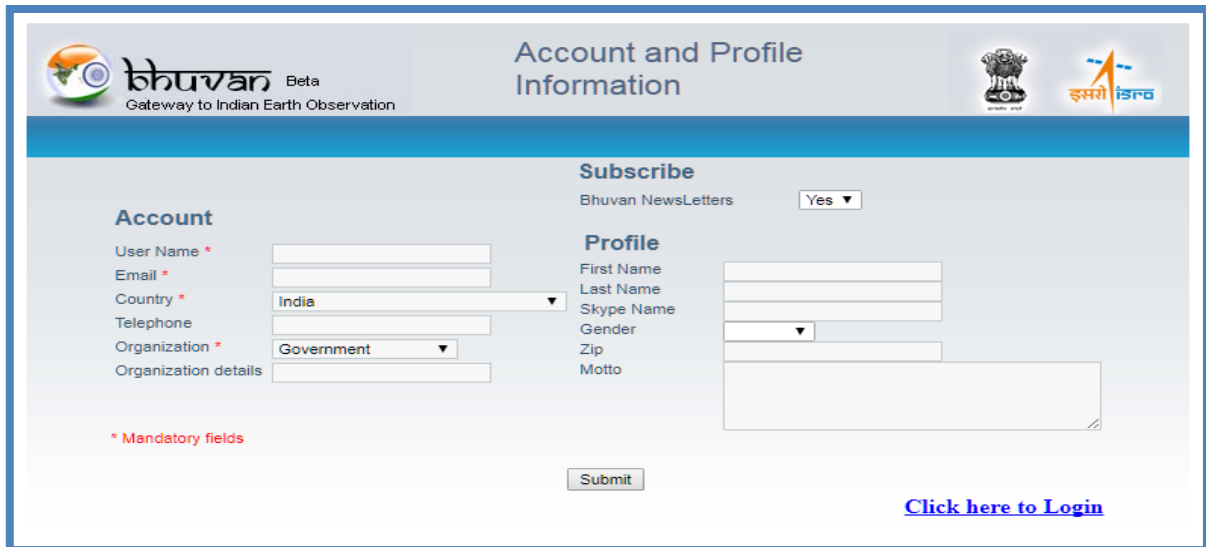


Figure 11. Registration window

- d) Go to login page.
- e) Provide the login details and start working.

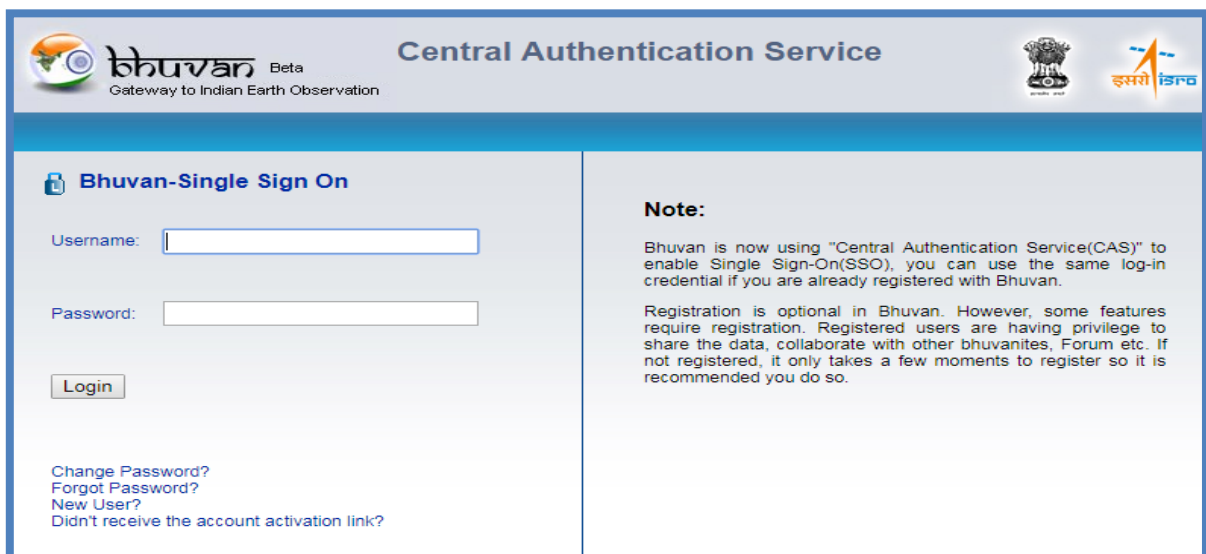


Figure 12. Login window

However, contact the bhuvan@nrsc.gov.in to upgrade user's permissions. There are 3 types of access permissions:

- a)** Super Admin User (Administrative rights) - for system administration.
- b)** Admin User—User has privilege to make the layers/maps/documents public of his/her own and other users who gives privilege to view/change access permission.
- c)** Registered Users: Rights upload/download/create map/ Sharing with groups/registered users.
- d)** Public Users get access to publically shared information (unregistered users).

3. User Profile

A user without being logged in is limited to read-only access of public layers. In order to directly upload layers, update user profile and to see recent activity, user have to login first and click on the user name to get the menu.



Figure 13. User profile

3.1 Profile Setup

- Click on user name
- A pop-up window will appear with some options.
- A User can directly upload layers by clicking “upload layers” option.



Figure 14. Home Page

4. Permissions

Permissions determine who can view, download, edit and manage layers/maps. The user uploading a layer is by default the owner of that layer with full managing permissions. It is important to understand the differences between these settings since neglecting setting permissions correctly can result in giving unintentional access to layers/maps. The following settings are available:

❖ **Who can view this data?**

- ✓ **Anyone:** allows anyone to access the data, including unregistered users.(This option only available for Super Admin and Admin Users)
- ✓ **The following users:** only users(SUVIDHA) who are specifically selected by another user will be able to access the data.
- ✓ **The following groups:** limits access to either SUVIDHA

❖ **Who can download this data?**

- ✓ **Anyone:** allows any user to download uploaded data.(This option only available for Super Admin and Admin Users).
- ✓ **Only the following users:** limits downloading right to other users specified by a user (in addition to the owner of the layer/map).
- ✓ **The following groups:** limits downloading rights to either authenticated SUVIDHA users.

❖ **Who can change metadata?**

- ✓ Limits the editing of map details (title, date, abstract, etc.) to specified users.

❖ **Who can edit data for this layer?**

- ✓ Limits who can edit the attributes of a layer.

❖ **Who can edit styles?**

- ✓ Limits who can change layer appearance.

❖ **Who can manage this layer?**

- ✓ Who can update, delete, change permissions, publish, or unpublish the layer. They become the only users able to set the permissions of the layer/map. To ensure

correct permissions are selected, adjust them before uploading new layers or creating maps. User can change these settings later in the *Layer View* and *Map View* interfaces, by using the red **Edit Layer/Edit Map** button → **Edit (Map) Permissions**.

- For Admin and Super Admin, the permission window appears as

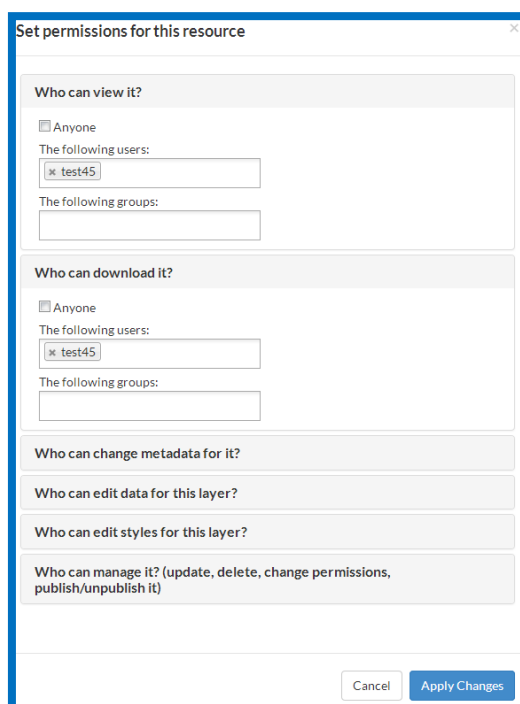


Figure 15. Permission window for admin and super admin

- For Normal registered SUVIDHA users, the permission window appears as follows

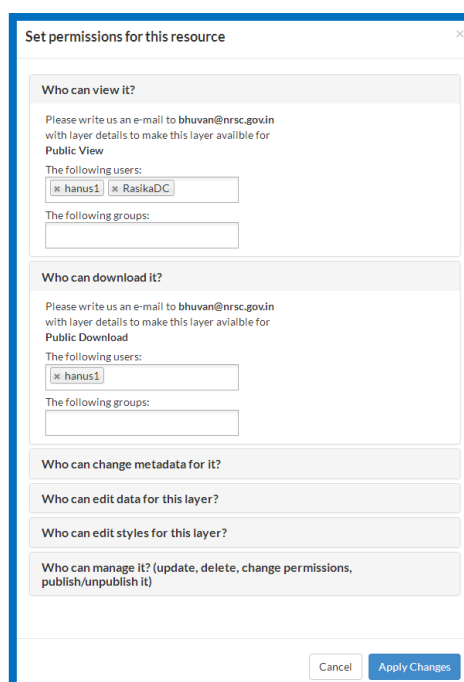


Figure 16. Permission window for general registered users

5. How to upload layers

Once a user becomes registered member of Bhuvan, they are free to upload their information.

- Log-in with user's credentials and Click 'Add Layers' or Click 'Layers' and 'Upload Layers' option to upload the spatial data

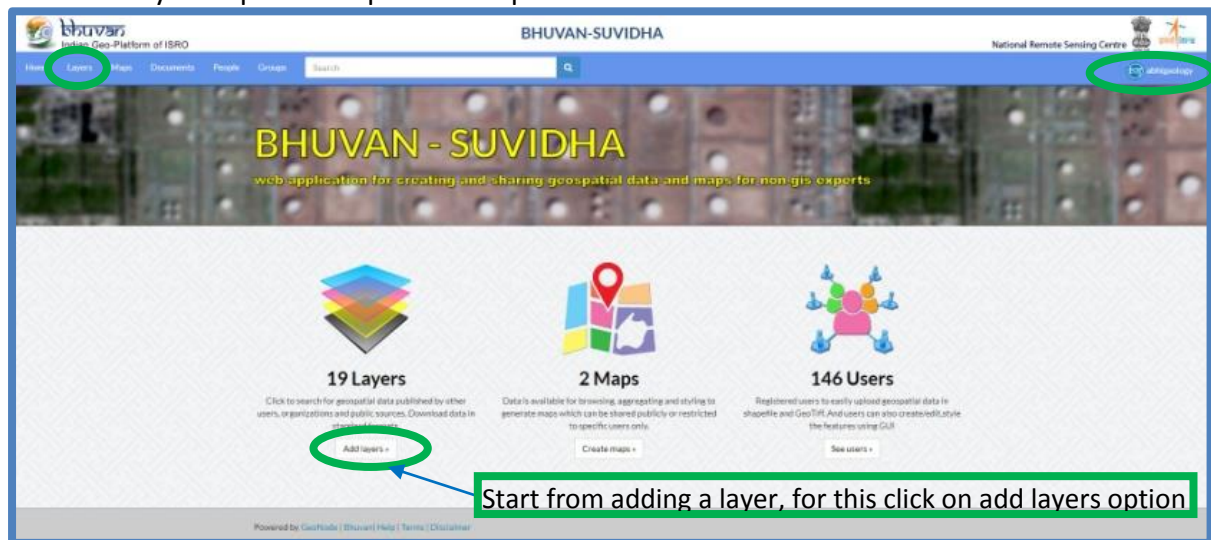


Figure 17. Add a new layer window

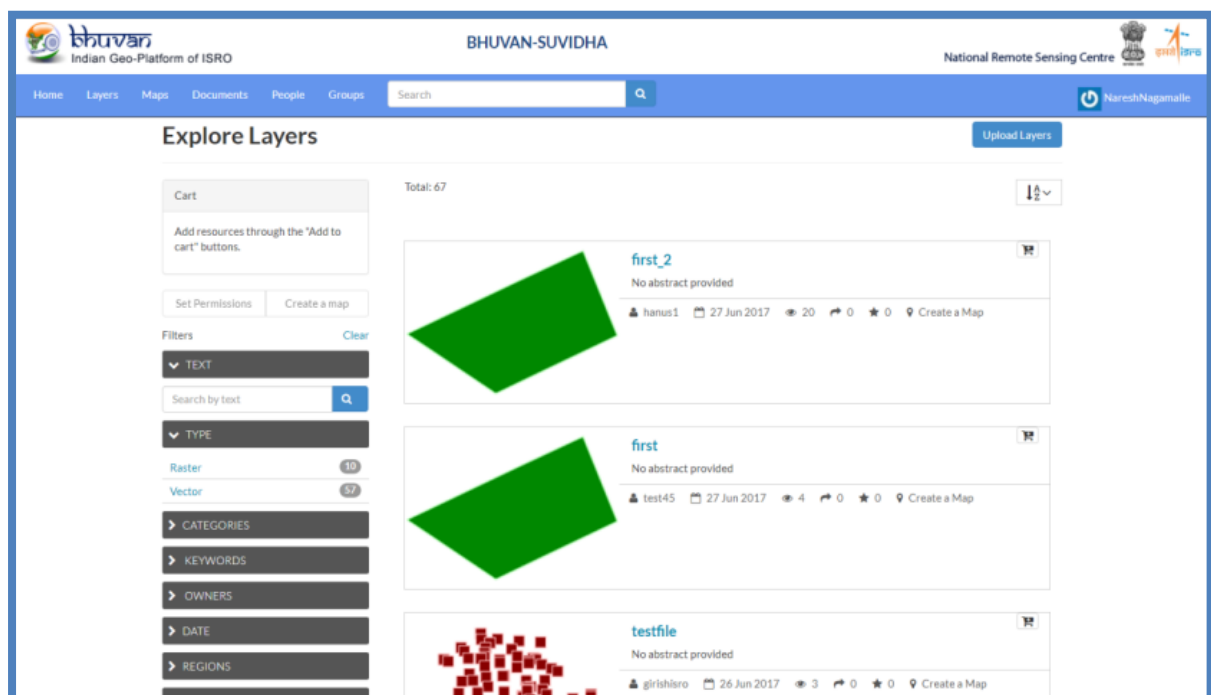


Figure 18. Uploaded and shared layer window

- Click "Choose Files" and select the necessary files for up

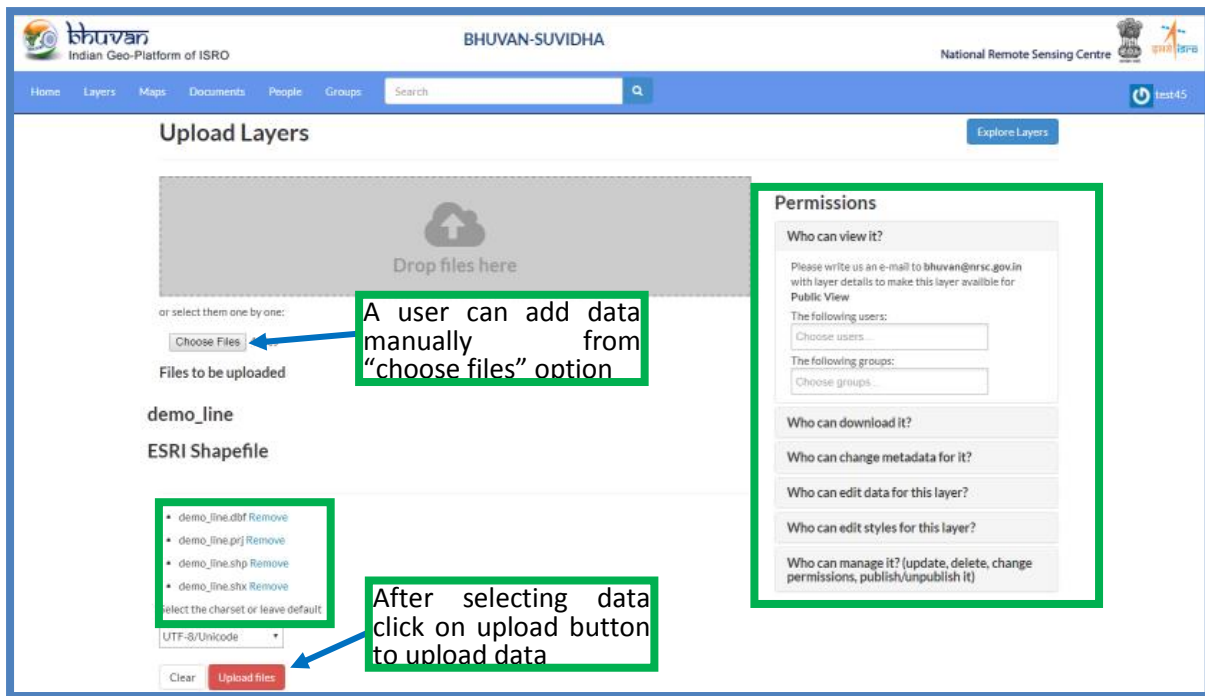


Figure 19. Upload a new layer window

- Click 'Upload files' and wait until the progress bar completes. User will receive confirmation of upload completion.
- On the right-hand panel, set the access permissions to the layers. Who can view/edit contents surrounding user's layer.
- To make sharing more restrictive, Check the "PEOPLE" and "GROUPS" first and take note of which user you would like to share your information with.
- Set this within the right panel, the fields do an automatic search of the group or individual of choice. Click 'Upload files' and wait until the progress bar completes. User will receive confirmation of upload completion.

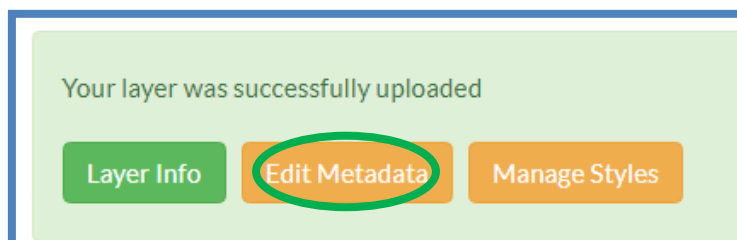


Figure 20. Metadata editor

- **Layer Info** allows user to access the Layer View interface from which user can proceed editing the layer, including changing Permissions for user's layer after upload.

- **Edit Metadata** takes user to an interface where detailed information on the layer should be provided. In the section below, this function will be explained in more detail.

- **How to add metadata to layers**

Meta Details include: Title, Date, Date type, Edition, Abstract (featured in catalogue), Purpose, Maintenance Frequency, Regions , Restrictions, Other Restrictions, License, Language, Spatial representation type, Temporal extent start, Temporal extent end, Supplemental information, Distribution URL, Distribution description, Data quality statement, Featured (to appear in front page of SUVIDHA), Is published, Thumbnail URL (automatically generated), Detailed URL, Keywords (for the purpose of user search), Point of Contact (user as default), Metadata Author (user as default), Category Contents contained within the Metadata dropdowns can be edited by the administrator to suit user's needs. Contact the administrator (bhuvan@nrs.gov.in) to include user's metadata needs.

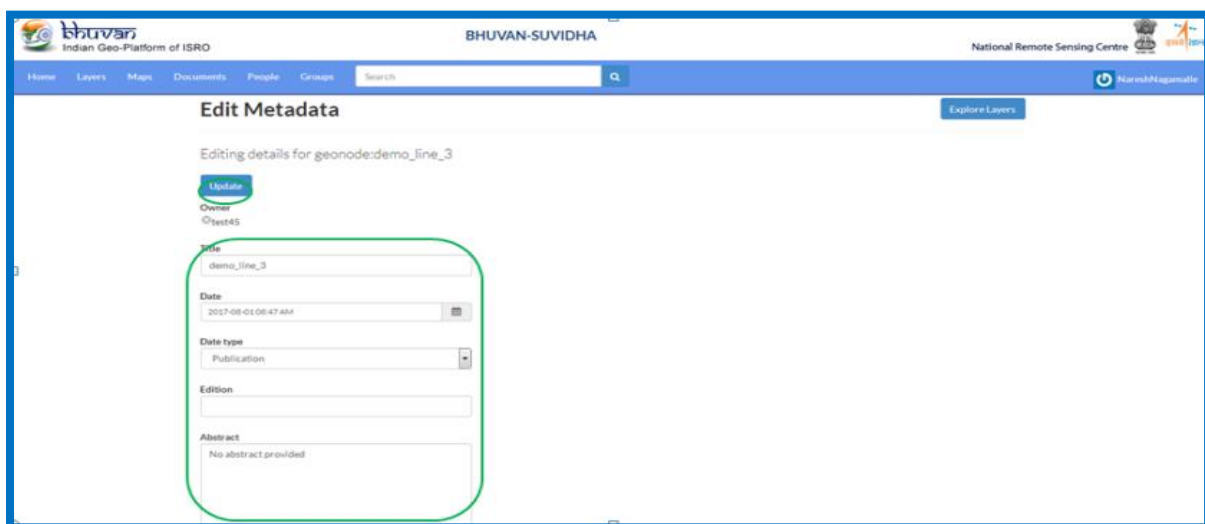


Figure 21. Edit metadata information window

- **Manage styles** allows user to select a pre-set appearance for their layers amongst the styles already created.



Figure 22. Layer styling window

Note:

- a) SUVIDHA Application allows Spatial data in: Shapefile, Geotiff only.
- b) Multiple data (shapefiles, Geotiff) can be published at a one time by selecting/drag and drop option.
- c) SUVIDHA will check if user have the relevant file formats. If not, revise the necessary formats.
- d) In case of shapefile, application requires the following ESRI shapefile formats:.shp/.prj/.shx/.dbf/.Either user can upload all these files individually or can be zipped and upload.
- e) Apart from .shp,.prj,.shx,.dbf,.tiff,.zip,.sld formats, if user uploads any other format files, application shows the error message. And in case of shapefile all the supported files should have same name, if not it shows error message.
- f) Users can upload SLD along with shapefile, however the naming convention of the SLD must be match with shapefile name, if not error message will appears.
- g) In Permissions section Who can view it? &Who can download it? Sharing with Anyone options are only available for Super Admin and Admin users.

Permissions

Who can view it?

☐ Anyone

The following users:

Choose users...

The following groups:

Choose groups...

Who can download it?

☐ Anyone

The following users:

The following groups:

Who can change metadata for it?

Who can edit data for this layer?

Who can edit styles for this layer?

Who can manage it? (update, delete, change permissions, publish/unpublish it)

Figure 23. Data view permissions window for admin and super admin

- h) For registered users, sharing with Anyone option is not available. However to make uploaded data public/share with anyone, users can write a mail to Bhuvan Administrator(bhuvan@nrsc.gov.in).

Permissions

Who can view it?

Please write us an e-mail to bhuvan@nrsc.gov.in with layer details to make this layer available for **Public View**

The following users:

Choose users...

The following groups:

Choose groups...

Who can download it?

Please write us an e-mail to bhuvan@nrsc.gov.in with layer details to make this layer available for **Public Download**

The following users:

The following groups:

Figure 24. Registered user request window for data sharing

6. How to upload documents

SUVIDHA allows user to upload documents associated to layers or maps.

- Click on the 'DOCUMENTS' link to view the documents catalogue

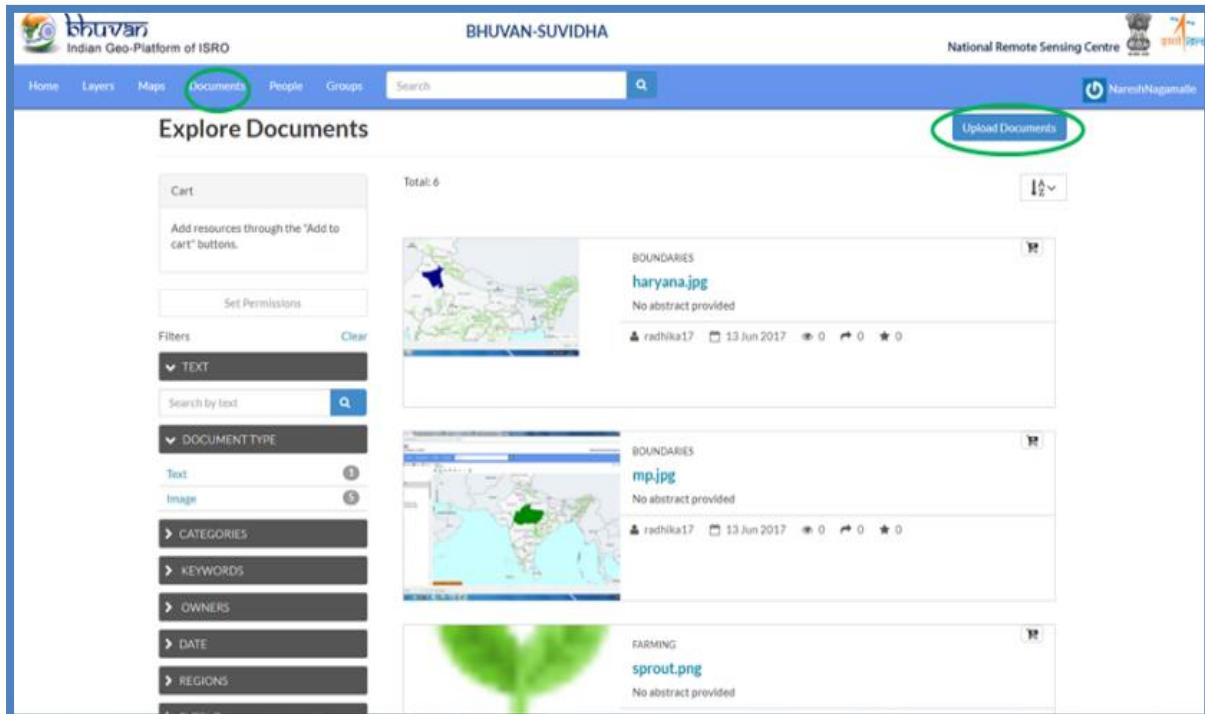


Figure 25. Document upload window

- Click on 'Upload Documents' on the top-right corner to upload user's document. User will be presented with the following:

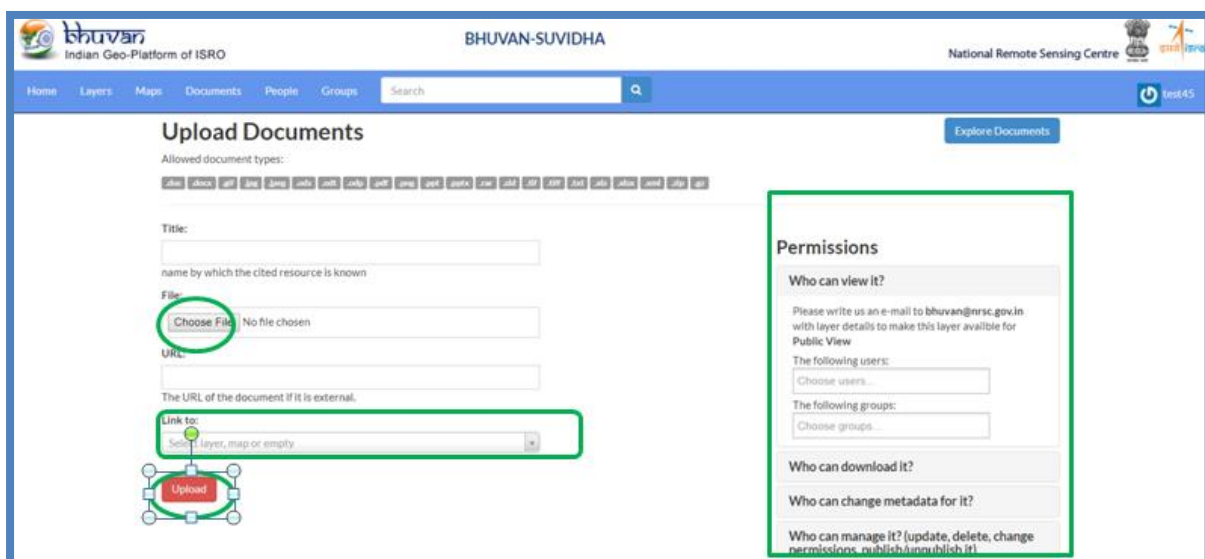


Figure 26. Document details window

- Give user's document a meaningful Title.

- Under File, browse to user document on user's local machine. Specify a URL address if user's document is external.
- If applicable, link user's document to a layer within SUVIDHA.
- Set the "Permission" to user's document. i.e. Who can view/edit contents surrounding user's document. When "Upload" button is submitted, user will be required to enter the metadata details for their document.

Note: Log-In is required for Uploading Documents, Layers and Creating Maps, Groups

7. How to create groups

SUVIDHA allows user to create new groups with set of permissions which will be inherited by all the group members.

- Click the 'GROUPS' link (top-menu) to view current groups:

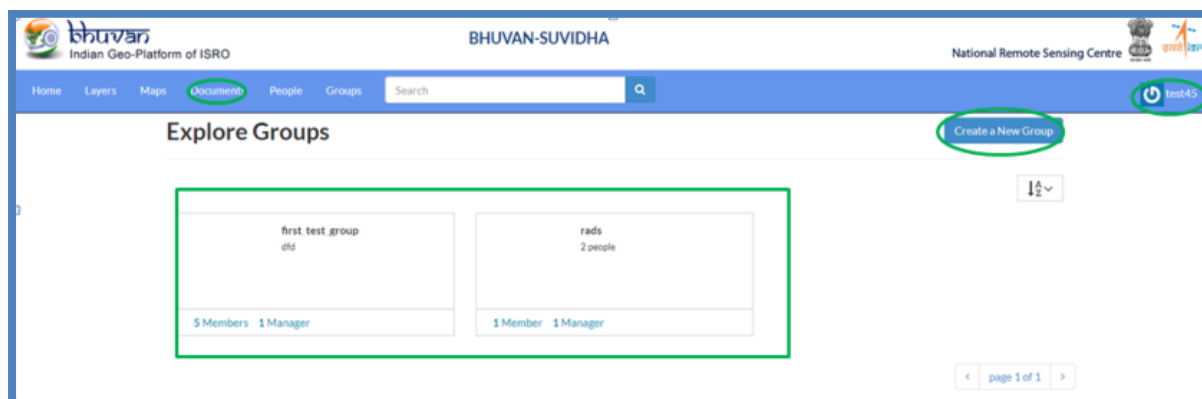


Figure 27. New group creation window

- Then click 'Create Group' button in the top-right corner. User will be presented with the following form to create their group with associated details.

Figure 28. New group details window

- It is mandatory to include a description of user's group. Important also to properly specify the "Access" to the group. There are 3 types of access;
 - ✓ Public - anyone can be a member of the group.
 - ✓ Public (invite-only) - invite external members to join the group.
 - ✓ Private.

8. How to create maps

SUIDHA allows users to create and share interactive web maps.

- Within the top menu, click on the 'MAPS' link. User will be prompted with a catalogue of accessible maps.

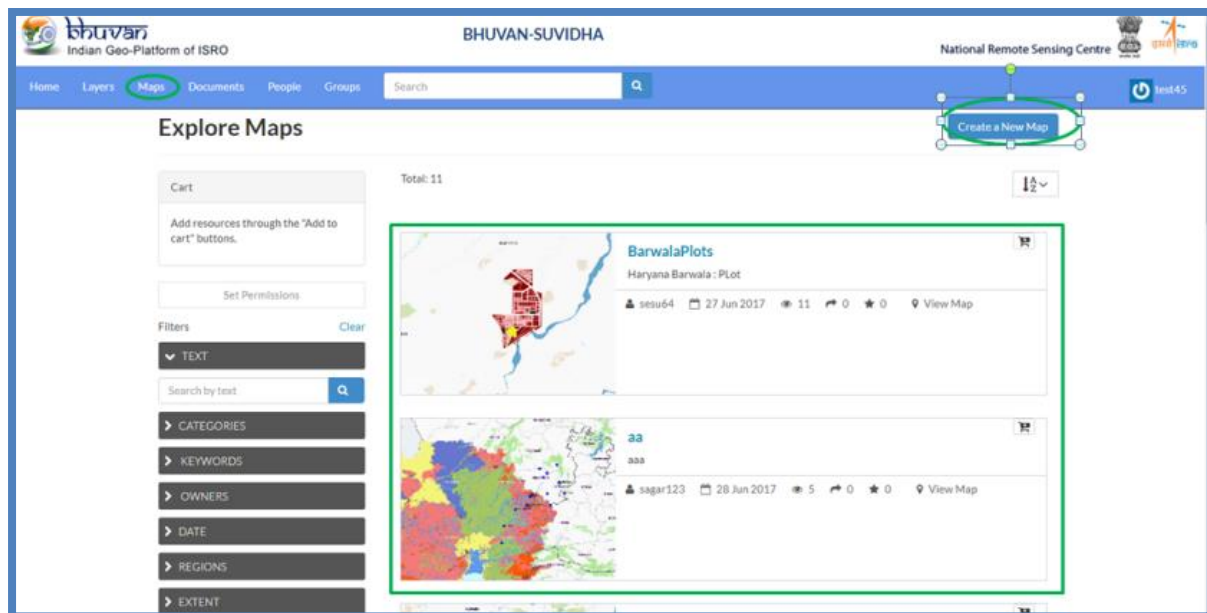


Figure 29. Map creation window

- Click on the "Create a New Map" button to create a map. User will be prompted with the following mapping interface. By default, Bhuvan base map is selected backdrop.

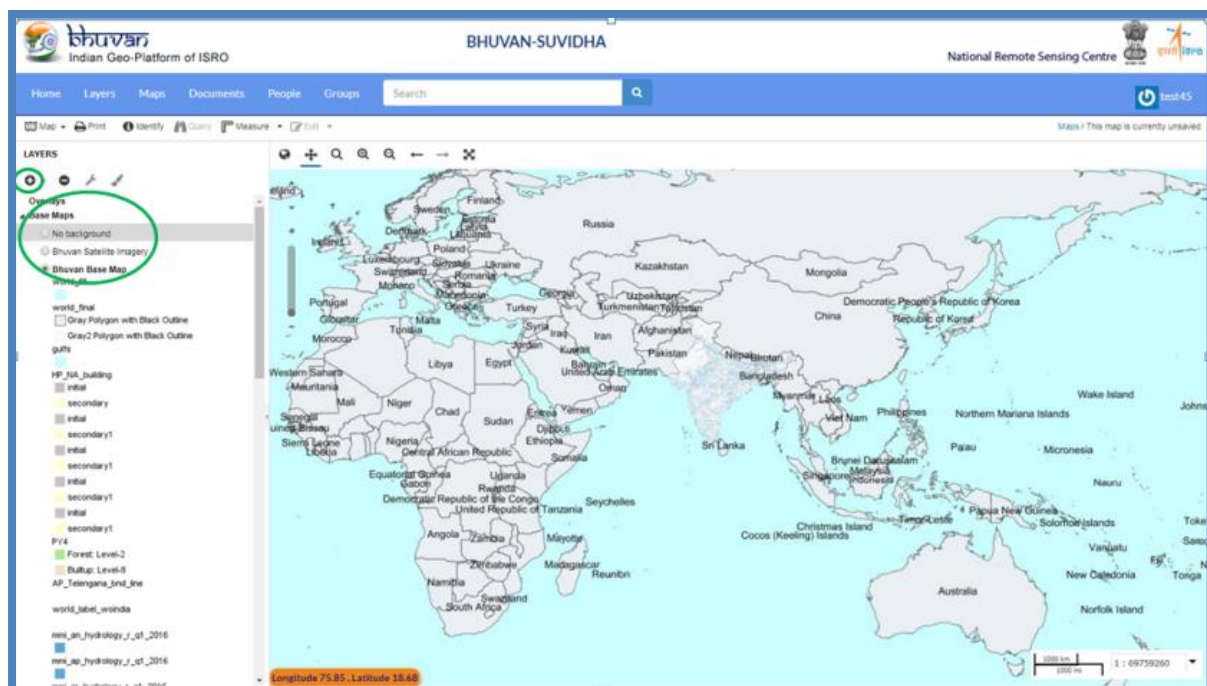


Figure 30. New map creation interface window

- Underneath the Layers menu title, click on the Add Layer button. There are two options, Add Layers (internal layers) and Add feeds (external layers):

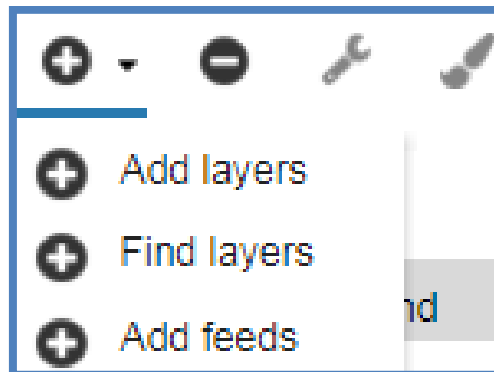


Figure 31. *Add layer tools*

- Choose the Add layers button. Under the "View available data from:" drop down, select "My GeoSever WMS".

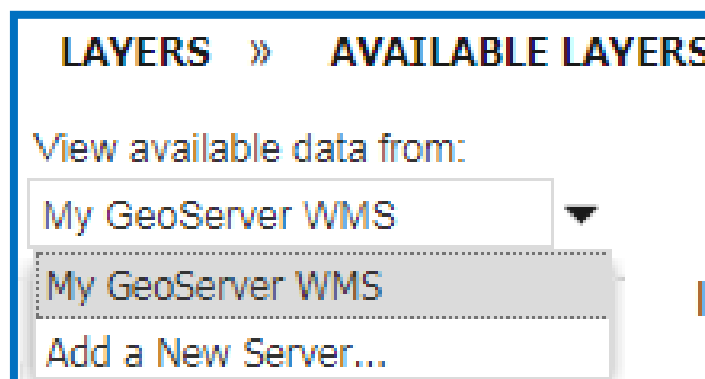


Figure 32. *WMS layer add option*

- User will be prompted with all the internal layer uploaded by themselves and other users who has shared with them for visualization.

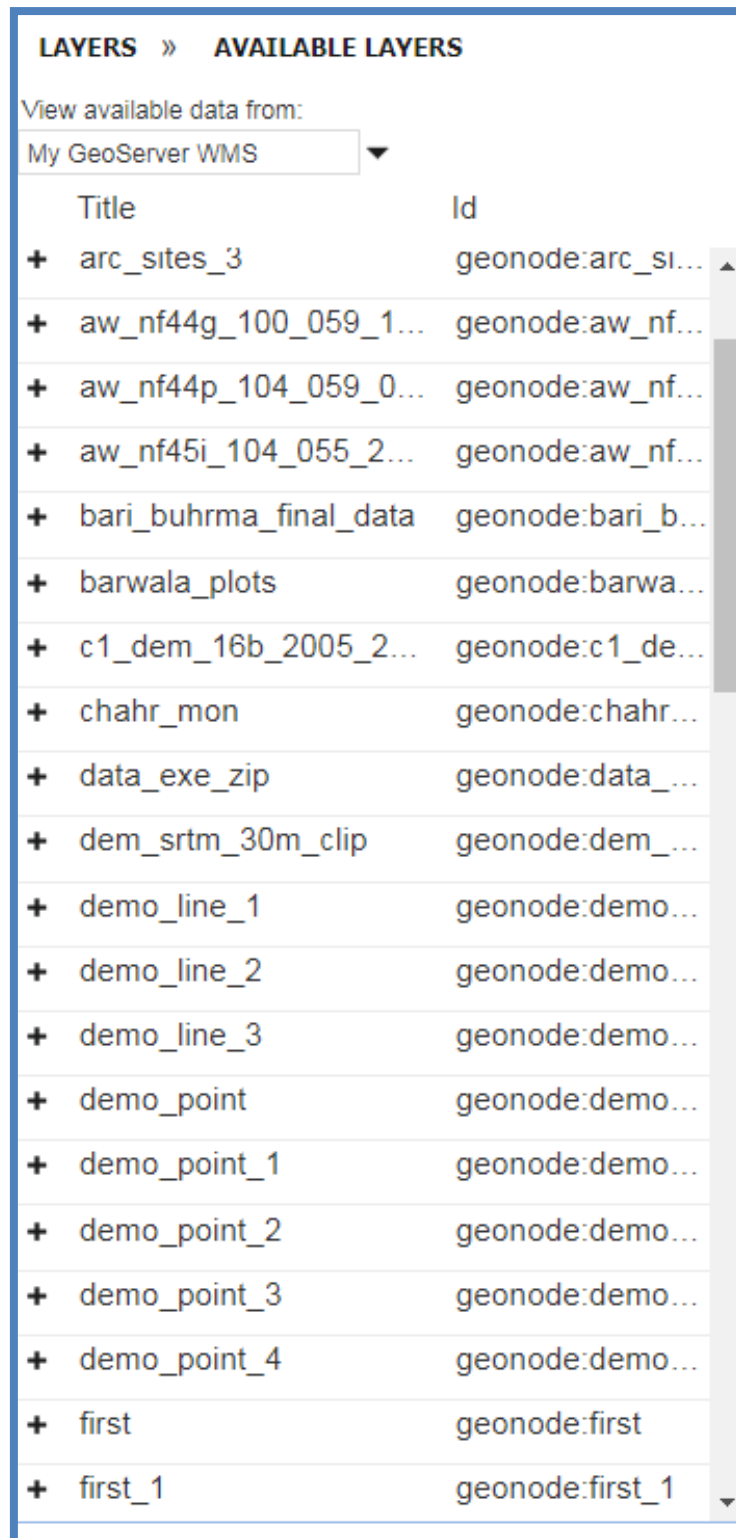


Figure 33. *Internal layer information window*

- To see the abstract of the layer, click on the "+" symbol next to the name of the layer. Otherwise, double-click the layer to include into the map. For example, double-click demo_point_4. User will see the layer merge in the map window:

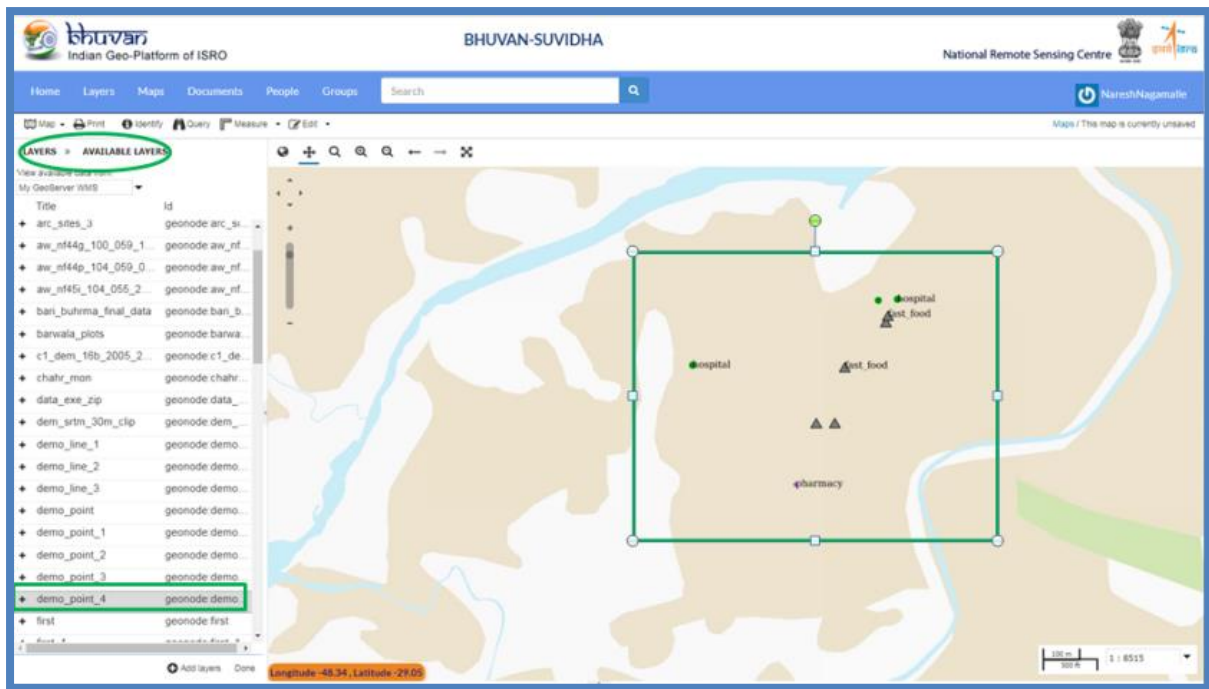


Figure 34. Merging different layers

- Click on the "Layers" link next to "Available Layers". User will see the layers panel along with the associated legends.

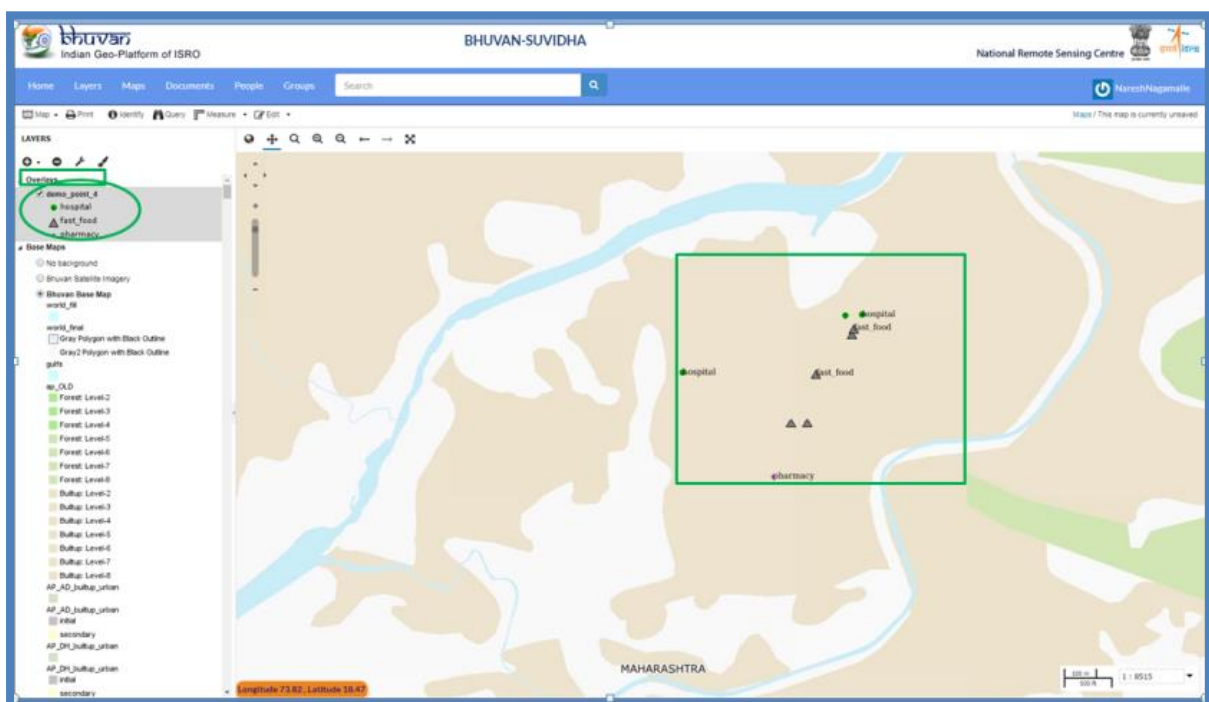


Figure 35. Added layers panel

- Click on the "Identify" icon -> click on a point of interest within the map window.

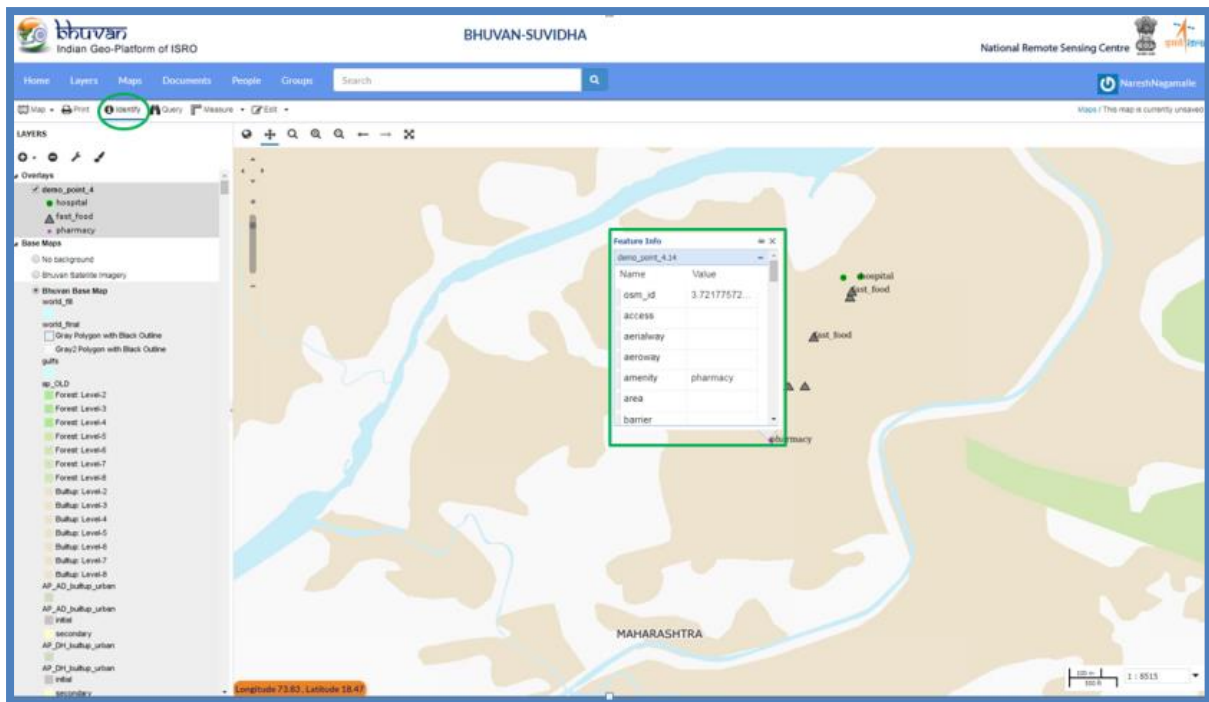


Figure 36. Identify a feature option

- Select the Layer (demo_point_4) and Click on the "Query" icon ->user will be prompted with Query Window and Result Window in bottom of the map/screen.

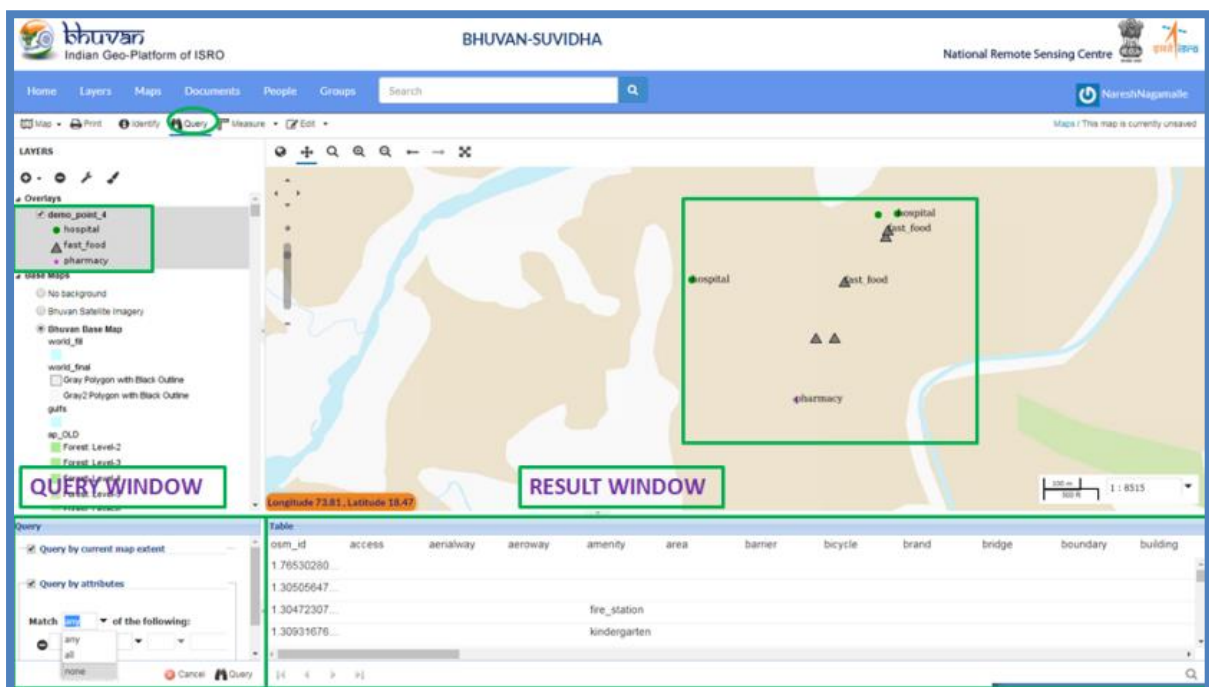


Figure 37. Query window

- Choose Match dropdown (Any, All, None) in Query Window.

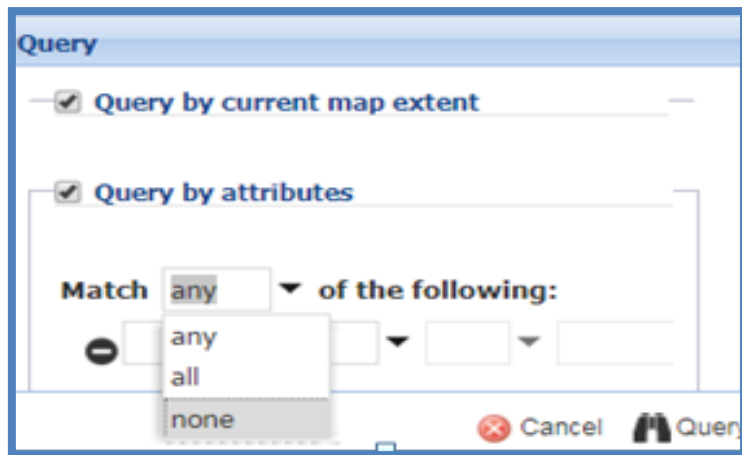


Figure 38. Query by attribute

- Select attribute name, operator and value.

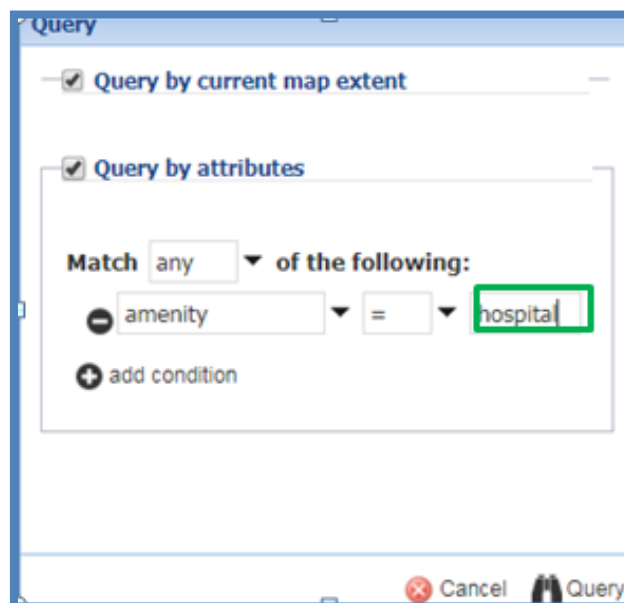
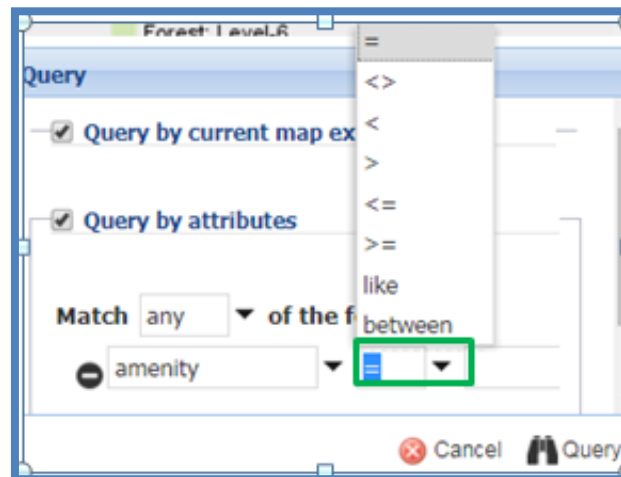


Figure 39. Query attributes

- Click on Query icon, corresponding results will be displayed in result window. User may add multiple conditions by clicking on add condition link.

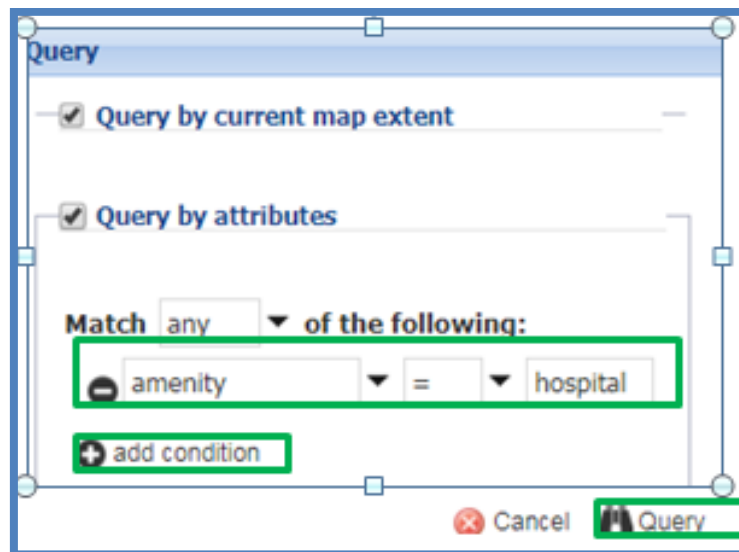


Figure 40. Adding conditions in query

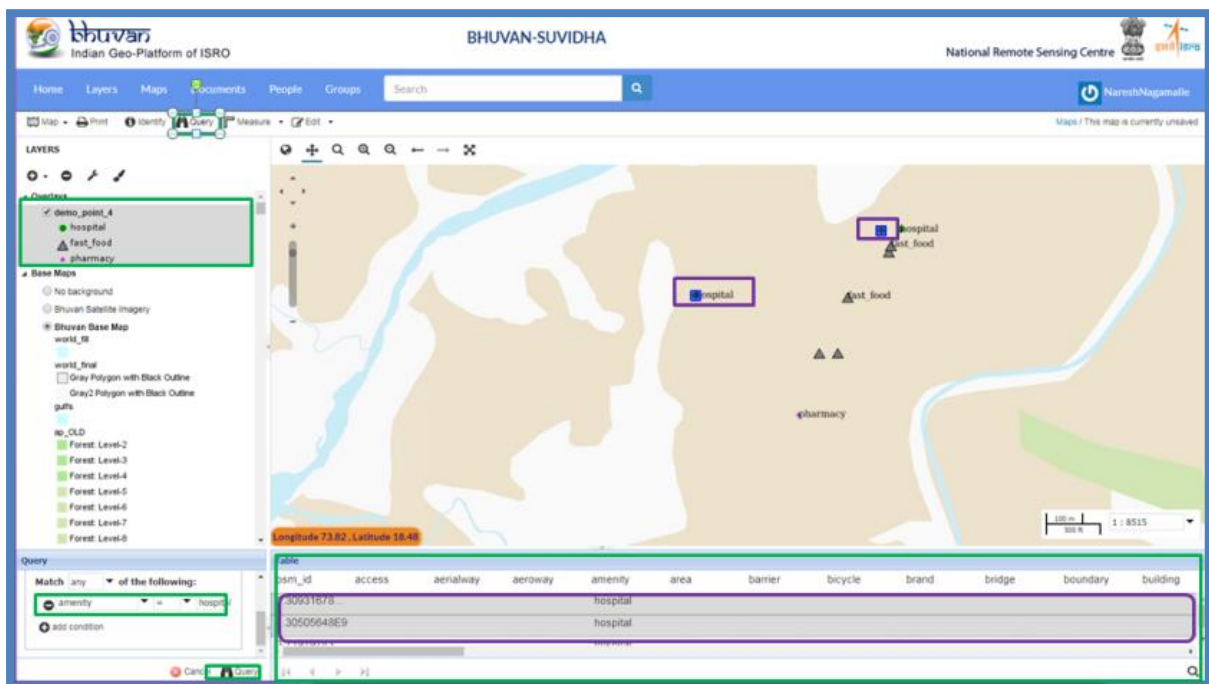


Figure 41. Query result window

- To Save Map. Go to "Map" -> "Publish Map":

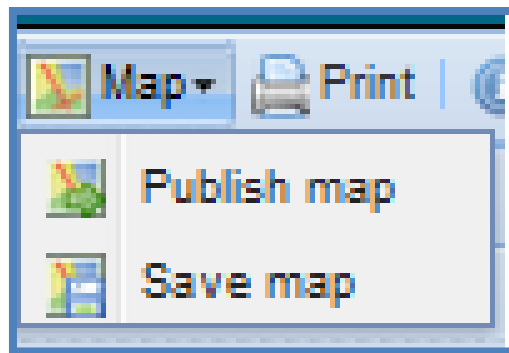


Figure 42. Publishing a map

- Give it a Title and a comprehensive abstract then Click Save.

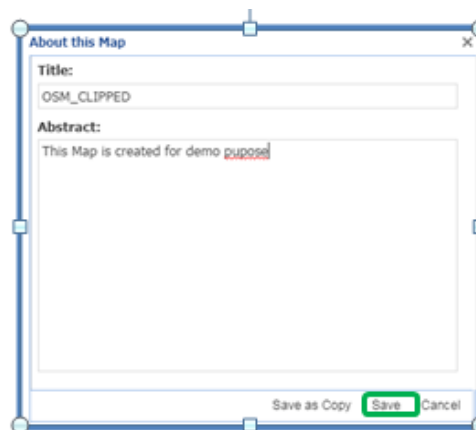


Figure 43. Adding information about map

- After click on save the following prompt will be appear. The snippet of code can be added to Embed map in third party applications.



Figure 44. Published map HTML link

- User can view their saved map within the Maps Catalogue.

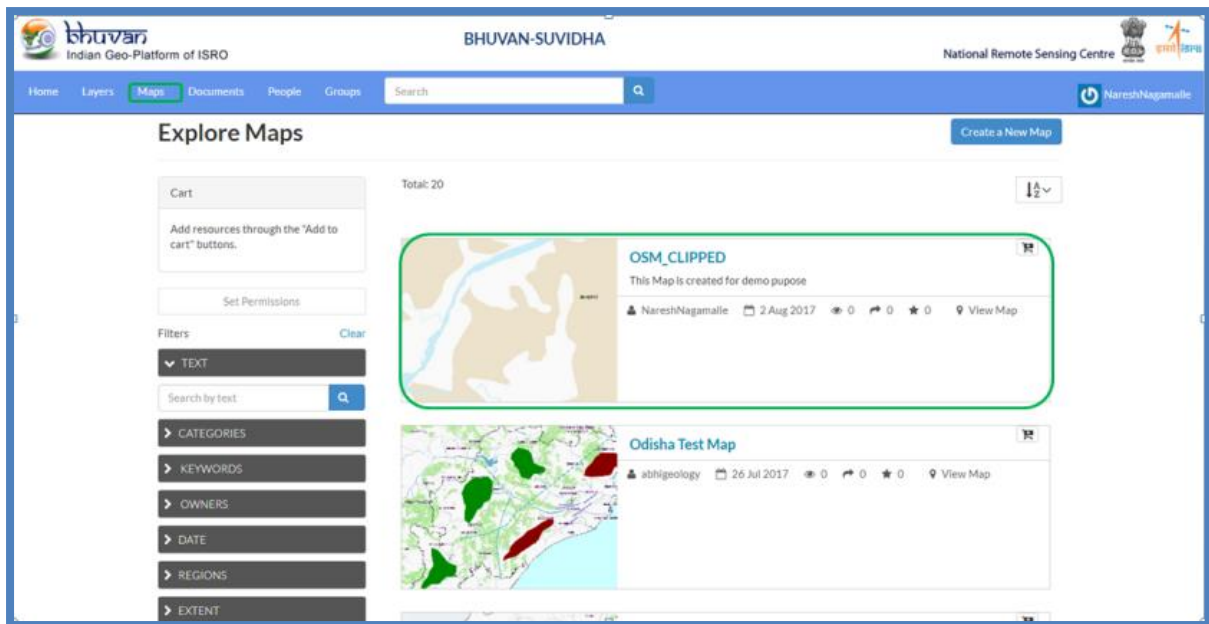


Figure 45. Published and shared map window

Set Metadata/Permissions To add metadata and permissions to map click on the Map itself. User will be prompted with the following:

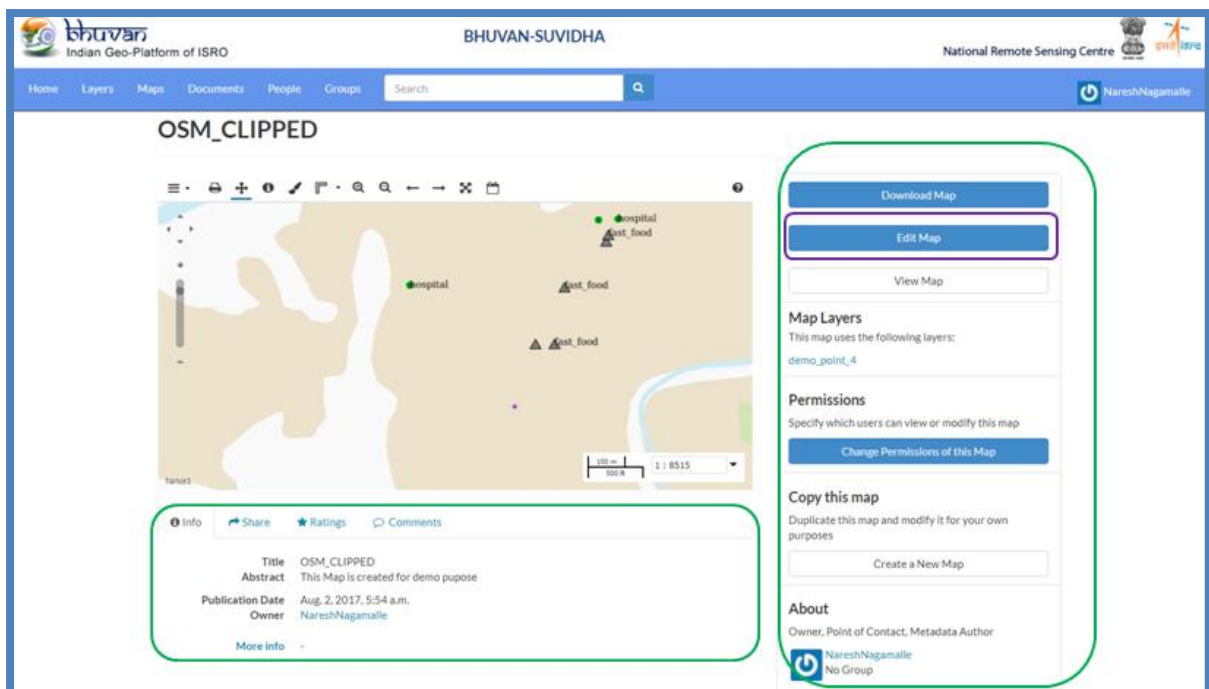


Figure 46. Set metadata and permissions to map

- The bottom section of the map is details concerning the map including Metadata Information, Share links (over social media), Ratings and Comments.



Figure 47. Share, Ratings and Comments

- Click on Share, the following prompt appears. Click on any of the link share the map over Social Media.



Figure 48. Share maps on social platform

- Click on Ratings, the following prompt appears. Select stars based on quality, accuracy of the data. Based on user ratings, Average rating is calculated. Users can verify Average Rating before they integrate/use the map into their application.

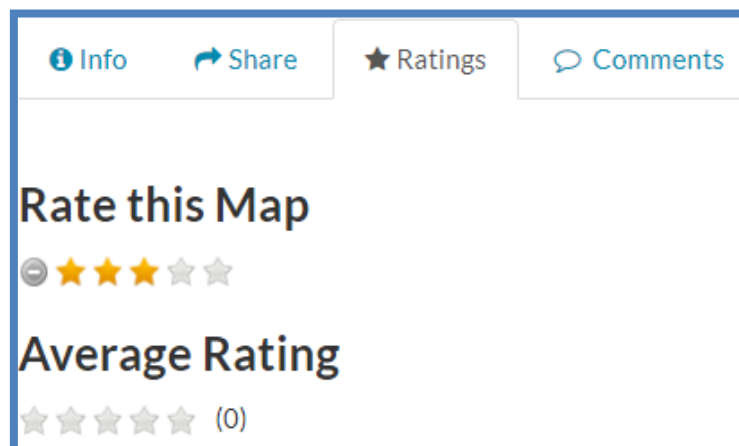


Figure 49. Get rating by other users

- Click on Comments and Add comment button, User will be prompted with window to write the comments.



Figure 50. Comment from users

- The right-hand pane is where user can add/edit metadata and set permissions to map. Click on ""Edit Map" button. User will be prompted with an edit map window:

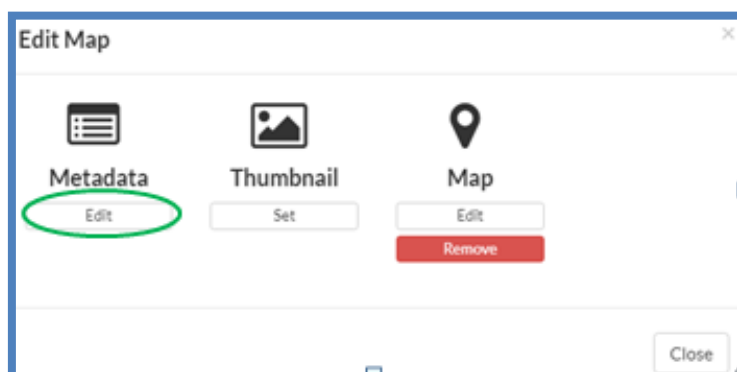


Figure 51. *Edit metadata information*

- Click the "Edit" button. The following prompt appears

Figure 52. *Map metadata elements*

- Add the relevant metadata details surrounding map. i.e. Title, Date, Date type, Edition, Abstract (featured in catalogue), Purpose, Maintenance Frequency, Regions , Restrictions, Other Restrictions, License, Language, Spatial representation type, Temporal extent start, Temporal extent end, Supplemental information, Distribution URL, Distribution description, Data quality statement, Featured (to appear in front-page of SUVIDHA), Is published, Thumbnail URL (automatically generated), Detail URL, Keywords (for the purpose of user search), Point of Contact (user as default), Metadata Author (user as default), Category.
- Don't forget to save details by clicking the "Update" button.

8.1 Creation of Map Using Layers Link

- Within the top menu, click on the 'Layers' link. User will be prompted with a catalogue of accessible Layers. Click on add-cart symbol (appears with each layer info) of layers of user's choice to create map.

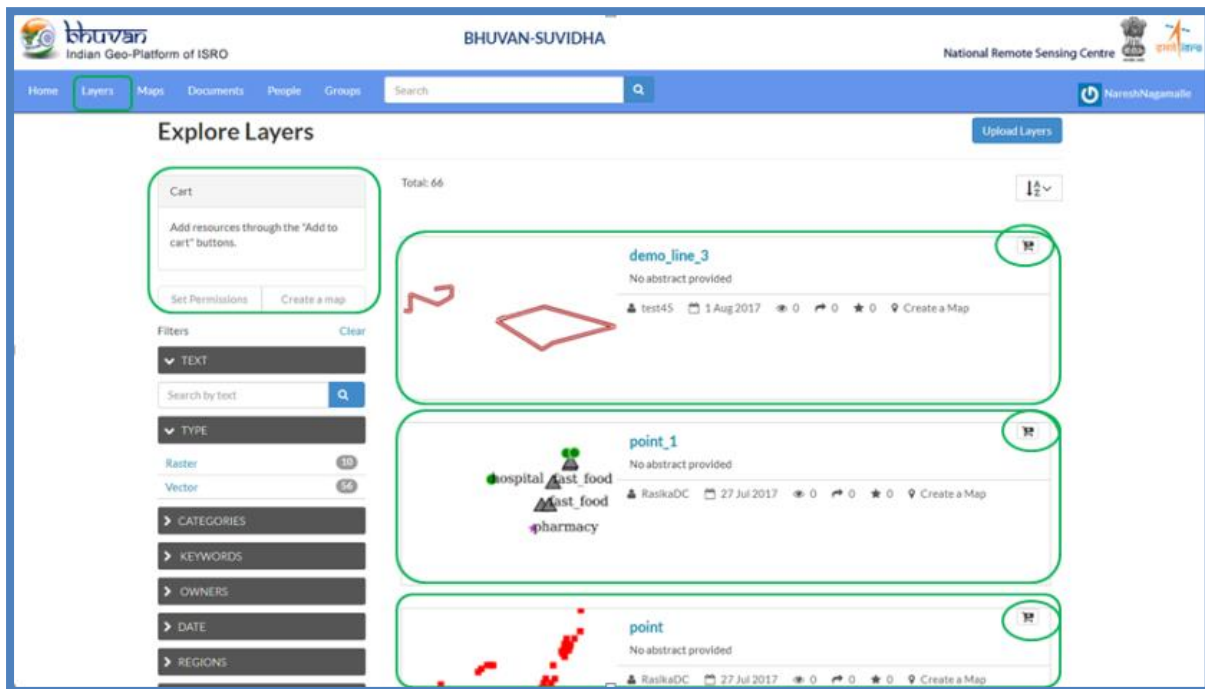


Figure 53. Uploaded layers window

- Click on add-cart symbol of layers of user's choice, the corresponding layers will be added in Cart window.



Figure 54. Map creation from uploaded window

- Click on Create a Map link, the following prompt will appear.

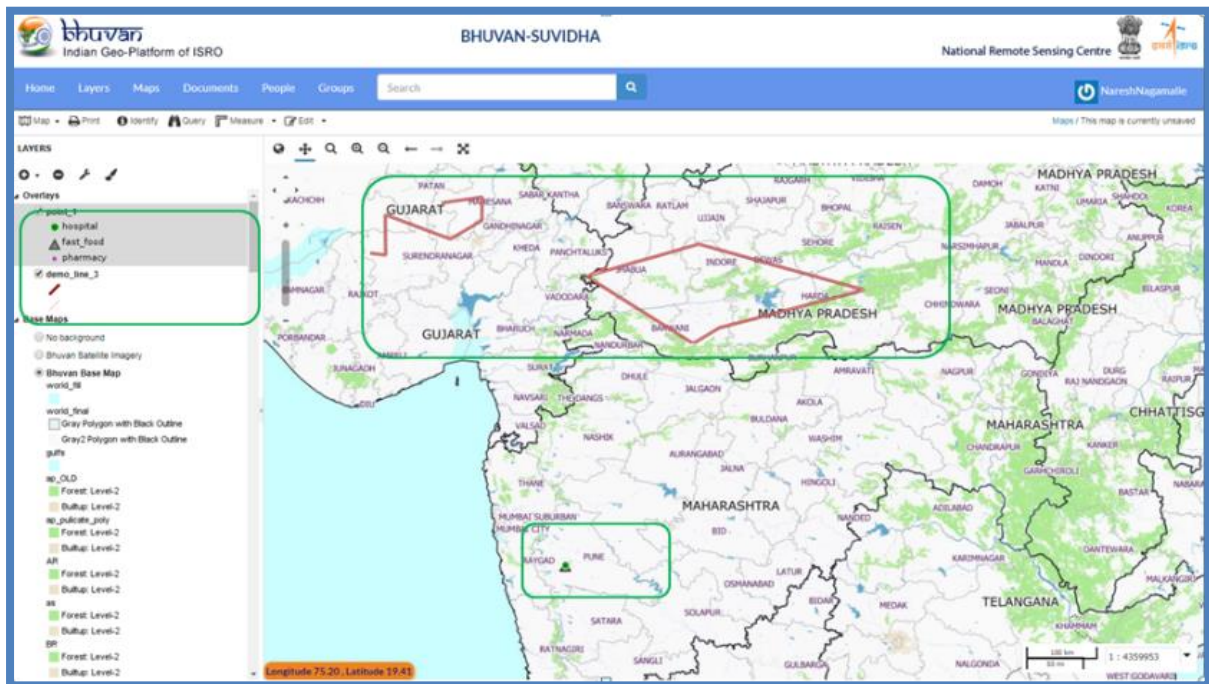


Figure 55. Map creation window

- To Save Map. Go to "Map" -> "Publish Map":

9. How to create/modify layers

SUVIDHA provides a fully Transactional Web Feature Service (WFS-T) which enables users to insert/delete/modify the available features in layer.

- To create/modify layers, user must have access permissions as set by the owner/author of the layer. Therefore, consult with fellow SUVIDHA users/groups to get permission first.
- Within the Maps Interface, add layer of your choice (refer to How to add layers to user's Map Window above). For Example: If a user uploaded a layer called "demo_forest_cover", add this to the map and Go to "Layers" panel to create/modify the layer.

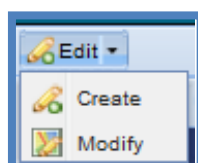
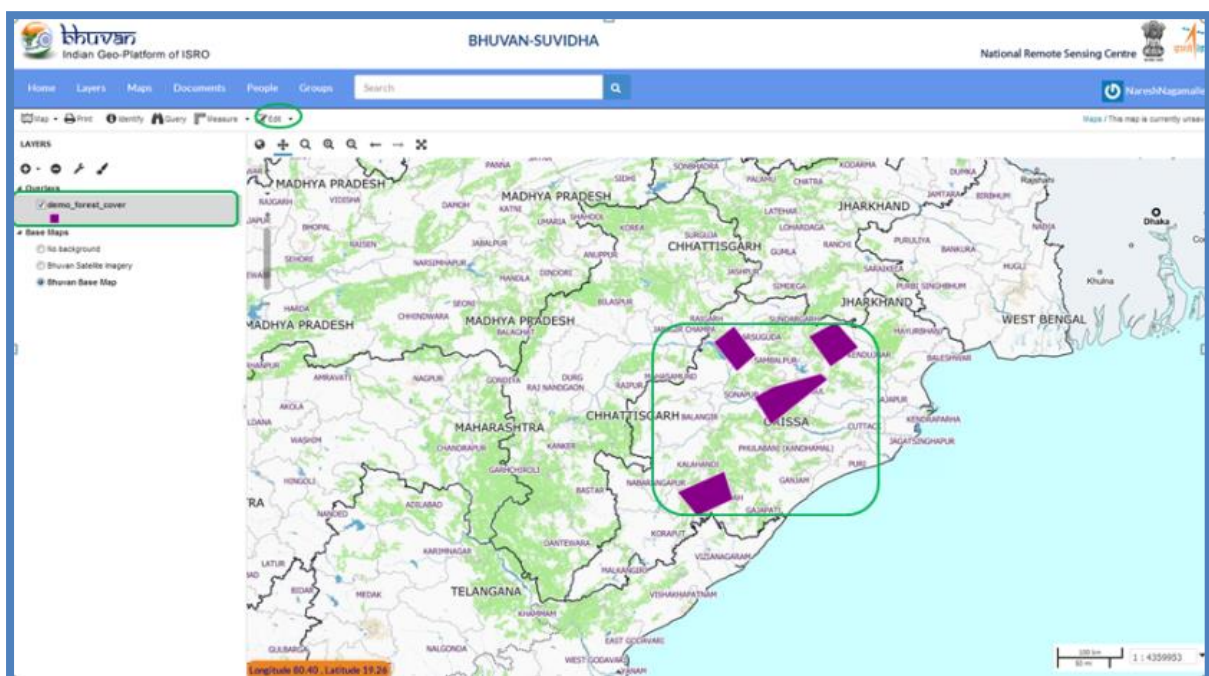


Figure 56. Edit and modify layers

- Click on "Edit -> Create" to add a layer, Create the layer within user's map window. Within our example (demo_forest_cover), user will create a polygon. Double-click the endpoint when user is done then include the layer details as required, click save.

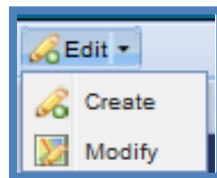
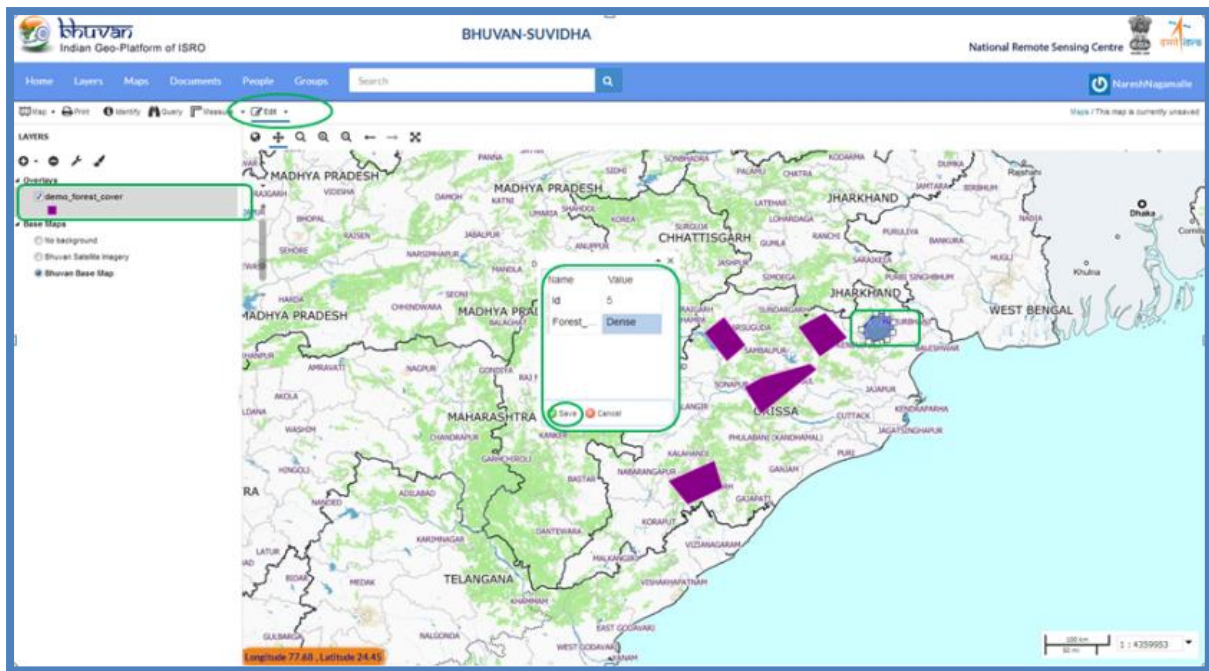


Figure 57. Create new layer

- Modify user's layer, click Edit – Modify. Click on the features on which user want to modify. User will be prompted the window with attributes detail.

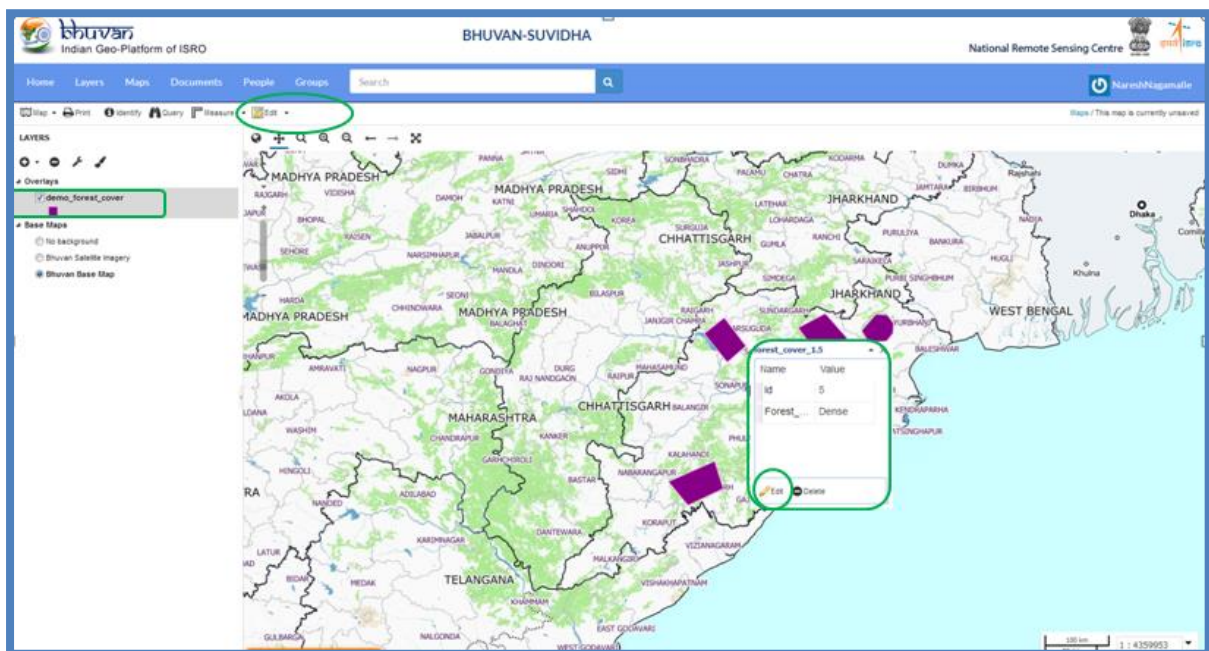


Figure 58. Modify layers

- Click on the Edit option on the attribute window. And modify the feature and click on save.

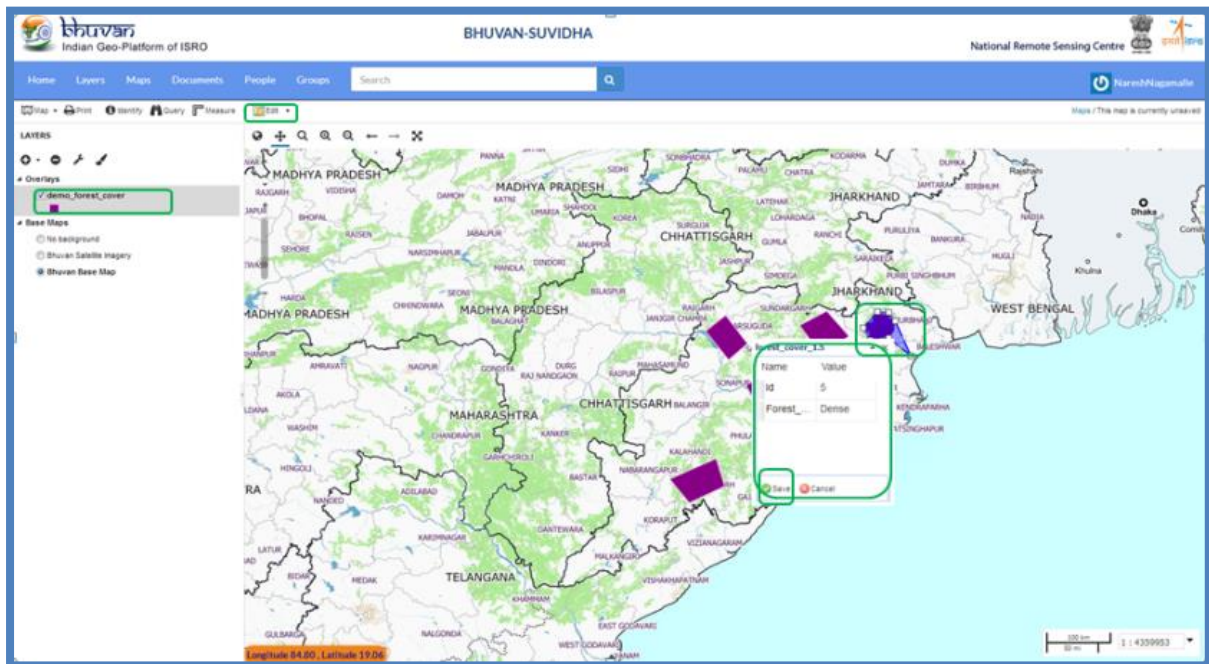



Figure 59. Save edited layers

- Users can also edit attribute values.

10. How to add styles

SUVIDHA allows users to edit layer styles graphically, without requiring a programming background.

- Within the Layers Window, *check* the layer to style and click on the styling icon, 

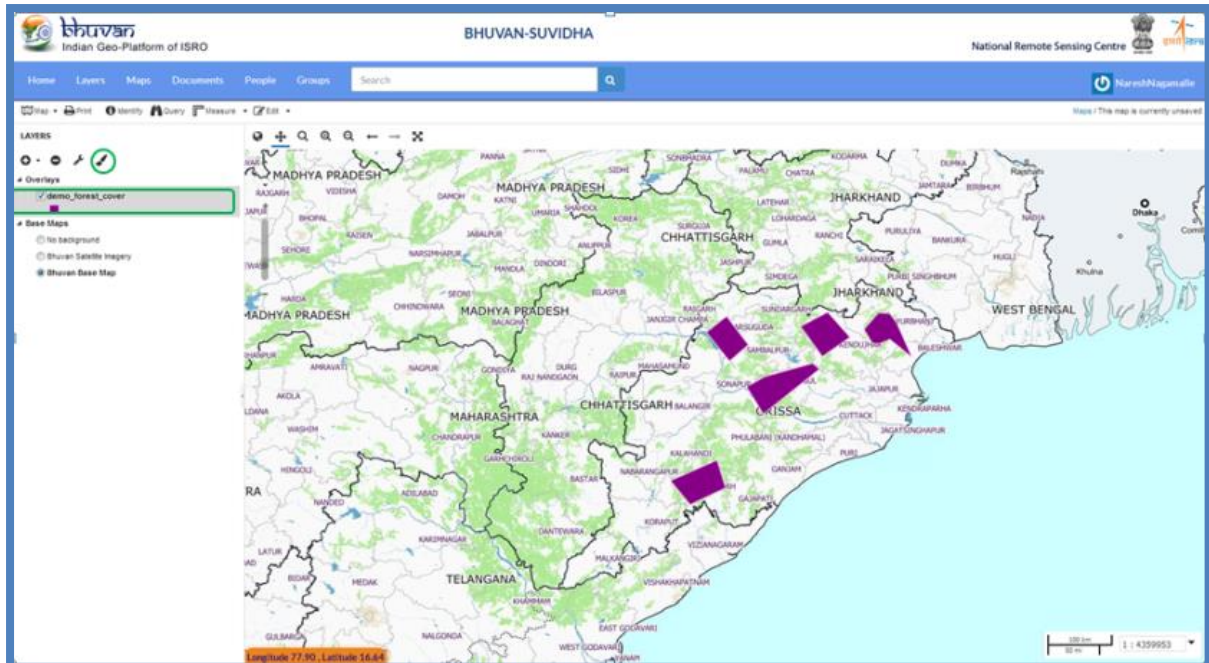


Figure 60. *Styling option for layers*

- User will see the Styling Panel for the layer. To edit the existing style (Untitled 1, under rules). Click on the style, then click "Edit".

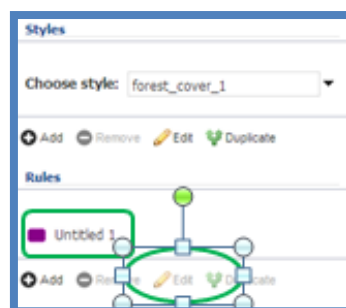


Figure 61. *Styling window*

- The main styling attributes are three main tabs: Basic, Labels and Advanced. This is where user can configure the look of their layers.
 - Basic - Name, Fill, Stroke. To set basic parameters.
 - Labels - Label Features, Graphic, Halo, Label positioning, Priority, Label options. To specify shapes, size, position of layers.
 - Advanced - Limit by scale, Limit by condition. To narrow down on layers by setting zoom scale or setting layer condition.
- Basic Labels Advanced

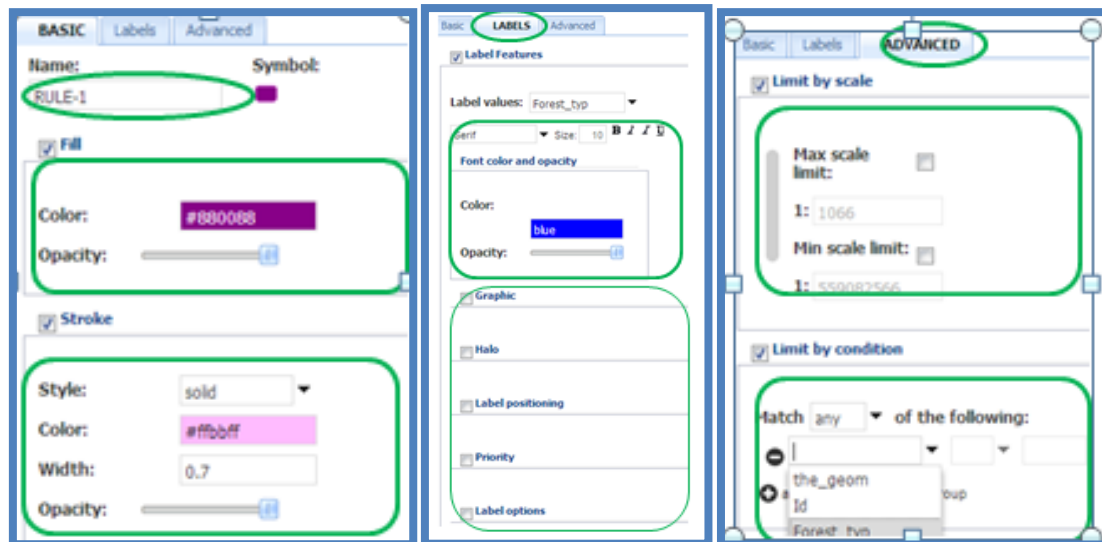


Figure 62. *Styling features*

Note: For point Features Symbol selection menu will appears as follows

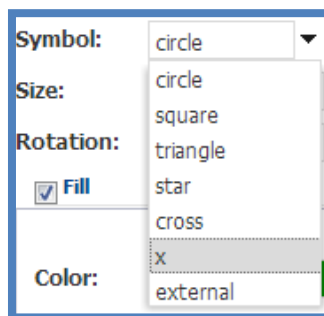


Figure 63. *Symbol options*

Once the external options selected the Basic style window prompt appears as follows. User need to mention the URL of the symbology/icon like <http://domain.com/fastfood.png>.

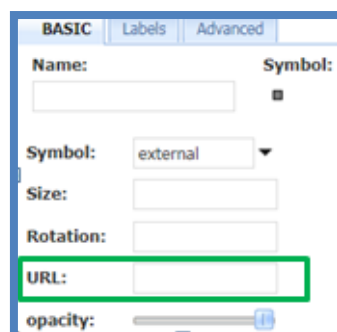


Figure 64. *URL addition option*

- For raster layers it is possible to define a rule for each range of values in the dataset. In the Map Composer interface click on the palette symbol Layer Style for the selected raster overlay. In the left-side panel under the section Colour Map Entries user can set rules for displaying the data by selecting an entry and clicking Edit.

User can see a classification created for the layer “Carto DEM 30m”. A first threshold has been defined at 100 meters and illustrated with black colour, whereas a second threshold has been defined at 500 meters with white colouring.

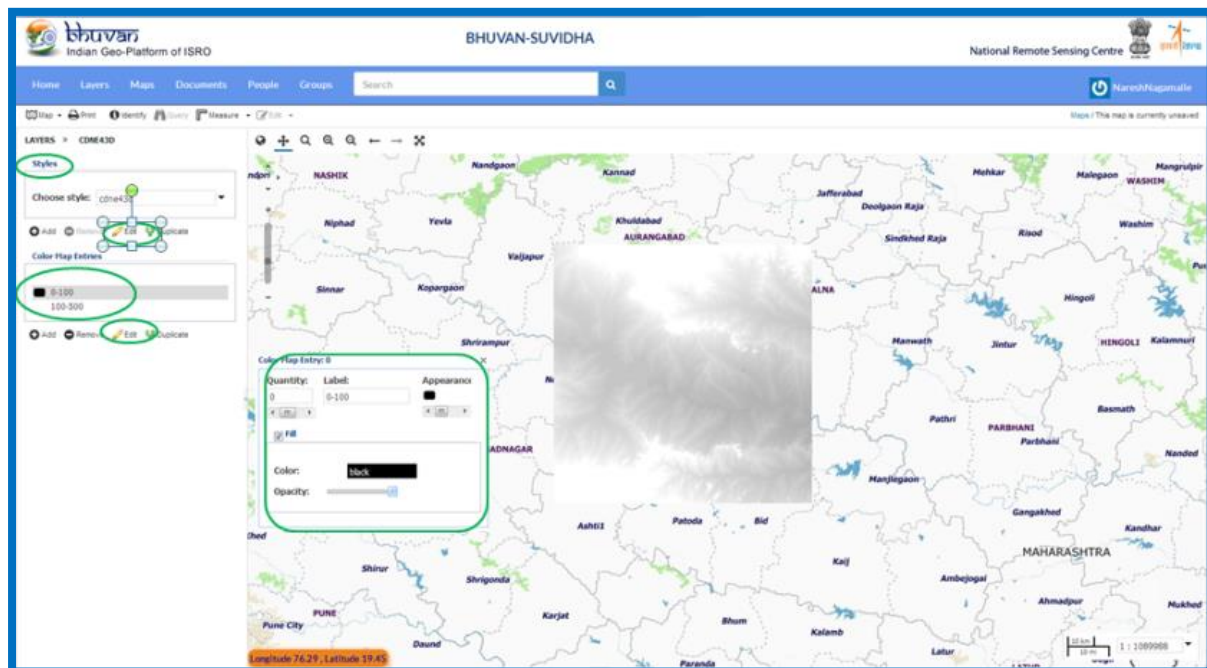


Figure 65. Styling option for layers

11. References

1. <http://bhuvan.nrsc.gov.in>
2. http://bhuvan.nrsc.gov.in/2dresources/documents/1_Bhuvan_User_Handbook.pdf
3. <http://docs.geonode.org/en/latest/index.html>
4. <http://www.geo-solutions.it/technologies/geonode/>
5. <https://geonode.wfp.org/static/docs/html/index.html>

Conclusion This manual provides users with a basic guide to upload and manage sharing of information. This will be tailored to serve the needs of all users including non-GIS experts, State, Central partners/stakeholders and decision makers, however for close collaboration and communication please contact the administrator bhuvan@nrsc.gov.in.

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