A Tutorial for mapping using GIS

A. Village boundary shape file:

1)Add district shape file:

Open QGIS \rightarrow from menu toolbar select Add layer \rightarrow add vector layer \rightarrow Browse file \rightarrow open folder and select "Ahmadnagar_District_Village_Boundary.shp" \rightarrow open

2)Extract village boundary shapefile

Select district layer in the layer panel \rightarrow right click and open attribute table \rightarrow select Karhe village \rightarrow minimize attribute table



3) Go to layer panel \rightarrow right click on same layer and click on save as \rightarrow Format-ESRI shapefile \rightarrow File name-"karhe_village boundary" \rightarrow CRS-WGS 84 \rightarrow click on check box -save only selected features \rightarrow ok



4) Village boundary layer is added in the layer panel



5) Select layer \rightarrow right click on layer \rightarrow select layer property \rightarrow style \rightarrow single symbol \rightarrow fill \rightarrow symbol layer type-outline simple line \rightarrow ok



6) Select layer \rightarrow save as \rightarrow format-KML \rightarrow file name \rightarrow CRS \rightarrow ok



7) Download google earth- <u>https://www.google.com/earth/download/gep/agree.html</u>

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Open KML file in google earth

8) From menu bar select view \rightarrow click on historical imagery from menu \rightarrow go to previous years and observe cropping areas, major interventions, streams, farm ponds, wells etc



B. Google Maps, Bing Maps, Open Street Map layers and more

1) From menu toolbar select Plugins→manage and install plugins→search "Openlayers Plugin" →Install





2) From menu toolbar select web→open layer→Google Maps→Google Hybrid

3) Observe habitations, cropping areas, major interventions, streams etc.



C. Land use and land cover map:

1)From menu bar select layer→Add layer→Add WMS layer



2) New window will open→layer→New→name→URL-"http://bhuvan5.nrsc.gov.in/bhuvan/ wms" →click Ok

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3) Connect→scroll down and select "MH_LULC50K_1112" for Maharashtra→TIFF→Add→close

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4) Measure area under Agriculture land/Non-agriculture land

From menu toolbar select view \rightarrow measure \rightarrow measure area



Georeferencing: It is process of assigning real world coordinates (special location) to a physical map or raster image.

D. Revenue map/Recharge Priority map:

1)Install "Georeferencer" plugin

2)After installing, select Raster from menu toolbar \rightarrow Georeferencer \rightarrow Georeferencer







4)Go to Edit \rightarrow add point \rightarrow click on village boundary from recharge priority map \rightarrow enter map coordinate window will open \rightarrow enter manually or choose from map canvas- from a reference layer in the QGIS session window, pick same point location from village boundary \rightarrow similarly add well 5-6 distributed points.



5)Setting \rightarrow Transformation setting \rightarrow Transformation Type-Linear/Polynomial 1 \rightarrow Resampling method- nearest neighbour \rightarrow CRS \rightarrow output file name \rightarrow Ok



6) File→Start Georeferencing



E. Soil texture map:

1)Go to Mahabhujalvedh website (<u>http://mrsac.maharashtra.gov.in/gsda/</u>) \rightarrow Zoom in at village location \rightarrow layers \rightarrow Soil \rightarrow Texture-click check box \rightarrow uncheck other check boxes \rightarrow take a screenshot & save it



2)Georeference it using QGIS- choose a distinct point & note down the coordinates of same points from Mahabhujalvedh or any other source and enter manually in the georeferencer \rightarrow observe different soil textures & measure area of prominent soil types.

F. Soil depth map:

1)Go to Mahabhujalvedh website (<u>http://mrsac.maharashtra.gov.in/gsda/</u>) \rightarrow Zoom in at village location \rightarrow layers \rightarrow soil \rightarrow depth-click check box \rightarrow uncheck other check boxes \rightarrow take a screenshot & save it



2) Georeference it using QGIS- choose a distinct point & note down the coordinates of same points from Mahabhujalvedh or any other source and enter manually in the georeferencer \rightarrow observe different soils depth.

G. Download rainfall data: Rainfall is measured at rain gauge station called as circle which is common for some villages. To know the circle for any village one option is to refer taluka map and rain map.

1) To know rain gauge station

Taluka map- <u>http://www.mrsac.gov.in/en/taluka-maps</u> \rightarrow Select district and taluka \rightarrow download taluka map

Circle wise Rain map- Go to <u>http://maharain.gov.in/</u> \rightarrow On bottom right side select Previous year rains \rightarrow Past rain maps \rightarrow District entire season \rightarrow select year and district \rightarrow circle wise intensity of rainfall \rightarrow download



2) Download daily rainfall

Previous year rainfall- Go to <u>http://maharain.gov.in/</u> \rightarrow On bottom right side select Previous year rains \rightarrow Past queries-circle wise \rightarrow daily rain \rightarrow select state, district, month, year \rightarrow click on search and download in PDF/excel sheet format.

Follow similar steps for each month and collect rainfall data for 3-4 years

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3) Dry spell & heavy rainfall count

On bottom right side select Previous year rains \rightarrow Past queries-circle wise \rightarrow dry spell/heavy rainfall counts \rightarrow select year \rightarrow download in PDF/excel sheet format. Or find using rainfall graph in the excel sheet

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534			Ghodegaon	07-06-2016 To 19-06-2016 (13) 12-07-2016 To 20-07-2016 (9) 07-08-2016 To 28-08-2016 (22) 04-09-2016 To 14-09-20	Current Year Rain
535			Sonai	07-06-2016 To 19-06-2016 (13) 29-06-2016 To 05-07-2016 (7) 12-07-2016 To 20-07-2016 (9) 06-08-2016 To 02-09-20	Reports- Tehsil wise
536			Wadala	07-06-2016 To 19-06-2016 (13) 24-06-2016 To 03-07-2016 (10) 12-07-2016 To 23-07-2016 (12) 04-08-2016 To 28-08-20	Reports- District wise
537		Rahuri	Rahuri	07-06-2016 To 19-06-2016 (13) 12-07-2016 To 22-07-2016 (11) 06-08-2016 To 14-09-2016 (40) 05-10-2016 To 31-10-20	Report - Division wise
538			Satral	07-06-2016 To 21-06-2016 (15) 16-07-2016 To 26-07-2016 (11) 04-08-2016 To 14-09-2016 (42) 05-10-2016 To 31-10-20	Current Year Intensity
539			Taharabad	07-06-2016 To 21-06-2016 (15) 30-06-2016 To 10-07-2016 (11) 12-07-2016 To 26-07-2016 (15) 05-08-2016 To 16-09-20	Intensity - Circle
540			Dewalali	07-06-2016 To 19-06-2016 (13) 12-07-2016 To 21-07-2016 (10) 06-08-2016 To 14-09-2016 (40) 05-10-2016 To 31-10-2	Intensity - District
541			Takalimiya	07-06-2016 To 19-06-2016 (13) 12-07-2016 To 25-07-2016 (14) 07-08-2016 To 14-09-2016 (39) 05-10-2016 To 31-10-20	Intensity - Circle (District wise)
542			Brambani	07-06-2016 To 19-06-2016 (13) 13-07-2016 To 20-07-2016 (8) 06-08-2016 To 30-08-2016 (25) 04-09-2016 To 14-09-20	Oueries - Circle wise
543			Wambori	07-06-2016 To 19-06-2016 (13) 30-06-2016 To 10-07-2016 (0) 00-06-2016 To 24-07-2016 (13) 05-08-2016 To 14-09-20	Queries - Tehsil wise
544		Sandamper	Sangamper	01-06-2016 To 19-06-2016 (19) 03-07-2016 To 19-07-2016 (71) 08-08-2016 To 09-09-2016 (33) 09-10-2016 To 31-10-20	Queries - District wise
545		Gangannie	Dhandamhal	01.06.2016 To 19.06.2016 (19) 09.09.2016 To 15.09.2016 (29) 24.09.2016 To 01.10.2016 (9) 03-10-2016 To 31-10-21	Queries - Division wise
540			Acebui	07 06 2016 To 19 06 2016 (13) 05 06 2016 To 10 07 2016 (3) 24 05 2016 To 10 10 10 2016 (3) 05 10 2016 To 21 10 20	Dain Mans
540			Chihalaasus	01-06-2016 To 19-06-2016 (13) 12-07-2016 To 19-07-2016 (8) 07-08-2016 To 19-09-2016 (40) 05-10-2016 To 31-10-20	Bar Graphs
547			Shibalapur		Line Graphs
548			Talegaon	01-06-2016 16 27-06-2016 (27) 13-07-2016 16 19-07-2016 (7) 07-08-2016 16 28-08-2016 (22) 30-08-2016 16 15-09-20	Other Information
549			Samanapur	01-06-2016 To 03-07-2016 (33) 12-07-2016 To 27-07-2016 (16) 05-08-2016 To 15-09-2016 (42) 25-09-2016 To 02-10-20	Darameters
550			Ghargaon	07-06-2016 To 19-06-2016 (13) 13-07-2016 To 26-07-2016 (14) 08-08-2016 To 22-08-2016 (15) 24-08-2016 To 14-09-20	Previous Year Rain
551			Dolasane	07-06-2016 To 19-06-2016 (13) 13-07-2016 To 24-07-2016 (12) 08-08-2016 To 15-09-2016 (39) 05-10-2016 To 31-10-20	Past Queries - Circle wise
552			Sakur	07-06-2016 To 20-06-2016 (14) 23-06-2016 To 03-07-2016 (11) 13-07-2016 To 22-07-2016 (10) 05-08-2016 To 15-09-20	Daily Rain
553			Pimparane	01-06-2016 To 19-06-2016 (19) 21-06-2016 To 27-06-2016 (7) 12-07-2016 To 25-07-2016 (14) 05-08-2016 To 15-09-20	Heavy Rainfall Count
554		Akola	Akole	01-06-2016 To 19-06-2016 (19) 13-08-2016 To 15-09-2016 (34) 05-10-2016 To 31-10-2016 (27)	Dryspell
555			Virgaon	01-06-2016 To 22-06-2016 (22) 12-08-2016 To 15-09-2016 (35) 04-10-2016 To 31-10-2016 (28)	Monthly Circle Rain
556			Samehornur	01_06_2016 To 25_06_2016 (25) 13_08_2016 To 15_09_2016 (34) 05_10_2016 To 31_10_2016 (27)	Past Queries - Tehsil wise
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H. Contour Map:

Download DEM

1)Go to <u>https://earthexplorer.usgs.gov/</u> \rightarrow need to register first



2)Search criteria \rightarrow Address/Place(village/taluka) \rightarrow write place-Sangamner \rightarrow show \rightarrow click on address/place to show on map



3)Check weather location on map is correct or not \rightarrow Click on Data set



4)Data set \rightarrow Digital elevation \rightarrow SRTM \rightarrow SRTM 1 Arc-second Global



5)Go to results \rightarrow click show browse overlay \rightarrow Download





6)Download →Download options→GeoTIFF 1 Arc-second→click download

Add raster file of DEM into QGIS \rightarrow From menu bar select raster \rightarrow extract \rightarrow contour \rightarrow fill input file, output file, interval between two contours \rightarrow click on check box-attribute table: ELEV \rightarrow Ok





Contour layer is added \rightarrow properties \rightarrow Label \rightarrow Show label \rightarrow lable with-elev