Nanaji Deshmukh Krishi Sanjeevani Yojana – Water Budget

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22 January'18, POCRA, Mumbai

Phase II Delivery

- Report on description of water balance framework Date 3th Oct 2017
  - Linkage with planning framework
  - Crop water requirement computation (Swat Compliance)
- The one crop vulnerability Tool delivered to Shri Bankar Date 19th Dec 2017

  Description of Plugin

  Demonstration and usage of the tool.
- Document B - Revised Water Budget format, the documentation has been delivered to Pradnya and Rohit

Description Of Plugin

Front End Inputs Need to Given by User

1 Cluster Boundary with zones
2 Land Use Land Cover
3 Soil
4 Slope
5 Cadastral
6 Rainfall

Back End Inputs used in the Plugin

1 Reference Evapotranspiration, ETo
2 Crop Coefficients - Kc,
3 Hydrologic soil Group, Curve Number
4 % Sand, % Silt, % Clay
5 Wilting Point, Field Capacity, Saturation
6 Ksat, Bulk Density, Available water content
7 Crop Root zone, Crop Depletion factor p

Plugin

Options
Colour Code Intervals
Crop Selection
Sowing Threshold

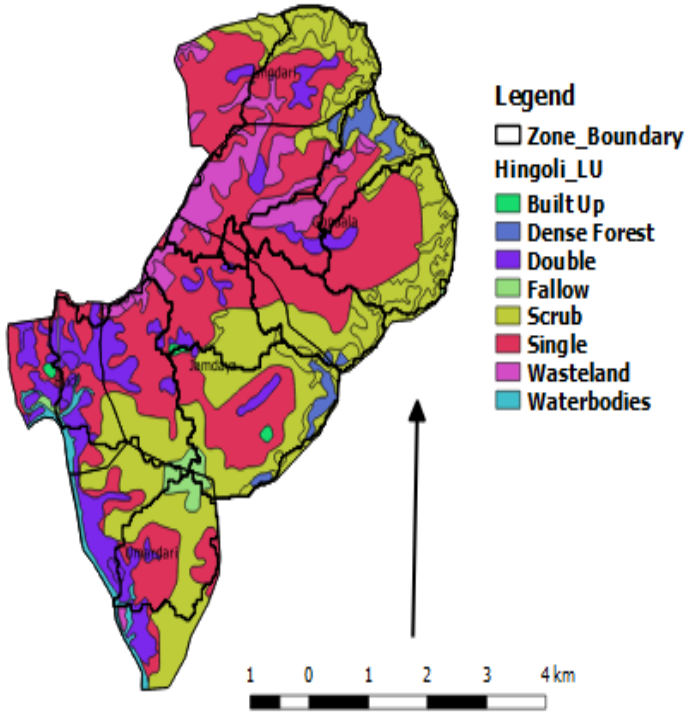
Output Generated by Plugin

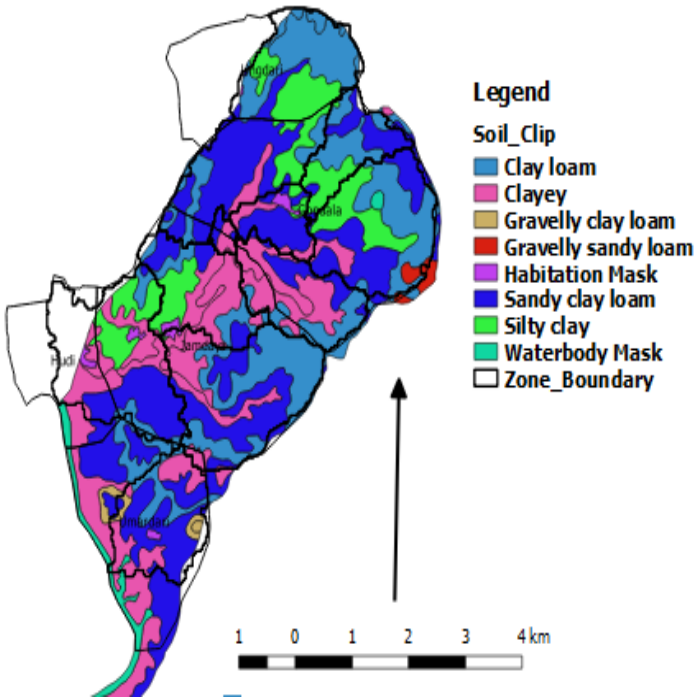
1 Cadastral Vulnerability Map
2 Point wise Vulnerability Map
3 Cadastral wise Vulnerability CSV
4 Zone wise Computation CSV

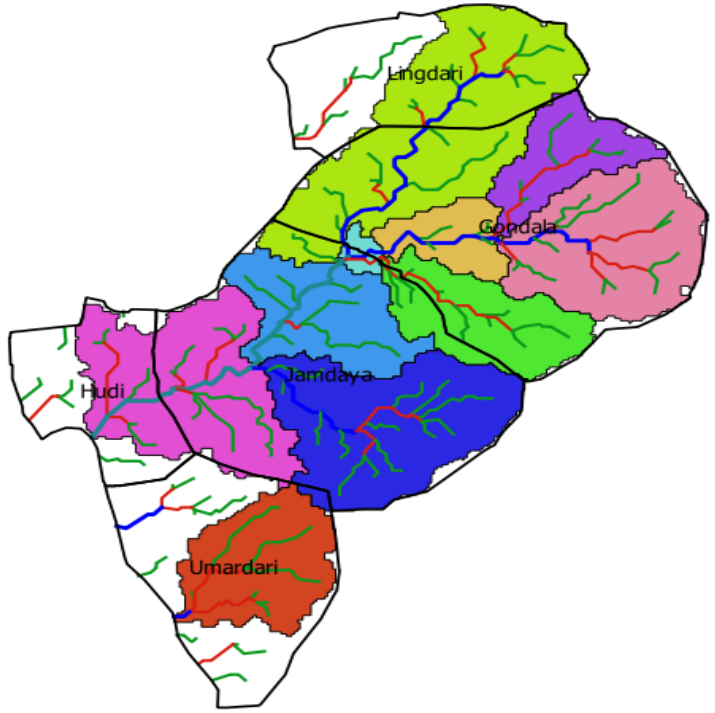
Pre Processing of layers

Sr.No	Input	Processing	Output	Commands Used
1	Cluster Boundary	Project the cluster boundary with number of villages in UTM projection.	Cluster Shapefile with required spatial extent.	Save command is used by selecting required villages
2	LULC	Using the cluster shapefile clip the LULC layer in UTM Projection	LULC layer with require spatial extent.	Qgis Clip Command
3	Soil	Using the cluster shapefile clip the soil layer in UTM Projection	Soil layer with required spatial extent.	Qgis Clip Command
4	Cadastral Map	Using the cluster shapefile clip the Cadastral layer in UTM Projection	Cadastral layer with required spatial extent.	Qgis Clip Command
5	DEM	Extraction of sub watersheds or zones from Dem	Zone layer with required spatial extent.	“r.watershed” , “r.to.vect”
6	Cluster Boundary with zones	Intersection of cluster boundary and zone layer and naming of zones	Cluster boundary with number of zones	Qgis Intersection Command
7	Slope	Extraction of slope layer from Dem	Slope layer with required spatial extent.	"r.slope"
8	Rainfall	Full year rainfall data in CSV format in two columns days and Rainfall	Rainfall CSV file	Excel

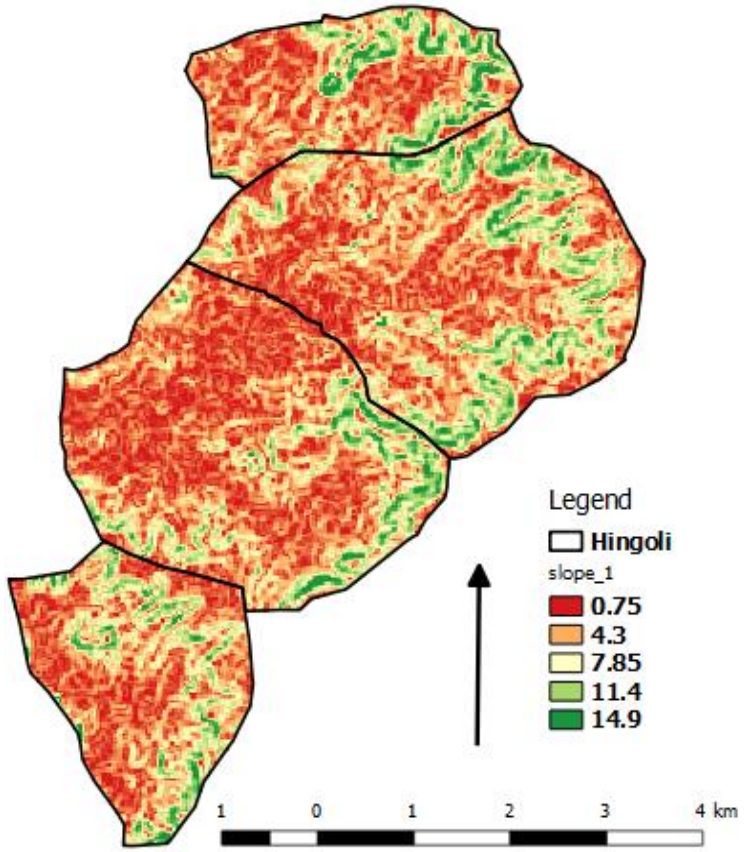
Inputs - LULC, Soil and Zone shapefile



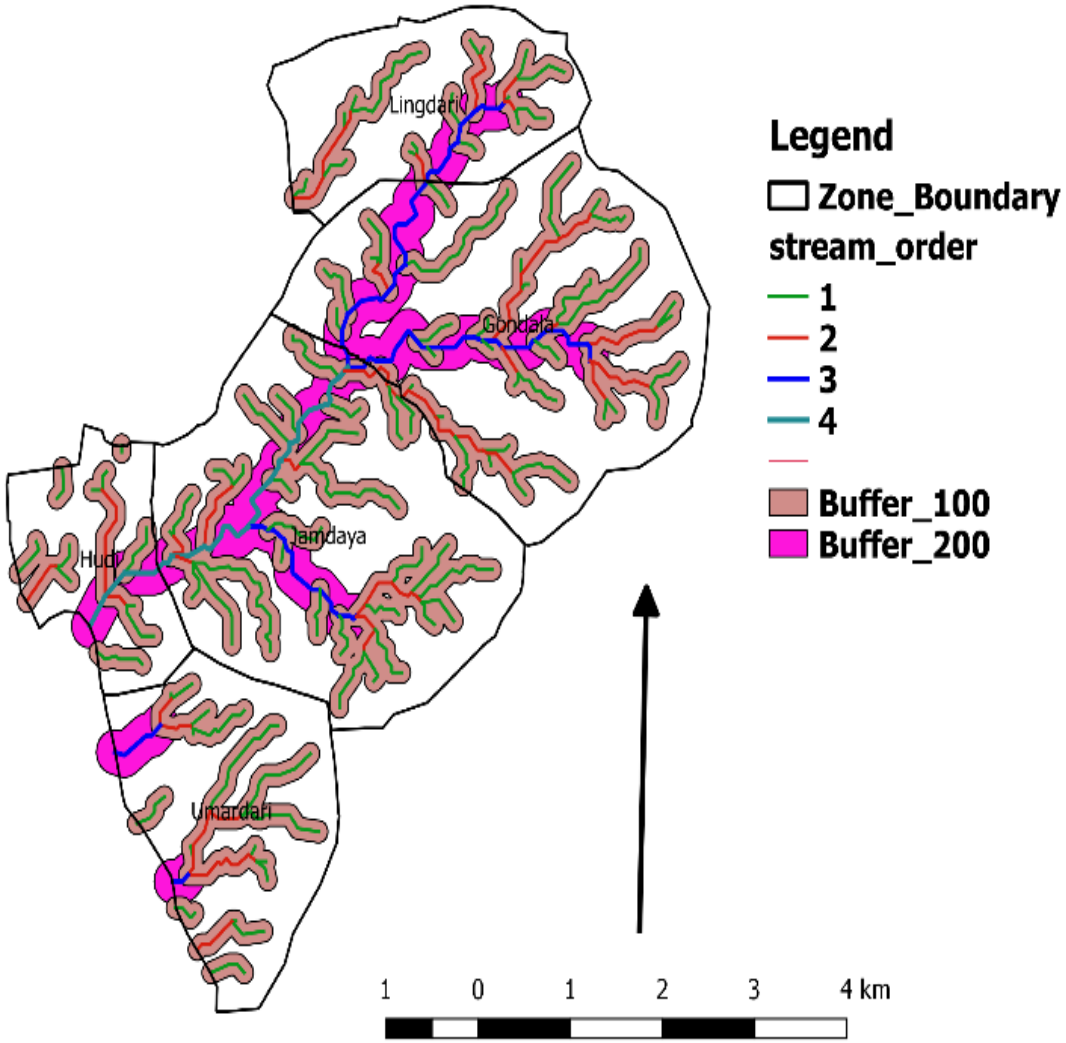


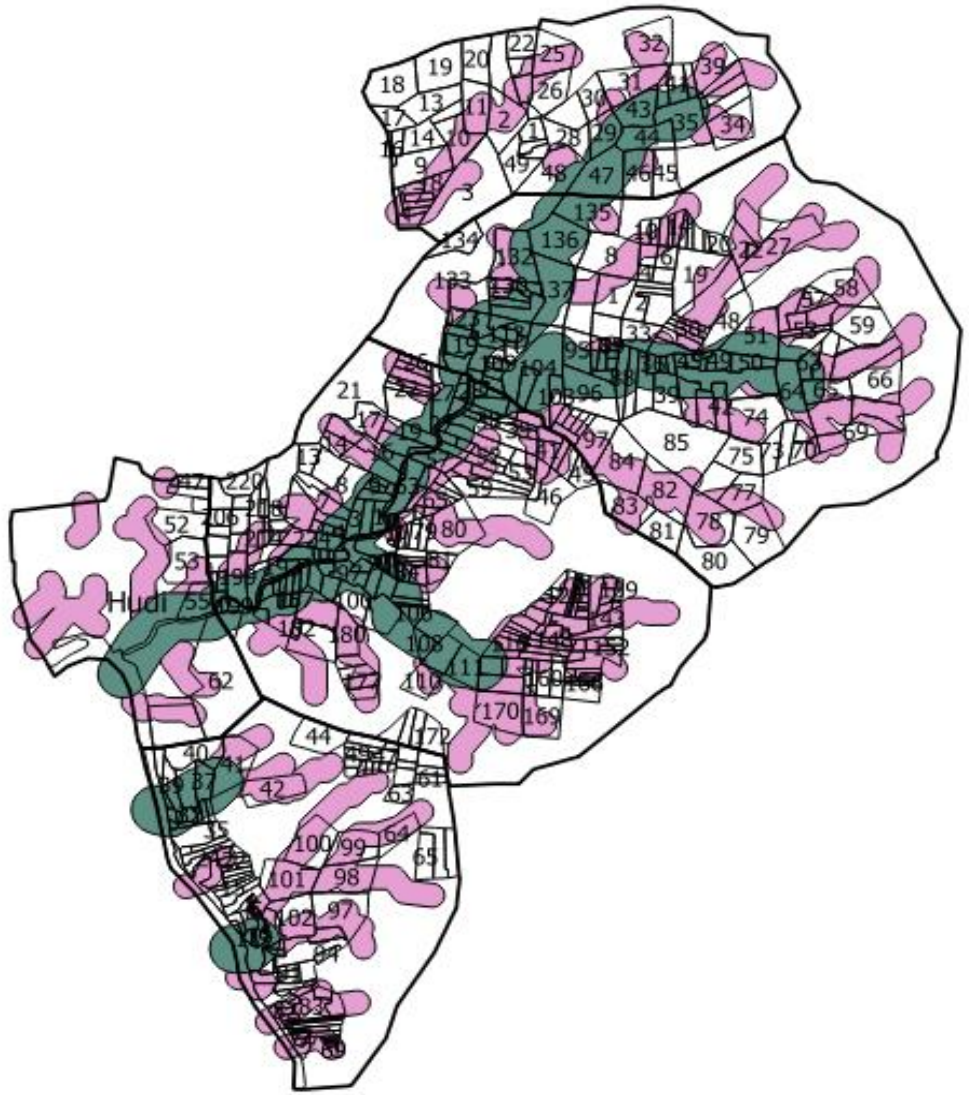


Inputs - Cadastral shapefile and Slope raster

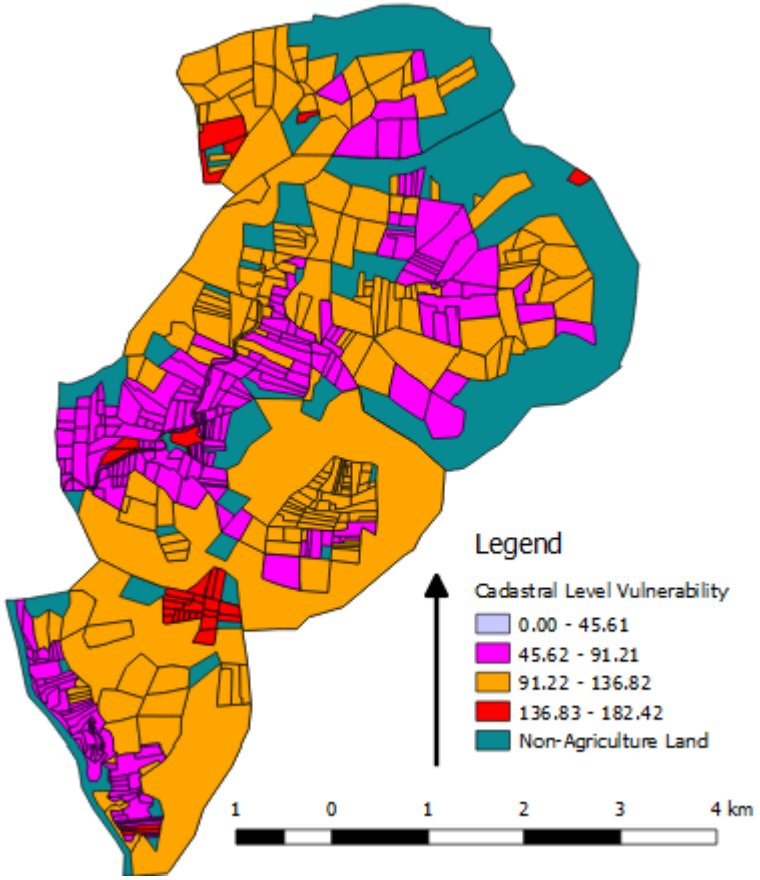


Stream Order

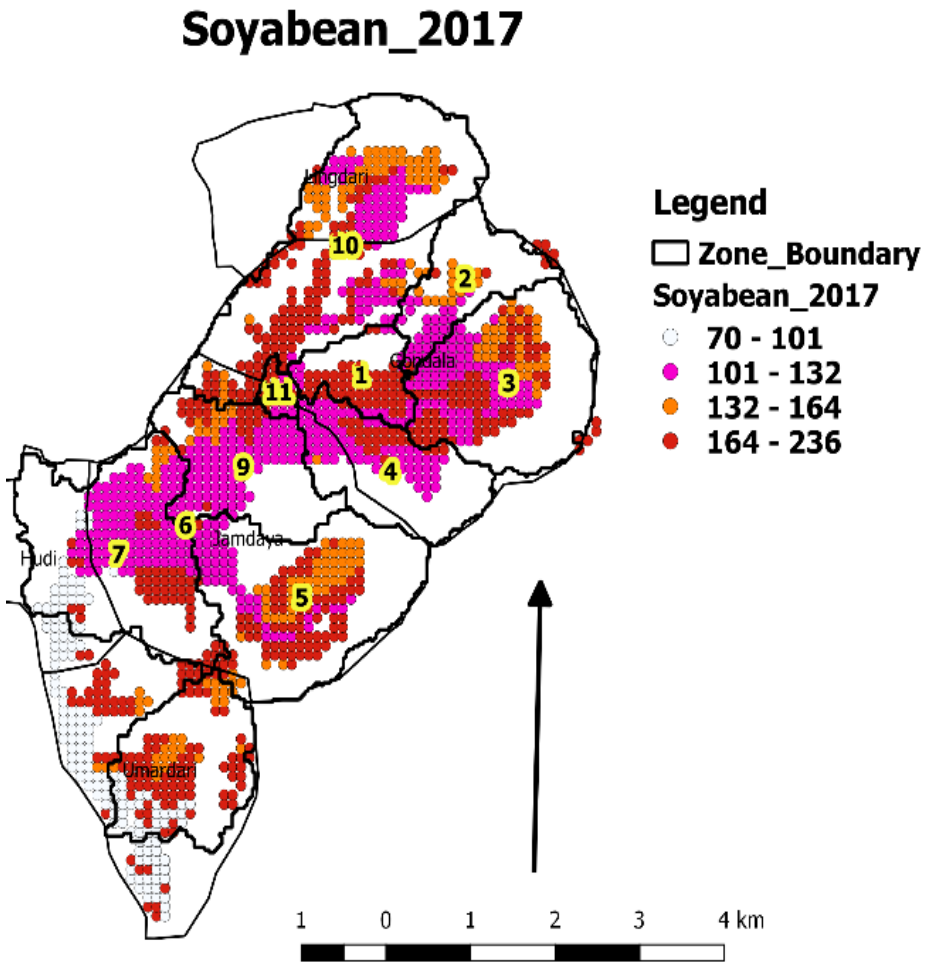




Output - Cadastral Vulnerability



Output – Pointwise Vulnerability



Computational Data

Data	Soyabean	Bajra	Cotton	Tur	Wasteland	Scrub forest	Dense Forest
Rainfall	837	837	837	837	837	837	837
Runoff in Monsoon	360	479	355	374	432	406	346
Infilitration in Monsoon	477	358	482	463	405	431	491
Soil Moisture Crop end	72	78	1	16	23	1	1
GW Recharge in Monsoon	59	84	31	35	69	60	62
AET Crop End	346	184	449	411	312	370	427
PET Crop End	454	289	754	601	518	634	779
AET Monsoon End	346	184	449	411	305	356	427
PET Monsoon End	454	289	721	601	518	634	779
Monsoon Deficit(PET-AET)	108	105	272	190	86	77	226
Crop duration Deficit(PET-AET)	108	105	305	190	206	264	352

Gat Wise Vulnerability CSV

Zone	AREA m2	Gat Number	Deficit mm	Mean Soil M mm	Watering's Req
3	20186.6	55	300.6	51.7	6
3	43807.3	41	302.9	113	6
3	44932.4	42	305.2	113	6
3	35156.9	56	305.6	51.7	6
3	14577.5	61	306.6	51.7	6
3	109521	58	308.7	51.7	6
3	88572.8	75	310.6	109.8	6
3	294478	85	316.7	79	6
3	591.6	44	321.2	45	6
3	134575.8	59	325.5	48.5	6
3	40883.6	72	331.6	45	6
3	21333.8	71	332.3	45	6
3	18392.5	53	340.3	44.1	6
3	67894.1	67	265.7	195.8	5
3	53228.4	62	268.1	227.3	5
3	147266.7	74	268.7	224.2	5
3	64644.3	52	274.2	140.3	5
3	32742.7	63	277.5	213.3	5
3	91136.3	60	279.3	126.5	5
3	36062.2	54	279.4	128	5
3	38596.6	57	285.2	124.1	5
3	144678.5	43	287.6	134.8	5
3	128271.6	66	289.3	114.2	5
3	88826.1	68	289.5	132.2	5
3	97179.5	64	299.6	106.3	5
3	6889	46	229.1	280.5	4
3	25120.2	45	229.1	280.5	4
3	30278	49	229.6	279.5	4
3	137214.3	51	230.5	277.8	4
3	69217.1	65	231.4	276.1	4
3	98775.4	48	231.5	276	4
3	48181.9	40	243.1	310.5	4
3	45536.7	73	247.1	304.2	4

Thank You