Delivery - Phase III - Contingency

Shubhada
Sharad
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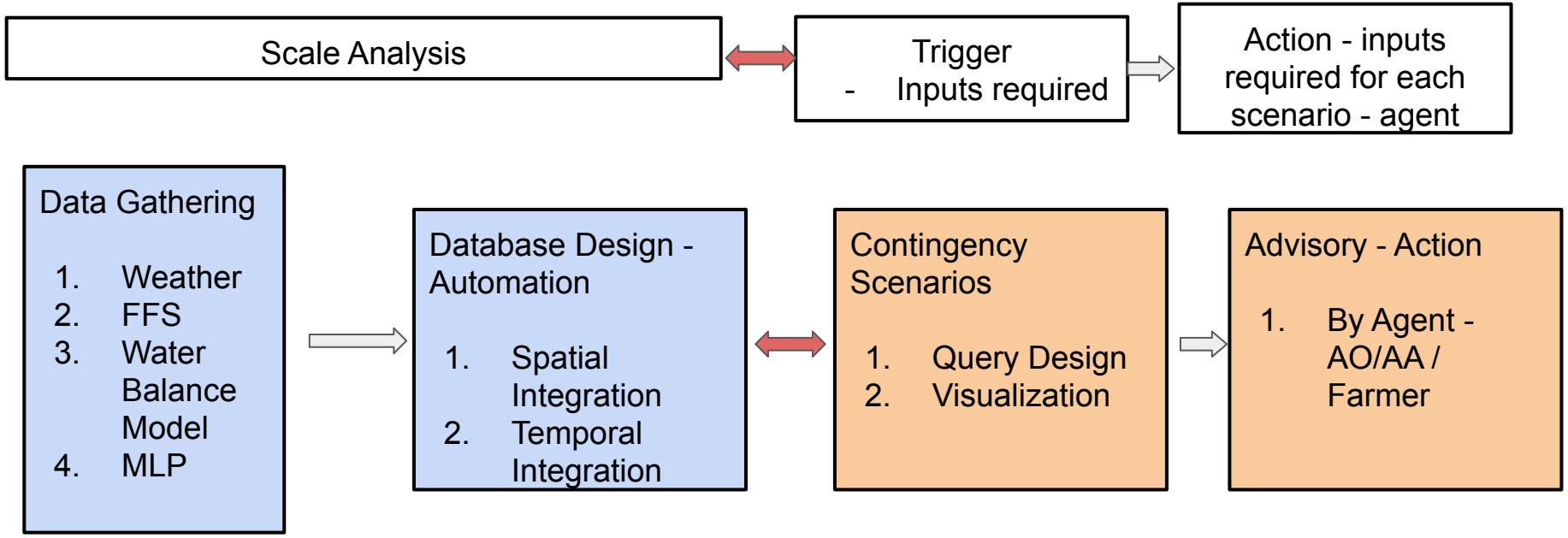
C - Contingency

C1 - Development of SATA Framework (Conceptual + IT Framework) - Phase III

C2 - Linking Contingency Planning at selected scale by prototyping triggers - partly done in Phase III by analyzing and preparing interlinked maps

C3 - Interface and support to CRIDA/SAU for extension and validation - Ongoing

Design of prototype IT Framework for Scale-Trigger-Analysis-Action



IT framework for contingency planning

In contingency planning we do require databases FFS,water budget and skymet.

- FFS plots will provide data such as major crop and date of sowing.

  For each plot there will be a contingency planning.
- For each plot a nearest skymet circle will be assigned to it and rainfall and other parameters will be updated from there only for that plot.
- Front-end of contingency planning will be a map contingency wise for entire pocra region

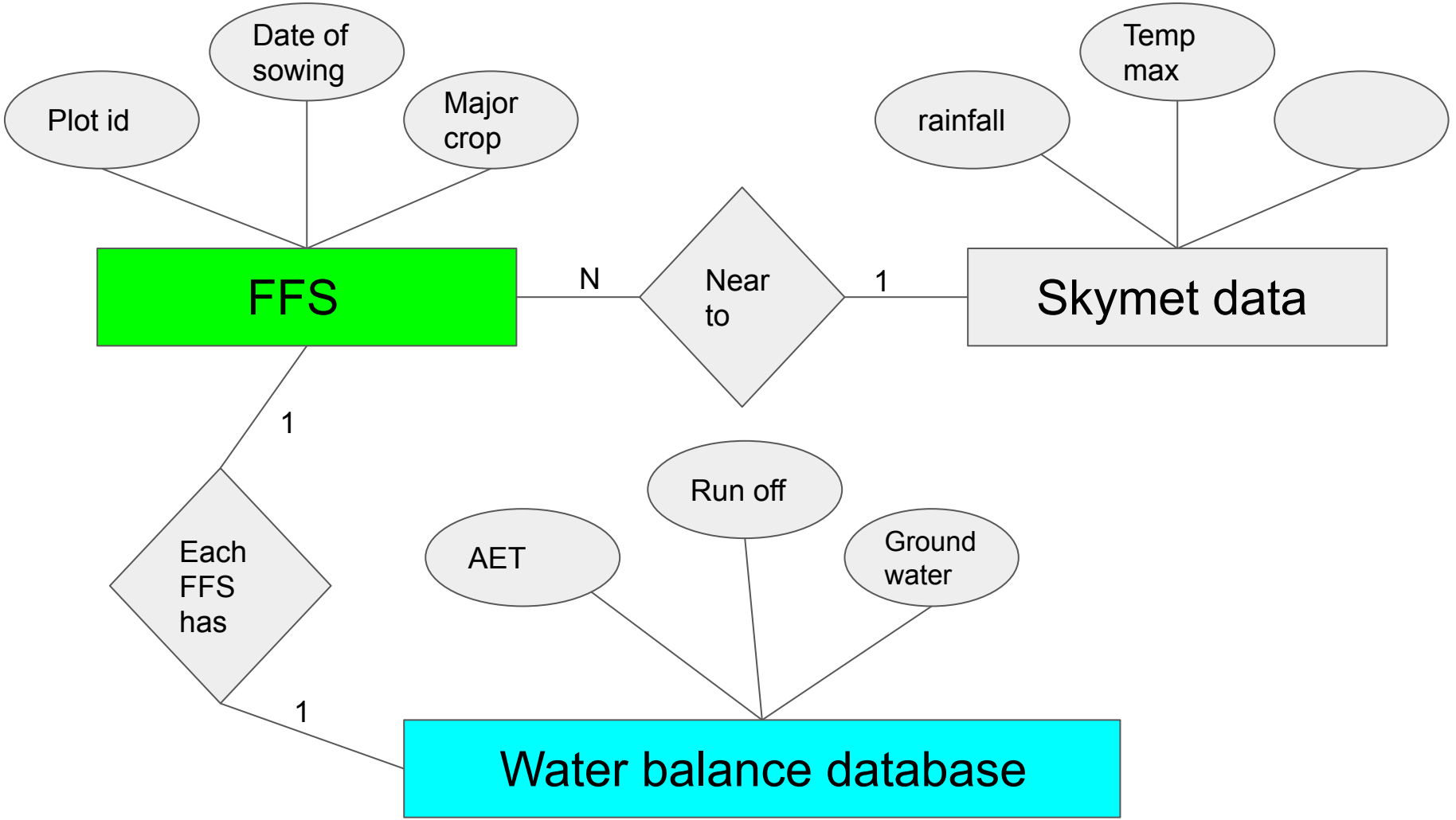
Database Design - Integration

1. Need inputs for deciding spatial scale for different contingencies - actions/advisories
2. Temporal scale
3. Integrate / aggregate databases and design for these.

Data	Spatial scale for Contingency	Temporal Scale
Weather	AWS Circle	Hourly -. daily
Water Balance Model	AWS Circle	Daily
FFS	plots/point	Based on data
MLP	Village level	Monsoon/Post-monsoon

Database design will depend on scenarios and advisories - currently done for existing datasets.

Triggers and advisory layer are added on this to implement contingency


Date of sowing
Plot id
Major crop
Temp max
rainfall
FFS
N
Near to
1
Skymet data
1
Each FFS has
Run off
AET
Ground water
1
Water balance database

Previous slides ER diagram explains how various databases will be used in contingency planning .

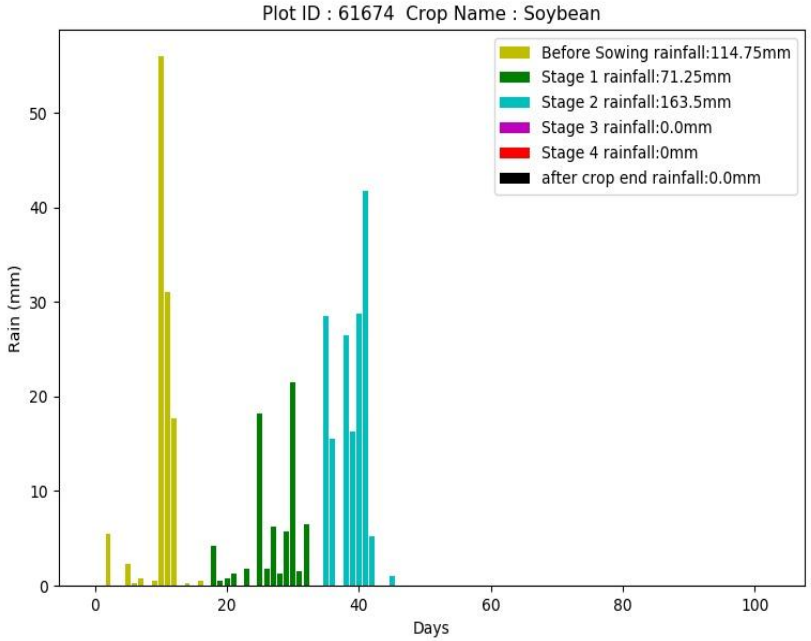
- For every village there will be a contingency plan for that village crop wise on the basis of crop sowing date and skymet data of nearest circle to it.
- On clicking/on search for a particular village map a chart will be shown for water balance and rainfall for a particular crop

Prototype contingencies

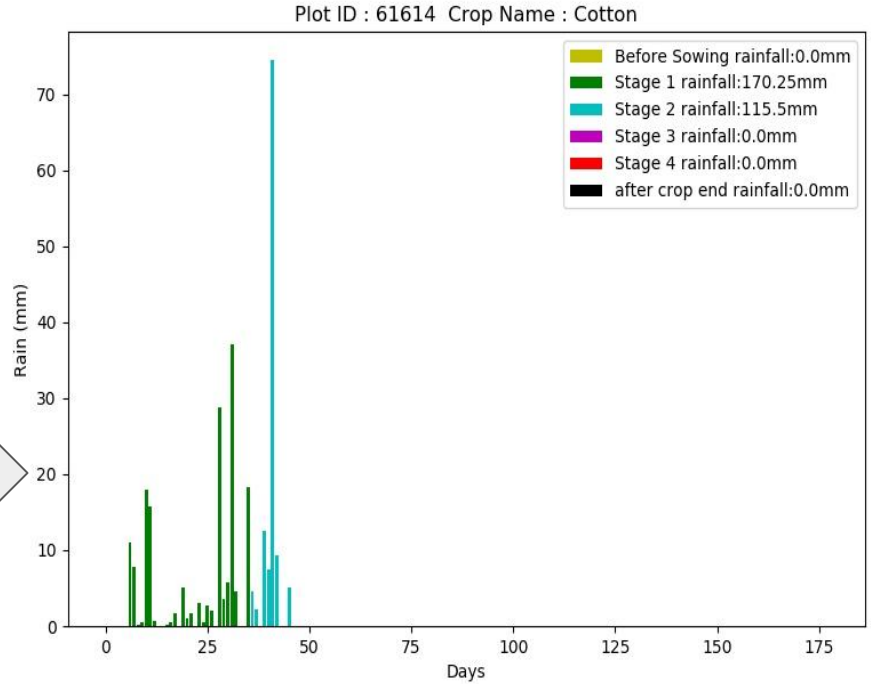
Contingency indicator	Crop stage	Dry spell	crops
Max number of days of Dry spell during reproductive stage	Reproductive (stage durations to be confirmed from SAU)	< 2.5 mm rain per days - continuous days	cotton/soybean
Excess rainfall during harvest stage	Harvest stage (stage durations to be confirmed from SAU)	Safe amount of rainfall during this stage required	cotton/soybean

Get TNAU like scenarios-actions for - pests/other contingencies

Scenario	Rainfall mm	TMAX °C	TMIN °C	RH %	Wind km/hr
1	0	<20	<15	>40	<5
2	0	20 - 30	<15	>40	<5

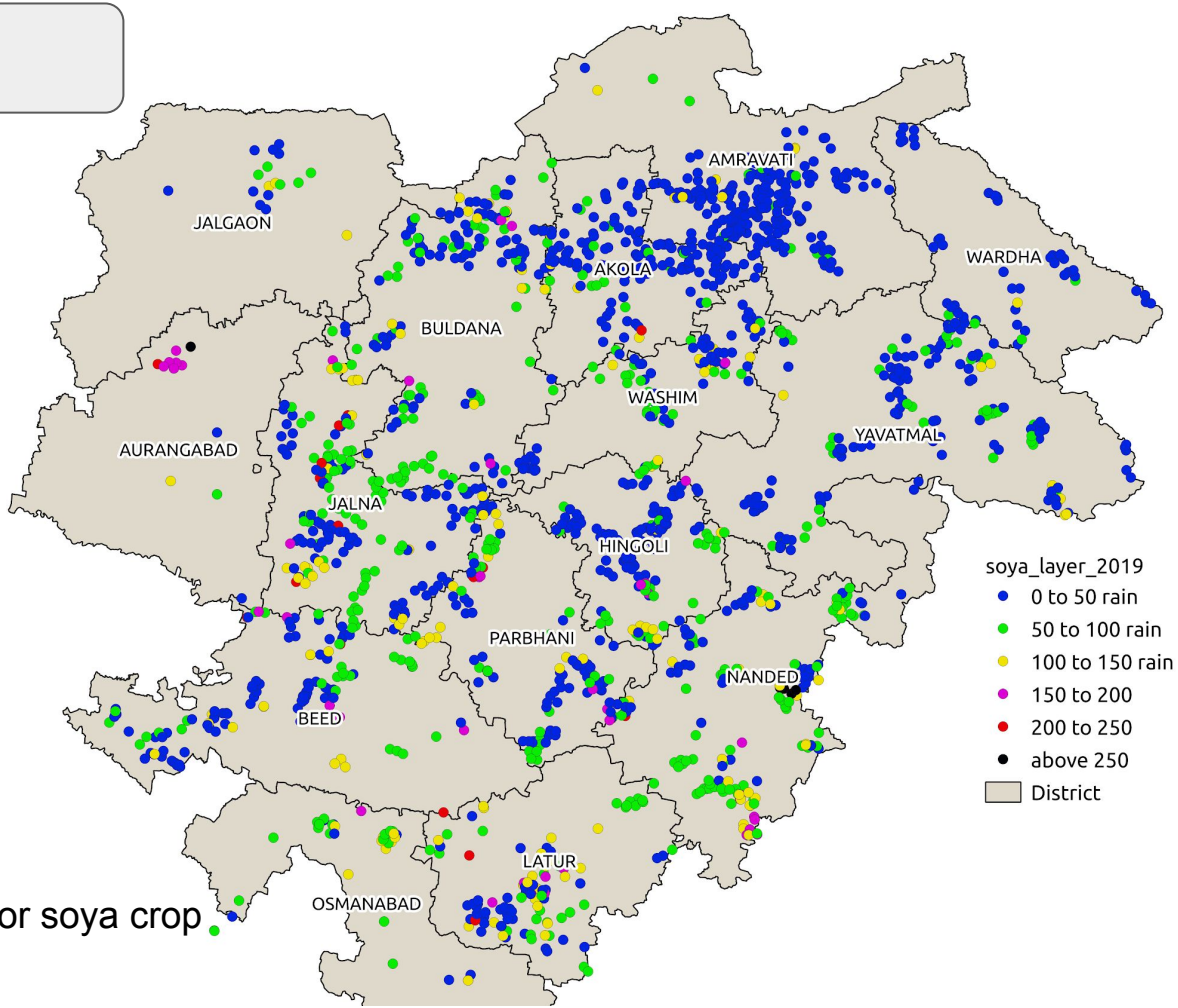


District :-Wardha subdivision:-Wardha
Taluka :- Seloo village : - Dahegaon (gosai)
Major _crop:- Soybean
Cropping_system :- intercropping



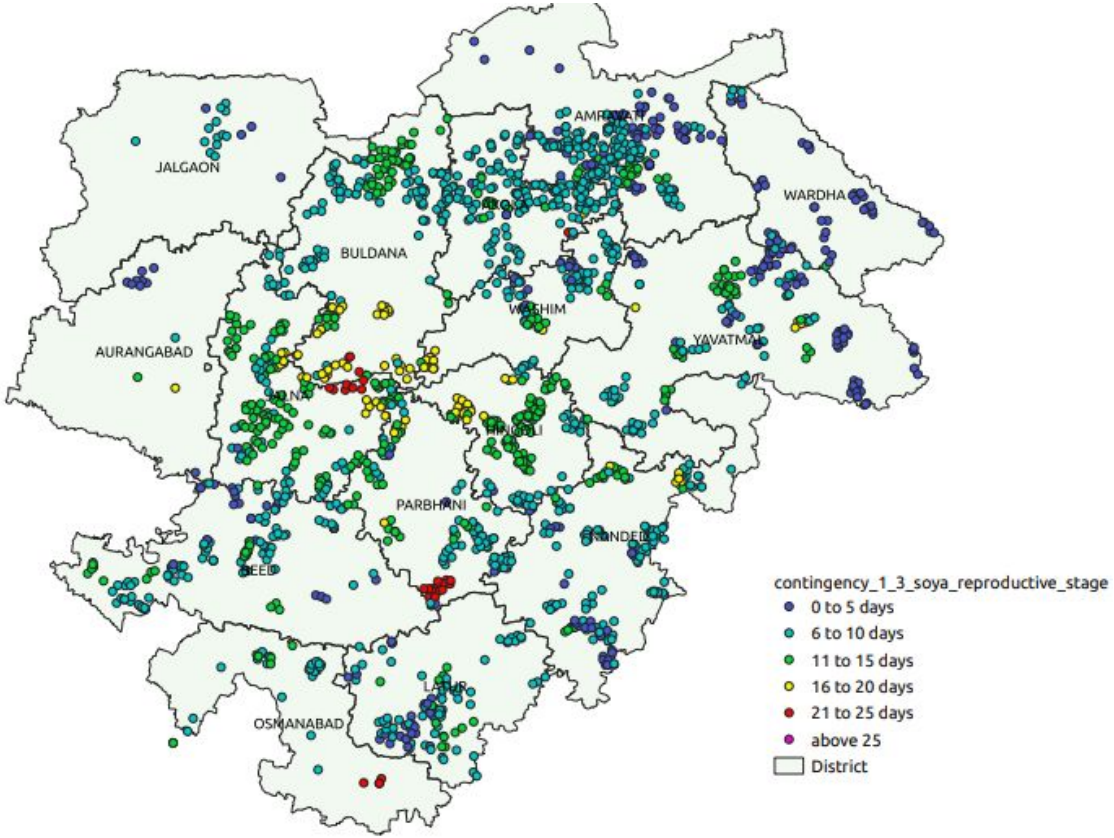
District :-Yavatmal
subdivision:-Pandharkawada
Taluka :- Zari jamani village : - Bhendala
Major _crop:-Cotton
Cropping_system :- intercropping

Sample MAP



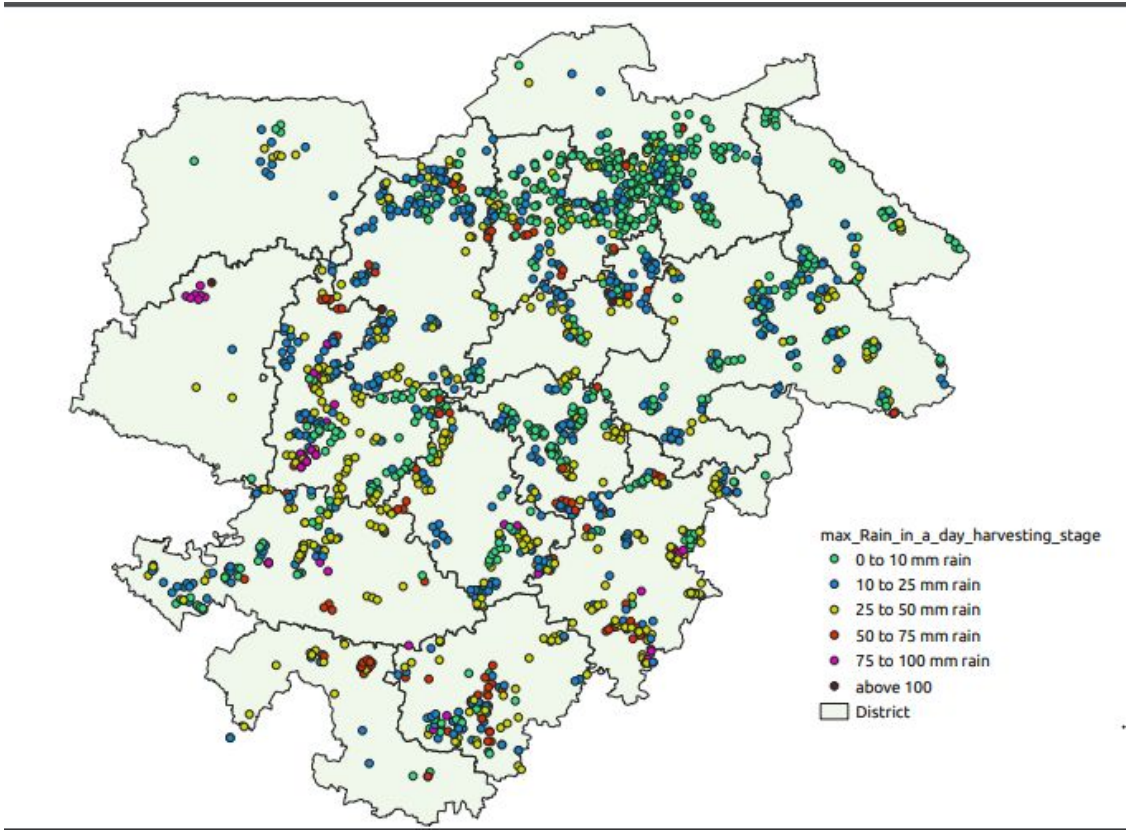
Total rain in harvesting phase for soya crop 2019

Sample maps - max dry spell during reproductive stage

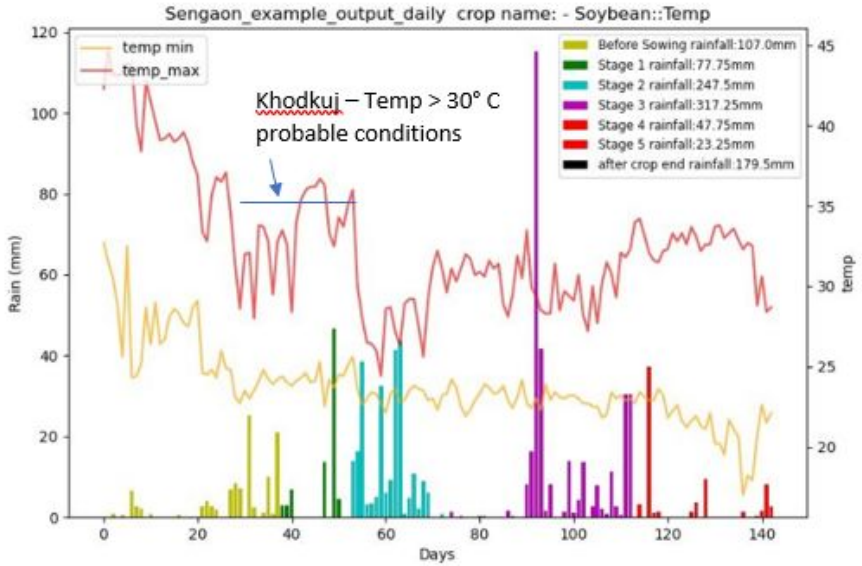


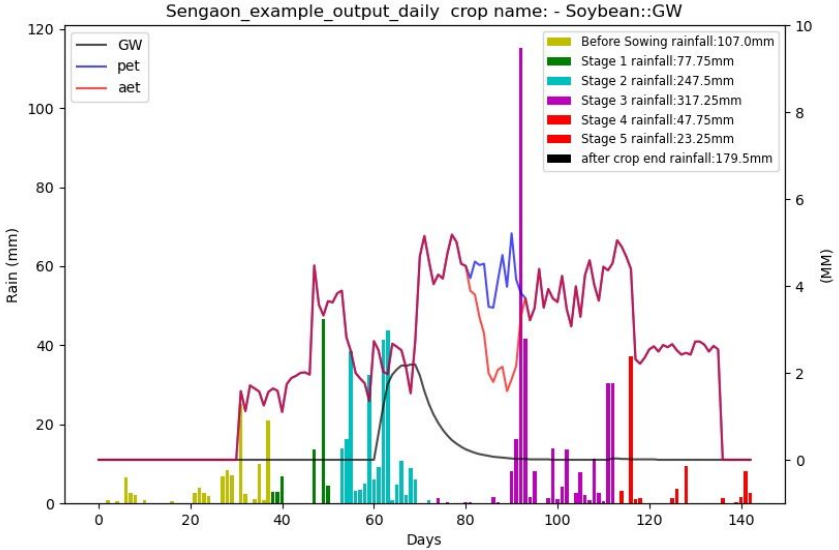
Max rainfall per day during harvest stage

1. Need triggers events-advisory layer on this data.

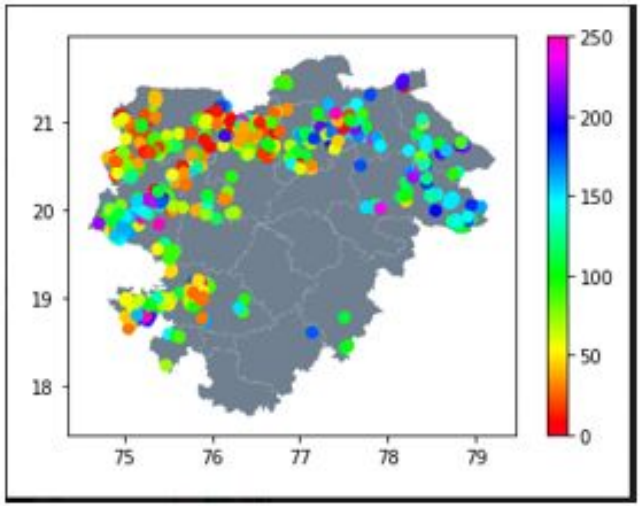


Temperature contingencies

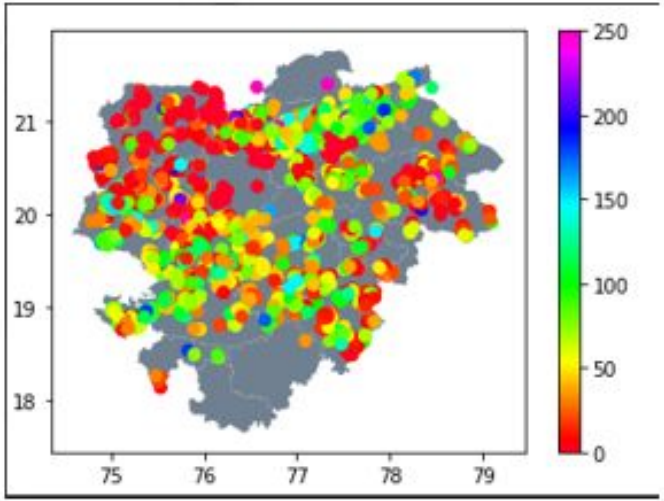




Cotton - Rainfall before sowing for FFS plots 2020, 2019

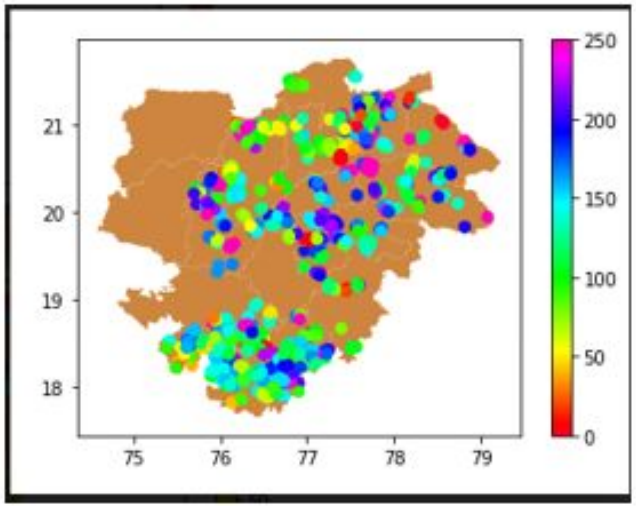


Cotton FFS lots 2020

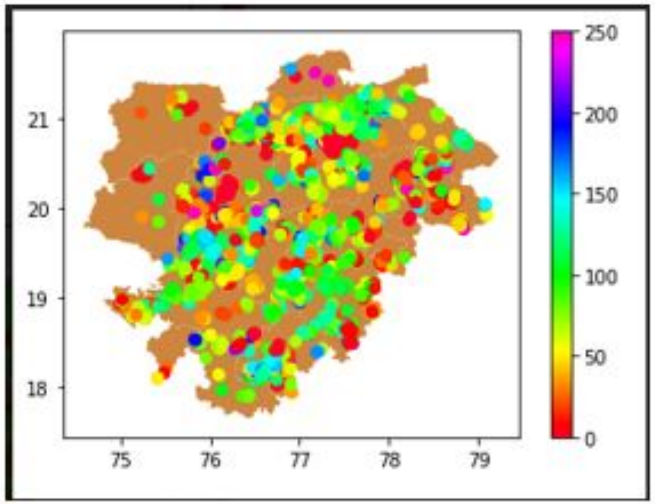


Cotton FFS plots 2019

Soybean - Rainfall before sowing for FFS plots 2020, 2019

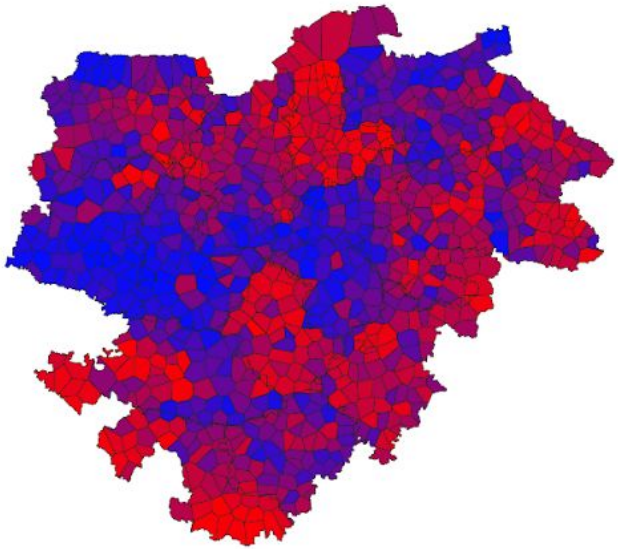


Soybean FFS lots 2020

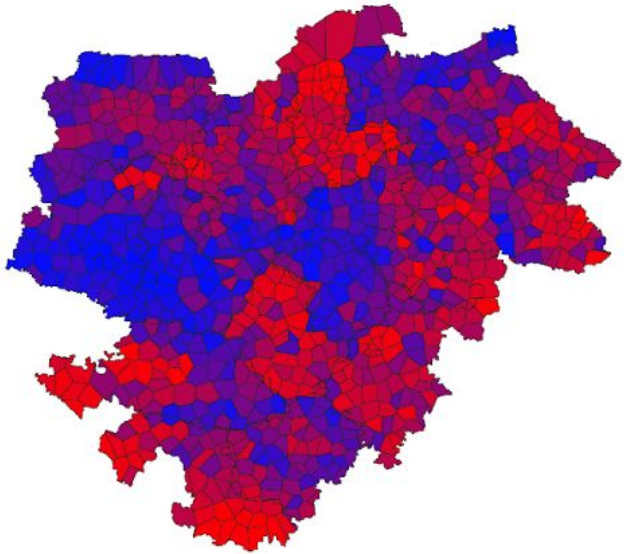


Soybean FFS lots 2019

Dashboard Skymet Data Issue



Without correction



With correction - nearest AWS rainfall considered in case of null values

Intermittent red polygons have moved towards blue.

-The AWS stations data is updated by skymet multiple times in a day. Sometimes even after 5 PM. Need input from PMU on - time at which the skymet data for previous day should be updated to avoid the null erros and enable 1 day lag.

What is required from the experts

- How to relate the weather, crop and farm-condition datasets to develop contingency rules
- Eventually, a contingency matrix needs to be developed for different crops and their crop stages which will have
  - Row as crop stages i.e. reproductive stage, budding, flowering, harvesting etc. for some crop
  - Columns as weather / farm conditions
    - these can be simple ones i.e. only one parameter - e.g. high rainfall, high humidity etc.
    - Composite ones - e.g. high humidity + high temperature OR excess soil moisture + high rainfall + high humidity etc.
  - Row, column values suggesting contingency level - this will combine the weather/farm conditions with the crop stage to suggest type and intensity of contingency - e.g. high rainfall during harvesting stage is contingency, but high rainfall during reproductive stage is not

Contingency matrix - preliminary

Weather or farm conditions	Crop stage 1	Crop stage 2	Crop stage 3	Crop stage 4
Wet spell	Y/N	Y/N	Y/N	Y/N
Dry spell	Y/N	Y/N	Y/N	Y/N
High humidity	Y/N	Y/N	Y/N	Y/N
High temperature	Y/N	Y/N	Y/N	Y/N
Excess soil moisture	Y/N	Y/N	Y/N	Y/N
…...				

- Each row and column combination with Y will be a contingency rule (or TRIGGER) for which a query can be prepared from the existing IT framework
- This matrix needs to be constructed by the experts

Before and After

Before - triggers

- Design contingency rules (triggers)
- E.g. crop-stage - weather - farm condition
  - Wet-spell contingency
  - Dry-spell contingency
- This will require
  - inputs from experts
  - Design of queries from the existing databases (IT framework)

After - advisory

- What will be action taken on the ground - inputs from experts
- By whom (AA, TAO, DSAO)