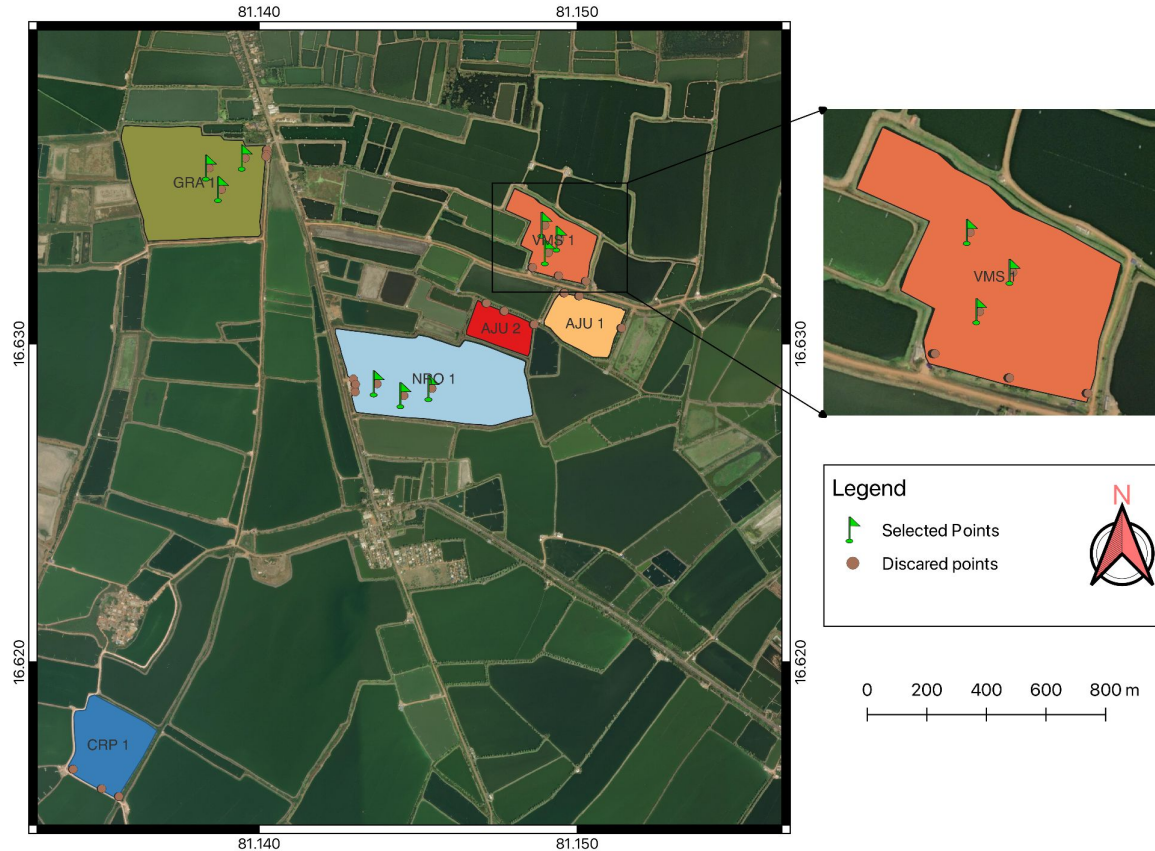


FWI Pilot - Satellite data & In Situ Data comparison

Sampling Locations| Retrospective data observations



Units of Parameters

Parameter	Unit of Measurement (GT)	Unit of Measurement (RS)
Temperature	°C	°C
Chl a	µg/l	µg/l
PC (Phycocyanin)	µg/l	NA
pH	Logarithmic	Logarithmic
Turbidity	cm	NTU
Ammonia	mg/L	mg/L

Before Pilot: RS-predicted & GT comparison| Units and Values

pH

<i>Pond</i>	<i>Unit (GT)</i>	<i>Unit (RS-predicted)</i>	<i>GT</i>	<i>RS-predicted</i>	<i>Relative Deviation (%)</i>	<i>Date of satellite pass</i>	<i>Date of collection</i>	<i>Difference b/w Dates</i>
NRO1	Logarithmic	Logarithmic	8.3	5.497	-33.771	28-08-2023	29-08-2023	1
VMS1	Logarithmic	Logarithmic	8.7	7.046	-19.011	28-08-2023	22-08-2023	6
GRA1	Logarithmic	Logarithmic	8.9	6.358	-28.562	28-08-2023	29-08-2023	1

Chl-a

<i>Pond</i>	<i>Unit (GT)</i>	<i>Unit (RS-predicted)</i>	<i>GT</i>	<i>RS-predicted</i>	<i>Relative Deviation (%)</i>	<i>Date of satellite pass</i>	<i>Date of collection</i>	<i>Difference b/w Dates</i>
NRO1	ug/L	ug/L	119.53	5.41	-95.474	28-08-2023	29-08-2023	1
VMS1	ug/L	ug/L	60.51	5.827	-90.370	28-08-2023	22-08-2023	6
GRA1	ug/L	ug/L	197.91	5.109	-97.419	28-08-2023	29-08-2023	1

Before Pilot: RS-predicted & GT comparison| Units and Values

Temperature

<i>Pond</i>	<i>Unit (GT)</i>	<i>Unit (RS-predicted)</i>	<i>GT</i>	<i>RS-predicted</i>	<i>Relative Deviation (%)</i>	<i>Date of satellite pass</i>	<i>Date of collection</i>	<i>Difference b/w Dates</i>
NRO1	C	C	32.2	28.315	-12.065	28-08-2023	29-08-2023	1
VMS1	C	C	31.5	28.365	-9.952	28-08-2023	22-08-2023	6
GRA1	C	C	33.2	28.371	-14.545	28-08-2023	29-08-2023	1

Ammonia

<i>Pond</i>	<i>Unit (GT)</i>	<i>Unit (RS-predicted)</i>	<i>GT</i>	<i>RS-predicted</i>	<i>Relative Deviation (%)</i>	<i>Date of satellite pass</i>	<i>Date of collection</i>	<i>Difference b/w Dates</i>
NRO1	mg/L	mg/L	NA	0.594	NA	28-08-2023	29-08-2023	1
VMS1	mg/L	mg/L	NA	0.595	NA	28-08-2023	22-08-2023	6
GRA1	mg/L	mg/L	NA	0.664	NA	28-08-2023	29-08-2023	1

Before Pilot: RS-predicted & GT comparison| Units and Values

Turbidity

<i>Pond</i>	<i>Unit (GT)</i>	<i>Unit (RS-predicted)</i>	<i>GT</i>	<i>RS-predicted</i>	<i>Relative Deviation (%)</i>	<i>Date of satellite pass</i>	<i>Date of collection</i>	<i>Difference b/w Dates</i>
NRO1	cm	NTU	NA	2.462	NA	28-08-2023	29-08-2023	1
VMS1	cm	NTU	NA	3.754	NA	28-08-2023	22-08-2023	6
GRA1	cm	NTU	NA	3.569	NA	28-08-2023	29-08-2023	1

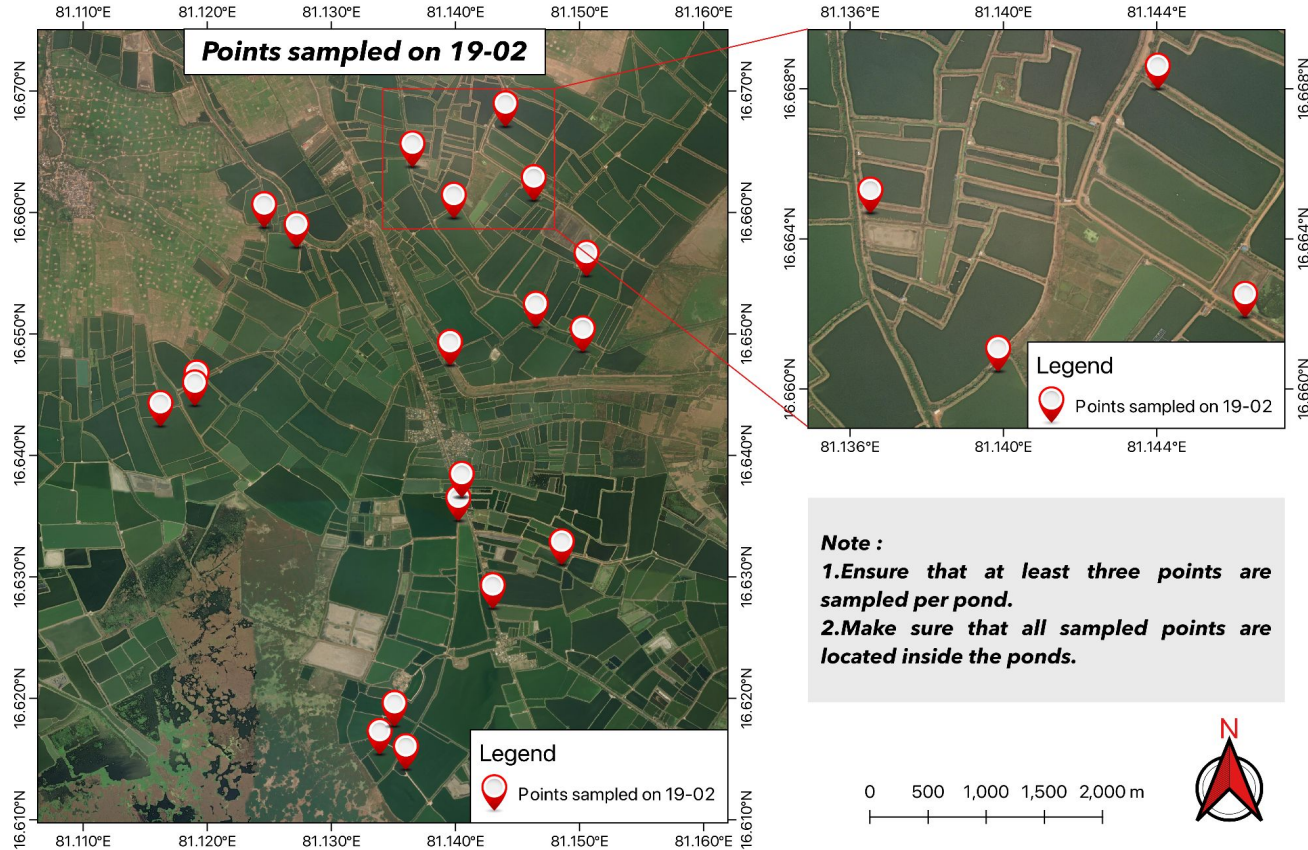
FWI Pilot - Collecting ground truth

Satellite tasking date	GT collected date	Satellite tasking time	GT collected time	GT Data Quality
19-02-2024	19-02-2024	10:25 AM to 10:45 AM	9:00 AM to 11:00 AM	Medium
24-02-2024	24-02-2024	10:25 AM to 10:45 AM	9:00 AM to 11:30 AM	Medium
29-02-2024	29-02-2024	10:25 AM to 10:45 AM	9:00 AM to 11:30 AM	Medium
05-03-2024	05-03-2024	10:25 AM to 10:45 AM	9:00 AM to 11:00 AM	Medium
10-03-2024	10-03-2024	10:25 AM to 10:45 AM	9:00 AM to 11:10 AM	Medium

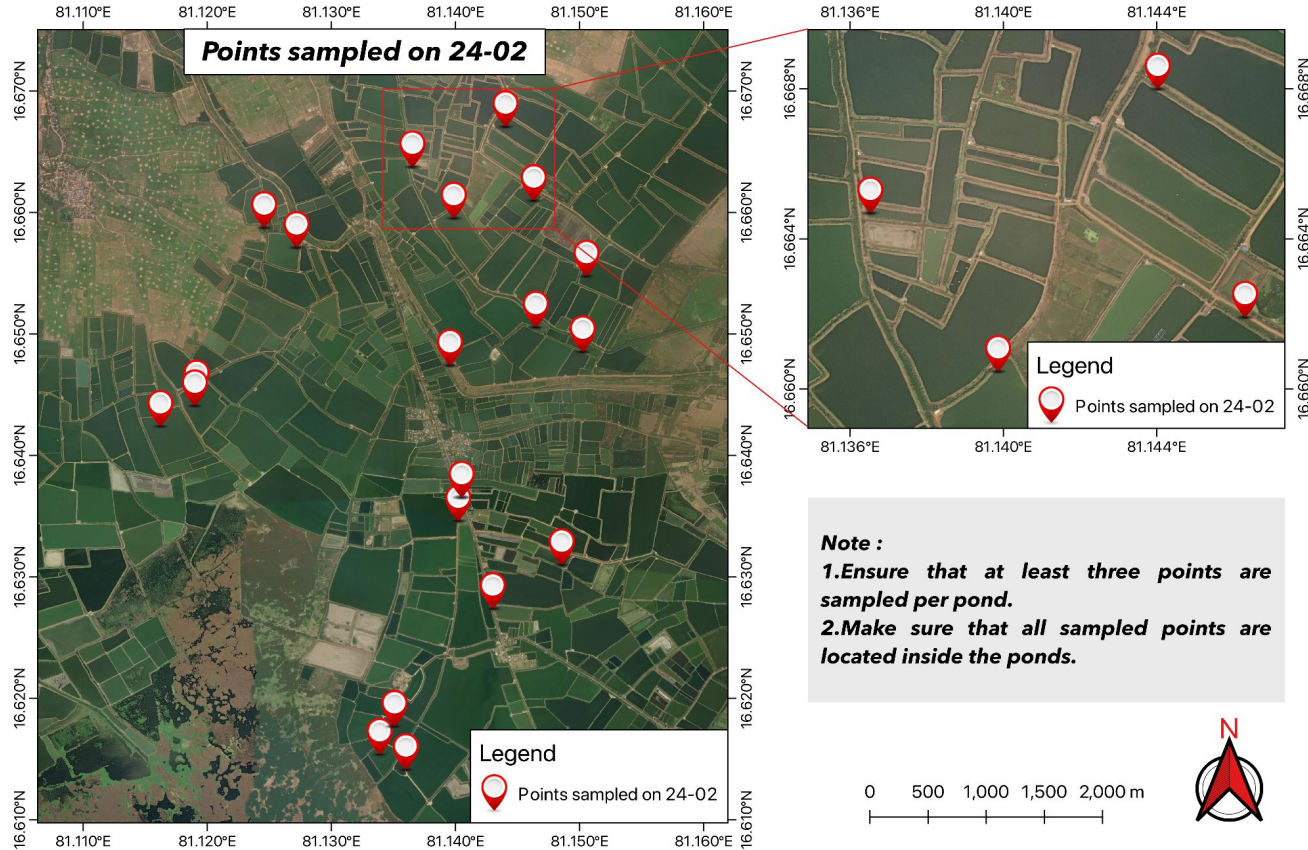
Note:

1. The same locations (latitude and longitude) were recorded/reported for all the dates.
2. Most of the ponds were sampled before and after the scheduled Satellite tasking time.
3. Only one point per pond was sampled due to which spatial variability was not captured (minimum of 3 points per pond were required).
4. Out of 20 points 18 points were located near vicinity of pond boundary and 2 points were located outside of the pond.

Ponds sampled on 19-02-2024



Ponds sampled on 24-02-2024

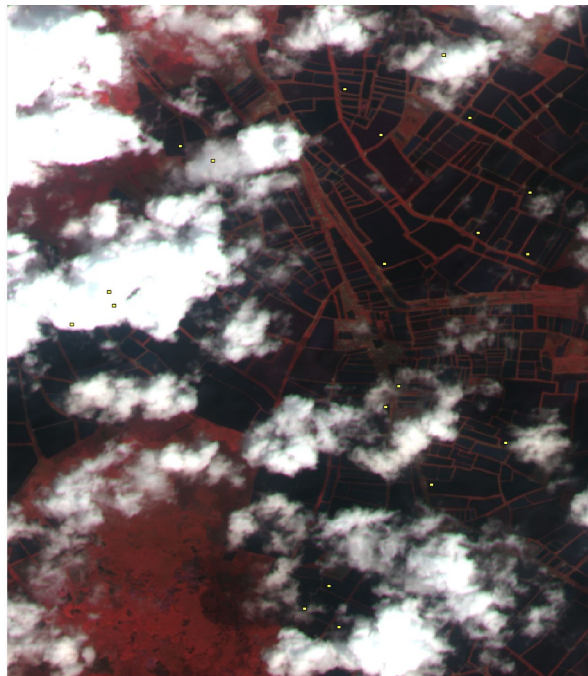


Correlating In-Situ (W.Q.P) data with RS data

- Total No. of GT samples collected = 99
- The number of samples impeded by both cloud cover and shadows = 18
- Total No. of samples available for training the model = 81



19-02-2024



24-02-2024



29-02-2024

Correlating In-Situ (W.Q.P) data with RS data



05-03-2024



10-03-2024

Performance of algorithms / models used in the estimation of W.Q.P

<i>W.Q.P</i>	<i>Coefficient of Determination (R^2)</i>
Ammonia	0.82
Chl - a	0.78
Dissolved Oxygen	0.71
PC	0.81
pH	0.8
Temperature	0.7

- Link for report on W.Q.P.: [W.Q.P report](#)

Conclusions

1. Overall coefficient of determination value of ~80% has been achieved for all the parameters.
2. The coefficient of determination can be enhanced by incorporating additional data points across the spatial and temporal dimensions.
3. The overall developed solution identifies semantic changes in the measured parameters and computes representational accuracy on predictions.
4. The total number of data points used for testing constitutes 30% of the actual ground truth received.
5. The link to access the EE app for demo and testing : [GEE-APP](#)