AOMSUC-15 FYSUC-2025

FIFTEENTH ASIA-OCEANIA METEOROLOGICAL SATELLITE USERS' CONFERENCE

THE JOINT 2025 FENGYUN SATELLITE USER CONFERENCE

AI to identify crops, monitor growth of crops And predict yields of crops using Fengyun Satellite 3D

Presenter: Dr. Yan Lin Aung (Myanmar)

Date-28.10.2025

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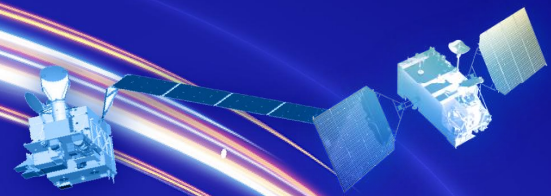


Outline

I. Introduction

II. Data and Method

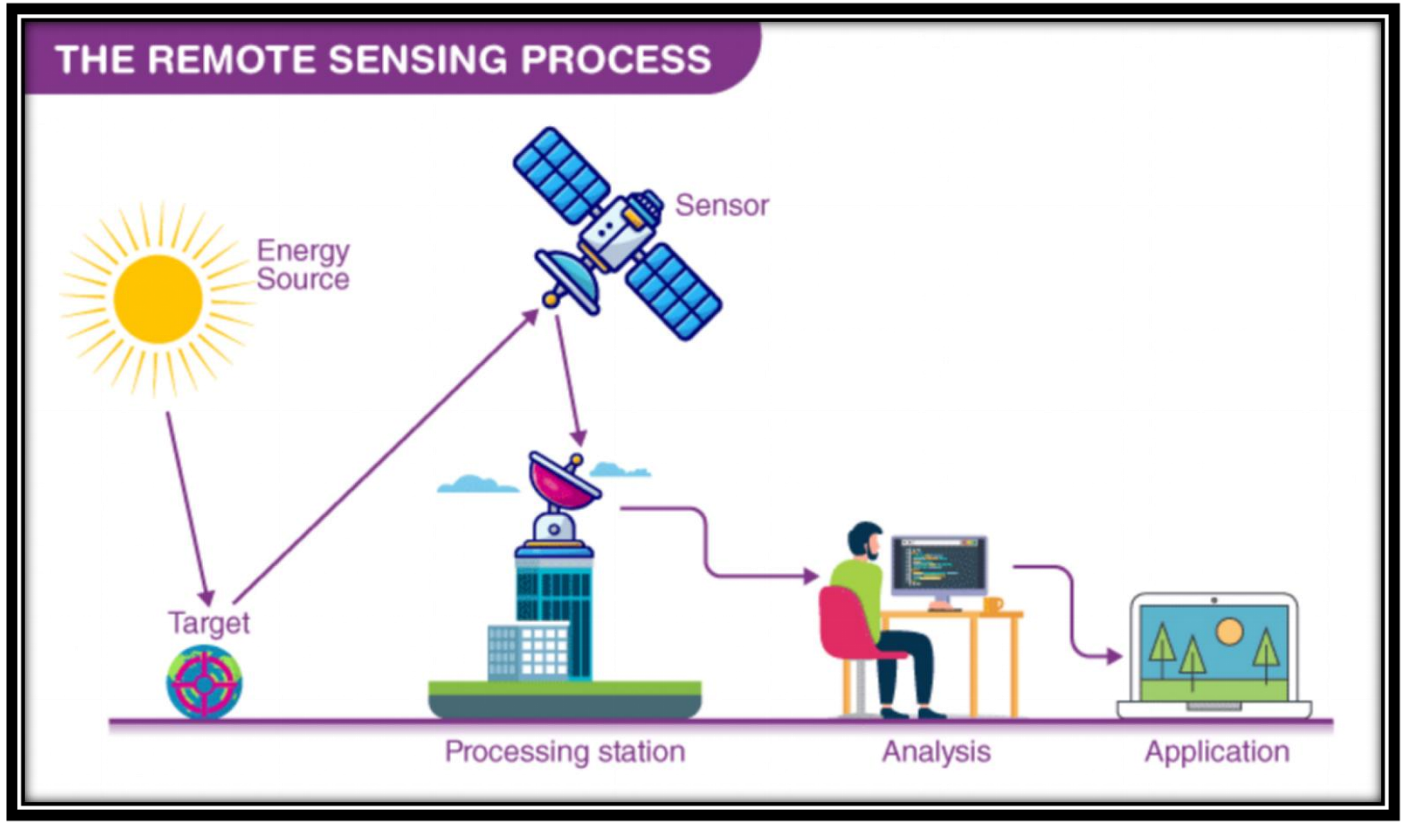
III. Result and Analysis

IV. Potential Future Applications of Fengyun Satellites in 【Myanmar】

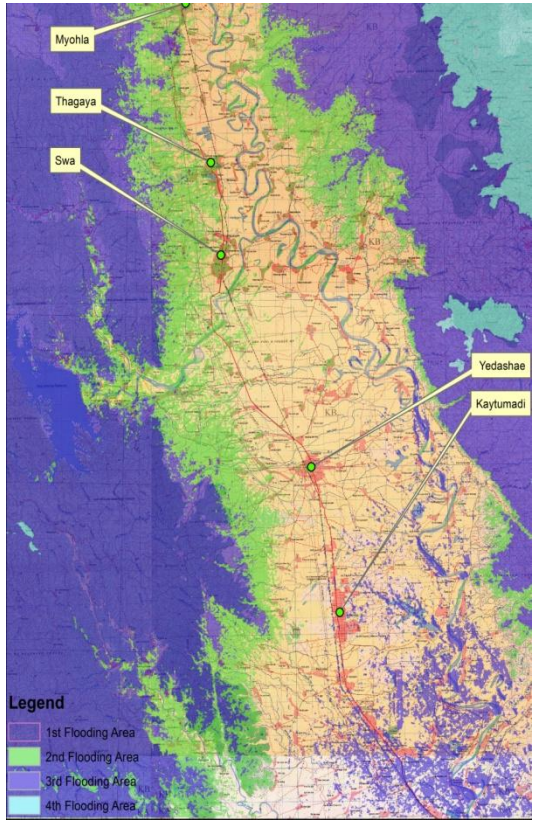
Introduction

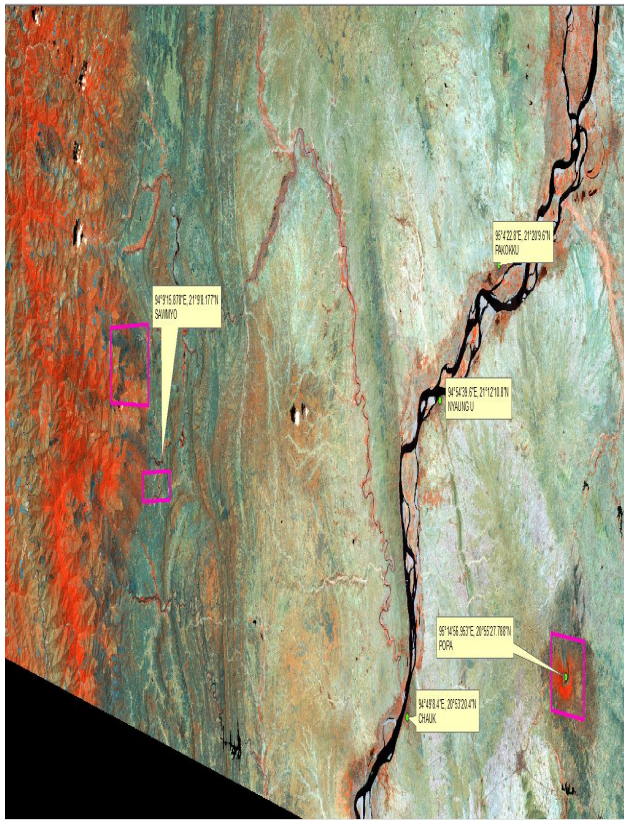
- Science and Technology Research center of Myanmar
- Professor of GIS project
- Remote Sensing Technology
- Landslide, underground water, flooding, exploring oil and gas, land surface temperature, urban expansion
- Landsat-8,9 OLI&TIRS and Sentinel 3
- ArcgisPro 3.4.0, GEE, Python

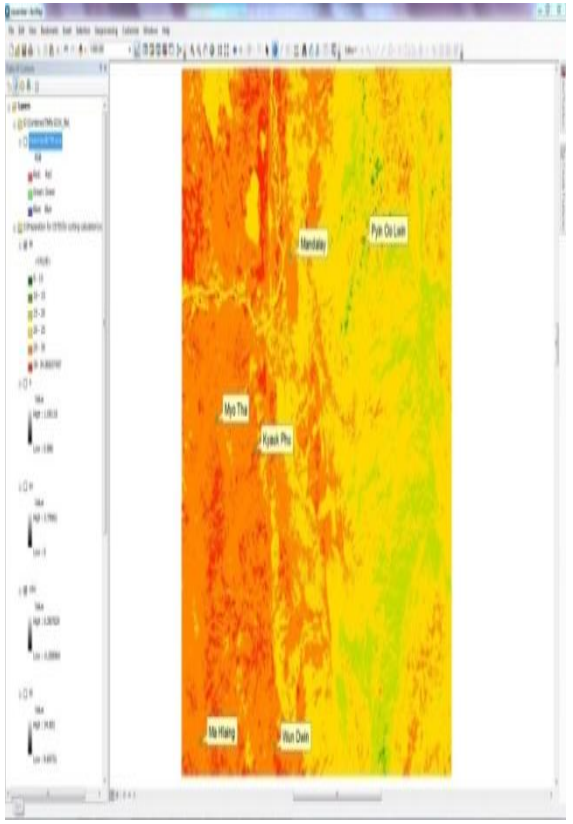
Remote Sensing Technology

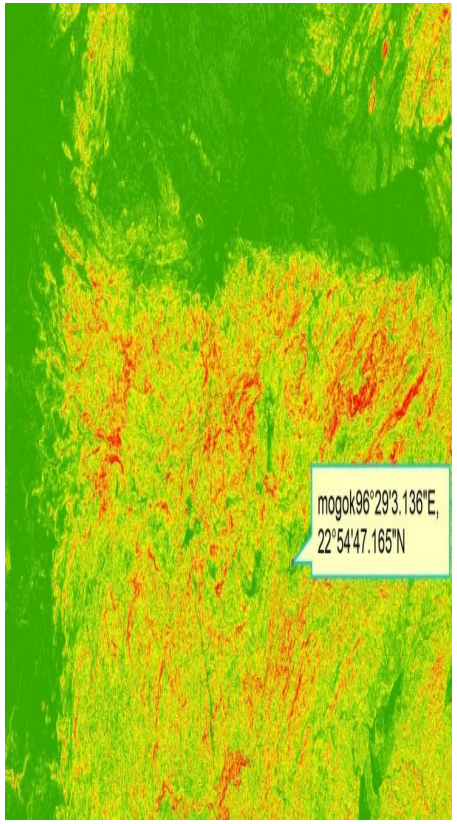


Prediction potential flooding areas, potential mineral deposits, land surface Temperature and potential land slide areas by remote sensing technology using Landsat8 OLI&TIRS

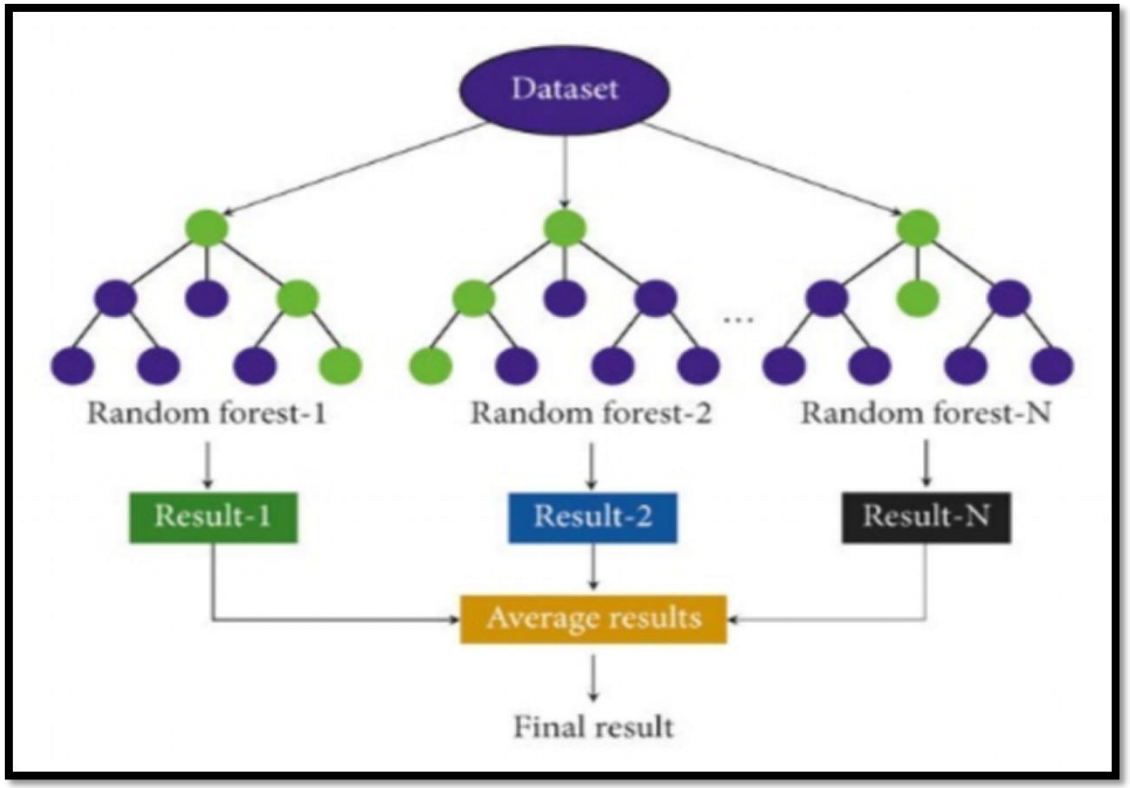




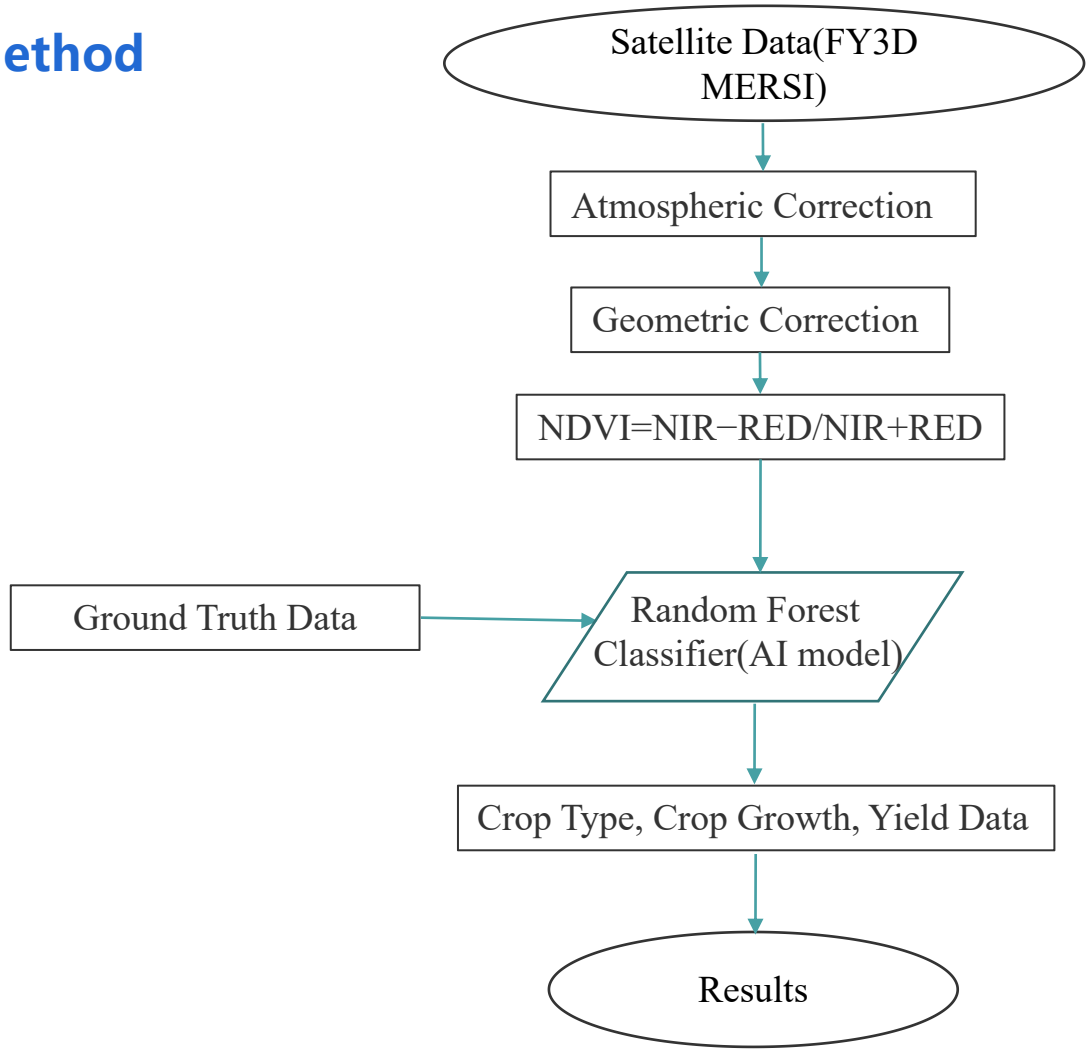




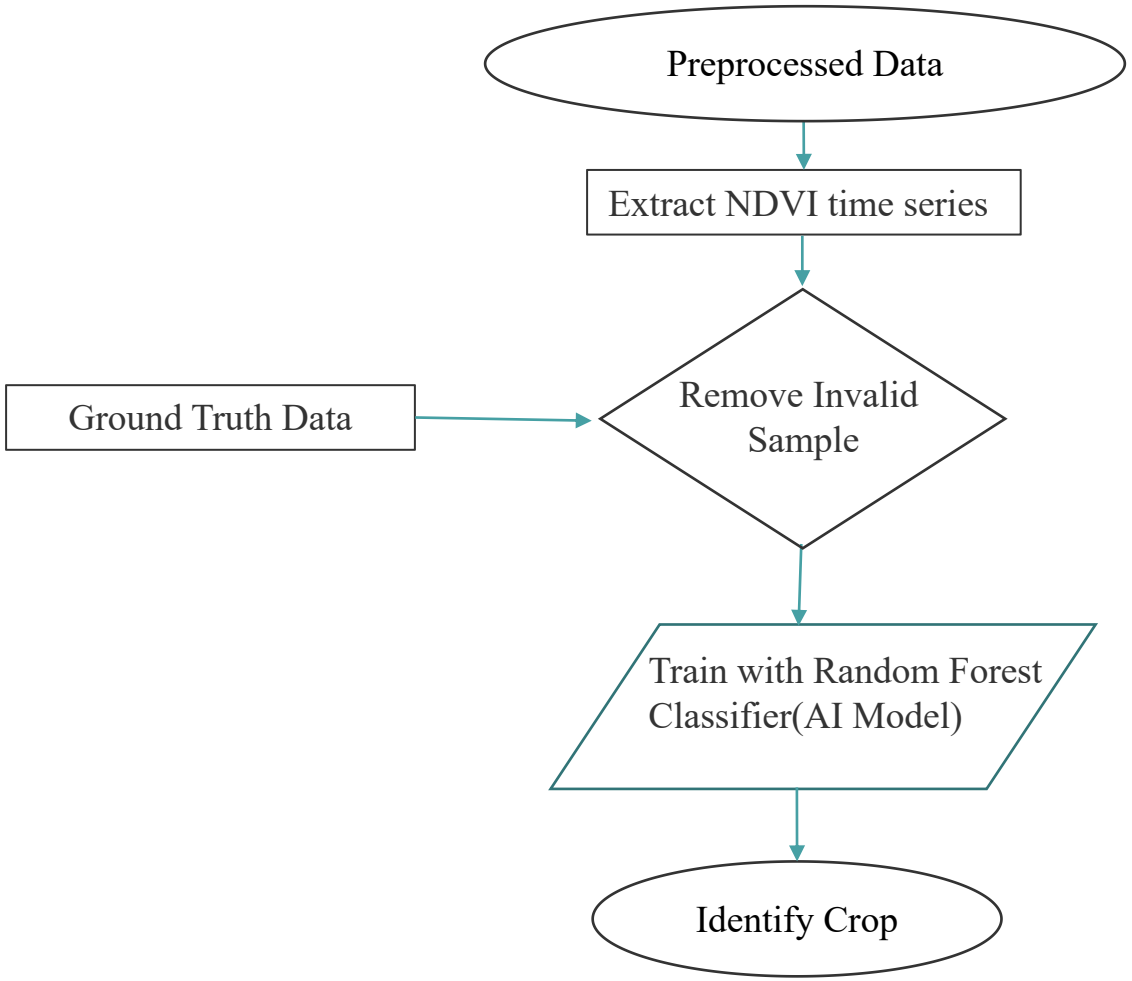
Random Forest Classifier Model



Data and Method



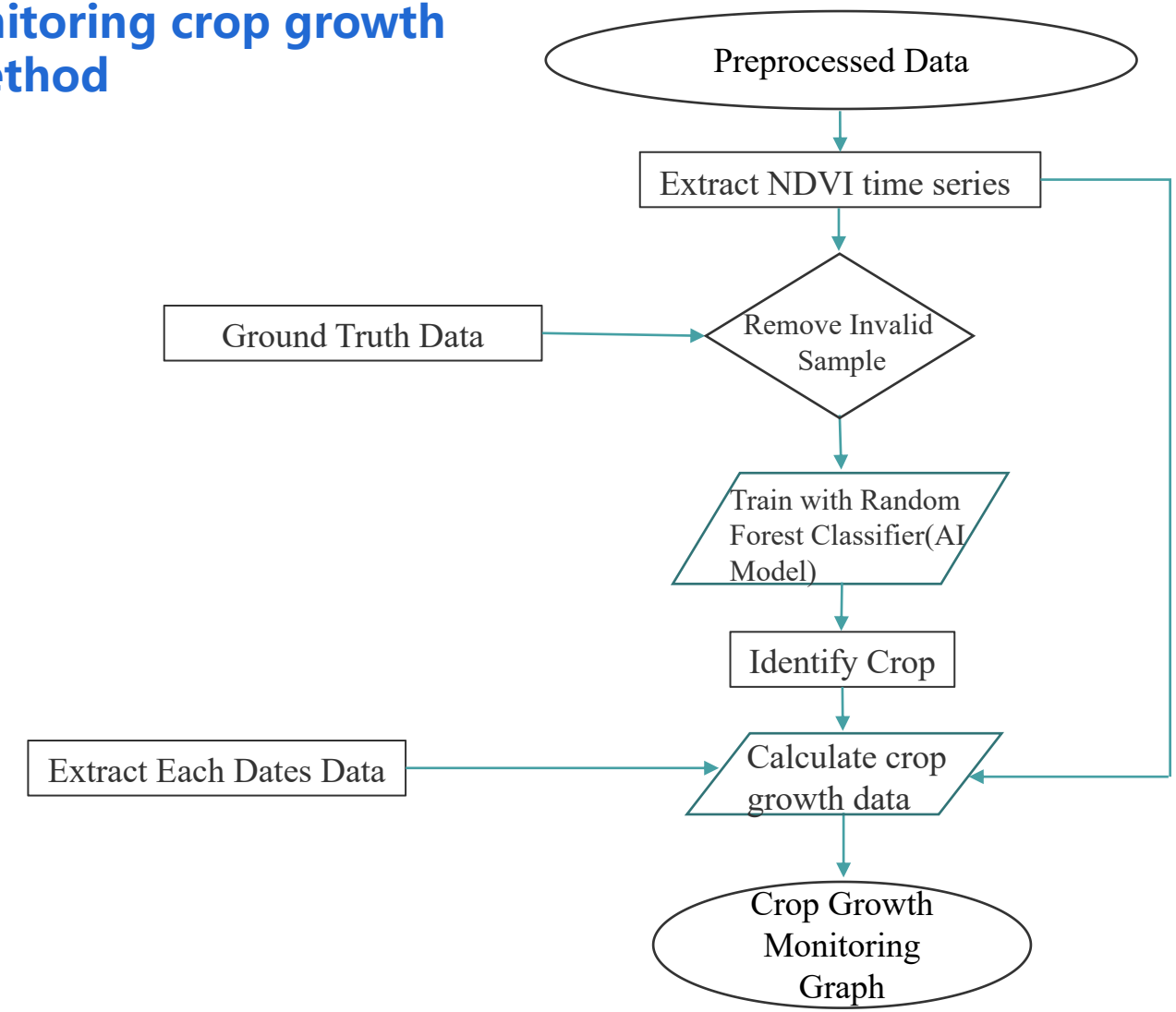
Flow chart of Identifying crop method



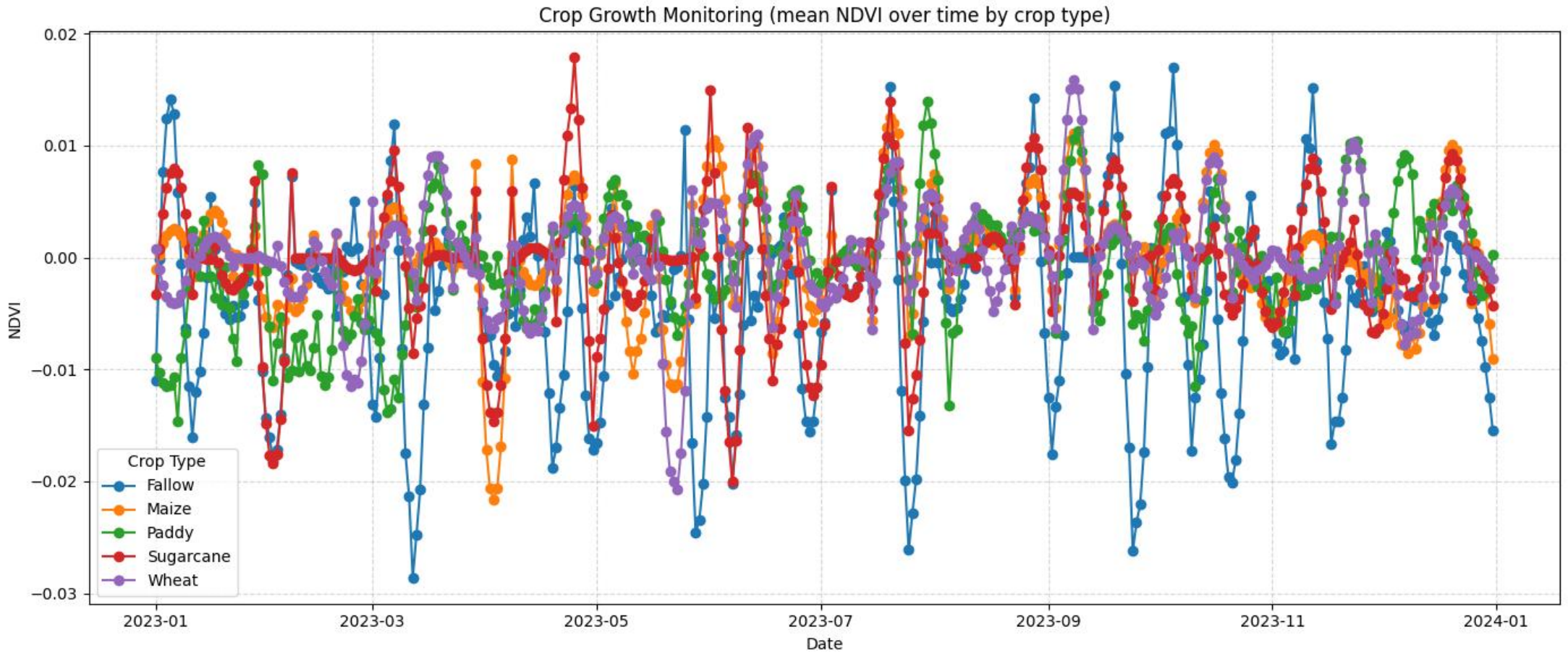
Result of Identifying Crop

```
(py310) C:\Users\GIS3>python D:\china\6-23\NDVI\ndvi.py
🔍 Found 364 NDVI files.
🔍 Extracting NDVI time series for each point...
100%|██████████| 250/250 [04:12<00:00,  1.01s/it]
🔍 Training Random Forest model...

🔍 Classification Report:

              precision    recall  f1-score   support

      Fallow       1.00      1.00      1.00         9
       Maize       0.90      0.90      0.90        10
       Paddy       1.00      1.00      1.00        13
   Sugarcane       0.92      1.00      0.96        11
       Wheat       1.00      0.86      0.92         7

    accuracy                           0.96        50
   macro avg       0.96      0.95      0.96        50
weighted avg       0.96      0.96      0.96        50

🔍 Model saved as 'rf_crop_temporal_model.pkl'

(py310) C:\Users\GIS3>
```

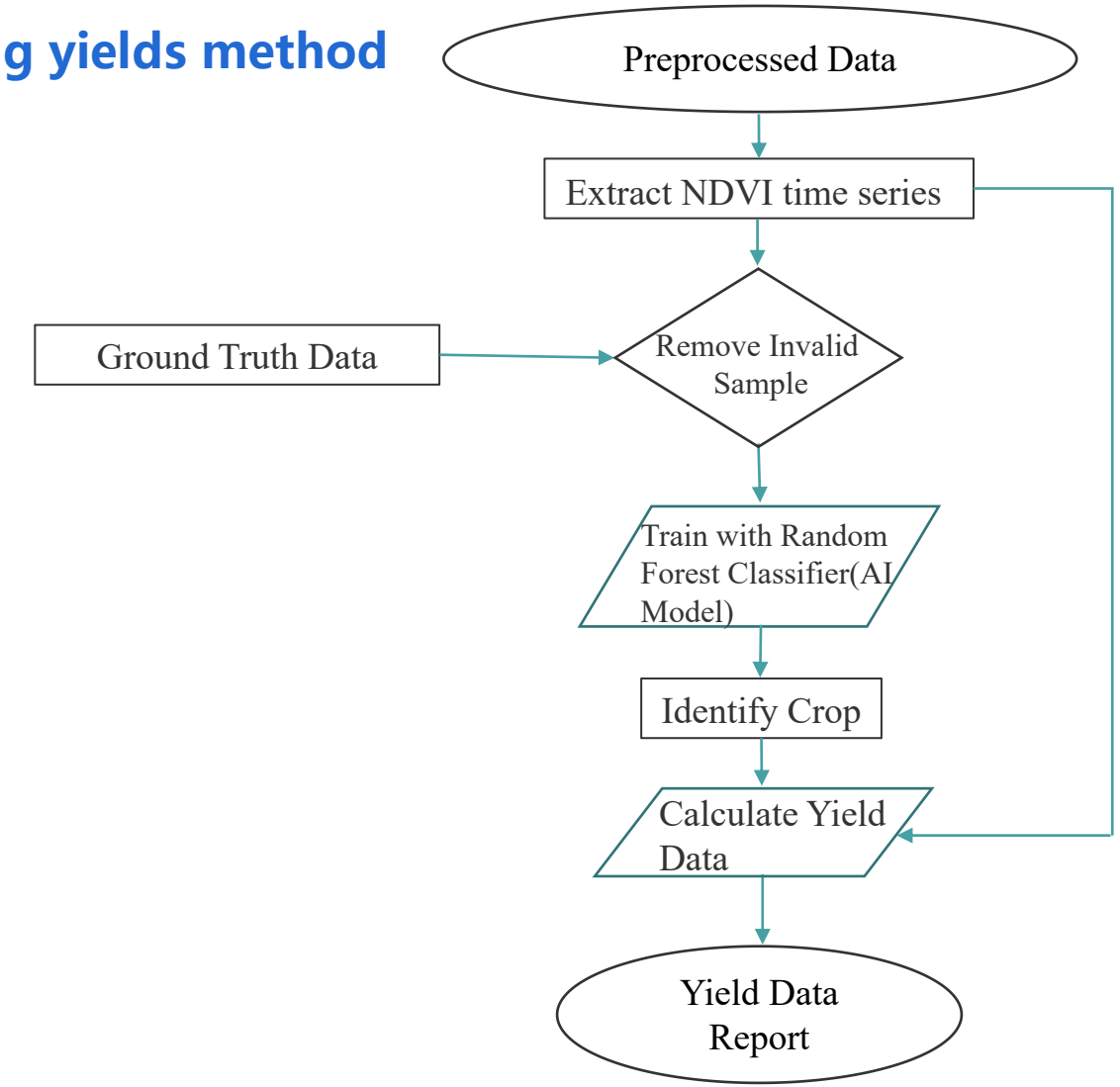
Flow chart of monitoring crop growth method



Result of Monitoring Crop Growth



Flow chart of predicting yields method



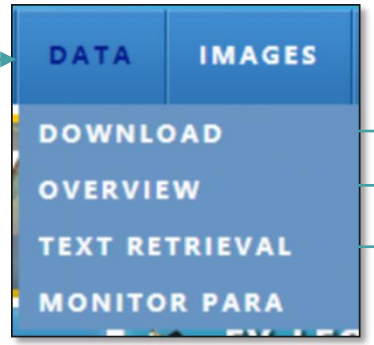
Result of predicting yields

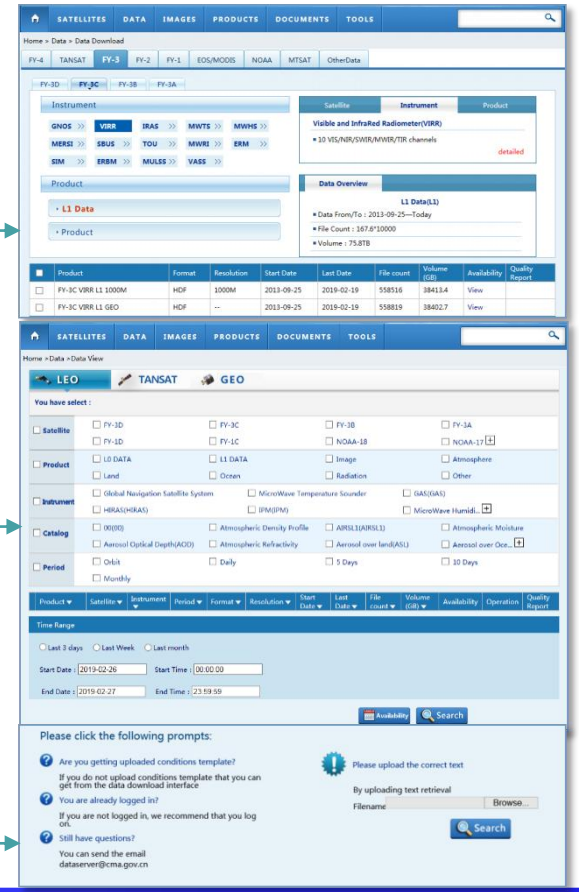
	crop_type	mean_ndvi	yield
2	Paddy	-0.0012787	3.10
3	Paddy	-0.0009292	5.04
4	Paddy	-0.000192	4.66
5	Paddy	-0.0018663	3.13
6	Paddy	-0.0028617	3.84
7	Paddy	-0.0008859	4.90
8	Paddy	0.00016797	4.57
9	Paddy	-0.0001362	3.67
10	Paddy	0.00013411	3.19
11	Paddy	-0.0012334	5.07
12	Paddy	0.00011535	5.26
13	Paddy	-0.0026696	2.65
14	Paddy	-0.0007115	3.71
15	Paddy	-0.0003742	1.17
16	Paddy	-0.0003961	1.95
17	Paddy	-0.0003473	6.78
18	Paddy	-0.0002623	5.28
19	Paddy	-0.0048232	3.28
20	Paddy	-0.0011285	2.80
21	Paddy	0.00079289	5.75
22	Paddy	-0.0007086	3.88
23	Paddy	0.00029083	3.25
24	Paddy	0.00069109	3.41
25	Paddy	0.00032798	4.12
26	Paddy	-0.0029749	6.74
27	Paddy	-0.0011305	5.21
28	Paddy	-0.000472	7.54
29	Paddy	0.00087427	5.93
30	Paddy	0.0004688	4.48
31	Paddy	4.53E-06	4.70
32	Paddy	-0.0001277	3.89
33	Paddy	-0.0002522	3.60
34	Paddy	0.00027418	3.60
35	Paddy	0.00024546	3.66
36	Paddy	-0.0007474	4.54
37	Paddy	-0.0001175	2.26
38	Paddy	-0.0021974	4.87
39	Paddy	-6.52E-05	3.23
40	Paddy	-0.0013713	2.94
41	Paddy	0.00101065	3.09
42	Paddy	-0.0005407	4.63
43	Paddy	0.00188912	7.04
44	Paddy	0.0001938	2.82
45	Paddy	0.00138406	4.17
46	Paddy	-0.0004282	4.29
47	Paddy	0.00045931	4.90
48	Paddy	0.00044357	5.73
49	Paddy	-0.0007542	4.43
50	Paddy	-0.0009482	4.54
51	Paddy	0.0009066	3.85
52	Wheat	-0.0008683	3.30
53	Wheat	0.00082699	3.67
54	Wheat	7.92E-05	3.01
55	Wheat	-0.0014509	3.01
56	Wheat	0.00067659	4.21
57	Wheat	-4.63E-05	2.72
58	Wheat	0.00155633	2.83
59	Wheat	0.0005652	3.53
60	Wheat	-0.0005117	3.39
61	Wheat	0.00193609	3.06
62	Wheat	0.00077622	2.51
63	Wheat	-0.0002368	4.91
64	Wheat	-0.0007444	3.50
65	Wheat	0.00107597	4.30
66	Wheat	0.00160833	3.89
67	Wheat	-0.0021749	2.72
68	Wheat	0.00178576	3.16
69	Wheat	-0.0003171	3.10
70	Wheat	-0.0007758	3.41
71	Wheat	0.001587	3.50
72	Wheat	-0.0003396	2.83
73	Wheat	-0.0006518	3.11
74	Wheat	-0.0004464	3.03
75	Wheat	0.00184563	2.39
76	Wheat	-0.0013557	3.85
77	Wheat	-7.12E-05	3.17
78	Wheat	-0.0004462	2.73
79	Wheat	0.00102786	3.90
80	Wheat	-0.0018426	4.01
81	Wheat	-0.0001807	3.02
82	Wheat	-0.0003058	2.73
83	Wheat	0.00142065	1.73
84	Wheat	4.44E-05	1.64
85	Wheat	0.00088003	3.57
86	Wheat	0.00025124	2.84
87	Wheat	-0.0005946	3.39
88	Wheat	0.00105363	3.23
89	Wheat	0.0011231	4.07
90	Wheat	0.00172133	3.40
91	Wheat	0.00026334	3.23
92	Wheat	-0.0005182	3.20
93	Wheat	-0.0024065	4.62
94	Wheat	-0.0002334	1.89
95	Wheat	0.00130813	2.43
96	Wheat	-0.0005677	2.84
97	Wheat	4.26E-05	2.95
98	Wheat	0.00091996	5.52
99	Wheat	0.00110466	1.83
100	Wheat	0.00154451	3.52
101	Wheat	0.00043014	3.51
102	Maize	-0.0008525	5.11
103	Maize	0.00152082	7.54
104	Maize	-0.0010766	4.23
105	Maize	3.17E-05	2.65
106	Maize	-0.0010934	4.51
107	Maize	0.00071397	4.52
108	Maize	-0.0014737	3.98
109	Maize	0.00059759	4.52
110	Maize	0.00027722	4.94
111	Maize	0.00111716	4.66
112	Maize	-0.0021323	3.03
113	Maize	-0.0013263	5.64
114	Maize	0.0018733	5.90
115	Maize	0.00133418	5.23
116	Maize	-0.0019311	1.27
117	Maize	-0.0009146	6.13
118	Maize	-0.0001945	4.01
119	Maize	0.00151591	5.68
120	Maize	0.00101842	3.87

Myanmar's economy heavily relies on its agriculture, which employs over half the workforce and contributes significantly to the GDP, with rice being the most vital crop. While the sector is diversified, it suffers from low productivity due to outdated farming practices, limited infrastructure.

Until now, traditional methods are still used, and yields are being affected by weather and crop pests, and there is a great need to use modern and innovative technologies in the agricultural sector. A significant issue is low agricultural productivity, with Myanmar's rice harvesting efficiency being much lower than in neighboring countries.

Therefore, if we use modern technologies such as remote sensing and AI technology to create algorithms using data obtained from the Fengyun satellite, this algorithm will be able to solve crop growth, harvest time and yield predictions. It will be applied in the sector of Agriculture in the near future. We will continue to create about soil fertility, pest infestation, and pesticide requirements using AI algorithms and data obtained from the Fengyun 3D satellite to build modernize the agro-based industry.





Thank You for Your Attention!