

TICAD9 ACE Partnership Session

ACE II

Eastern and Southern Africa
Higher Education Centers of Excellence Project

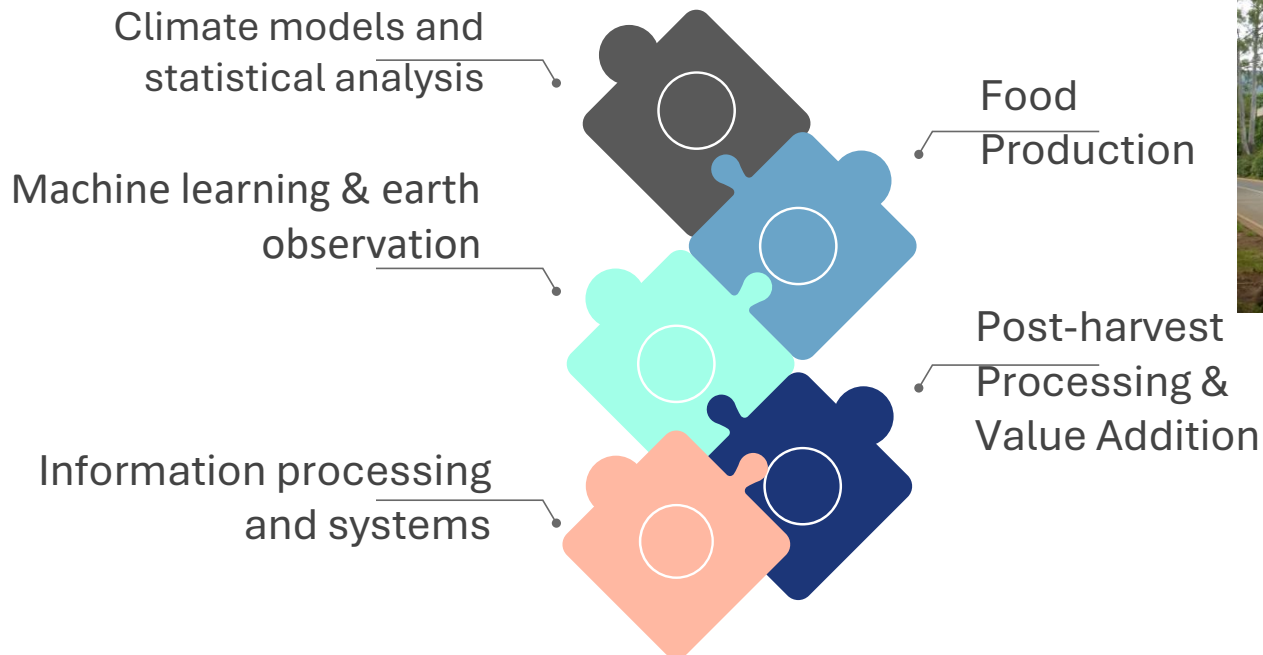


University of Malawi

23 August 2025,
Yokohama

Research Focus

- “Impactful research that leads to resilient agri-food systems through science and technology”



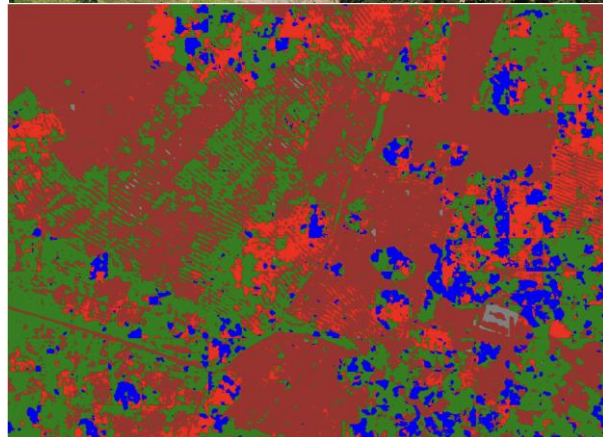
Collaboratively developed with partners



Research Focus

- Enhancing crop yield estimation

Machine learning & earth
observation



ResNetv2-based U-Net Model
Accuracy: **95%**

Jere et al., 2025

RGB UAV Imagery Segmentation: A Comparative Study

<https://doi.org/10.24963/ijcai.aai4g.2024/3>

Research Focus

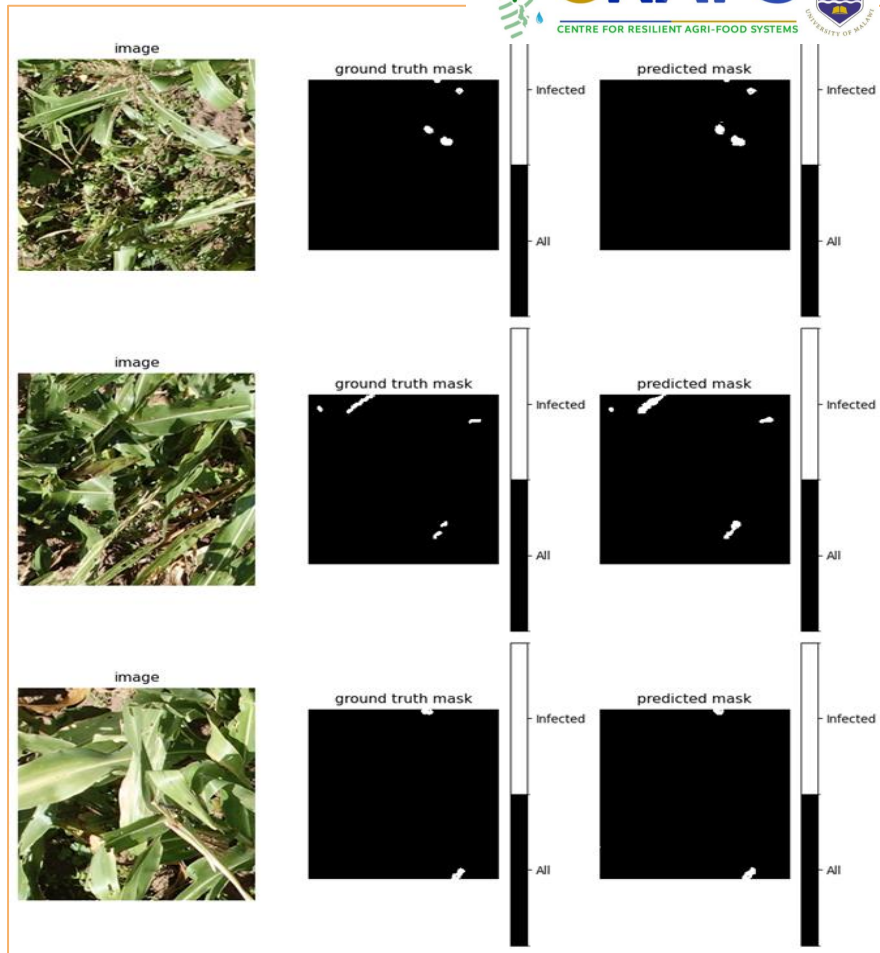
- Enhancing crop monitoring

PhD work on the application of Convolutional Neural Networks (CNN) model for maize fall armyworm detection

Machine learning & earth
observation



ResNet-50 Model
Accuracy: **99.54%**
IoU: **80%**

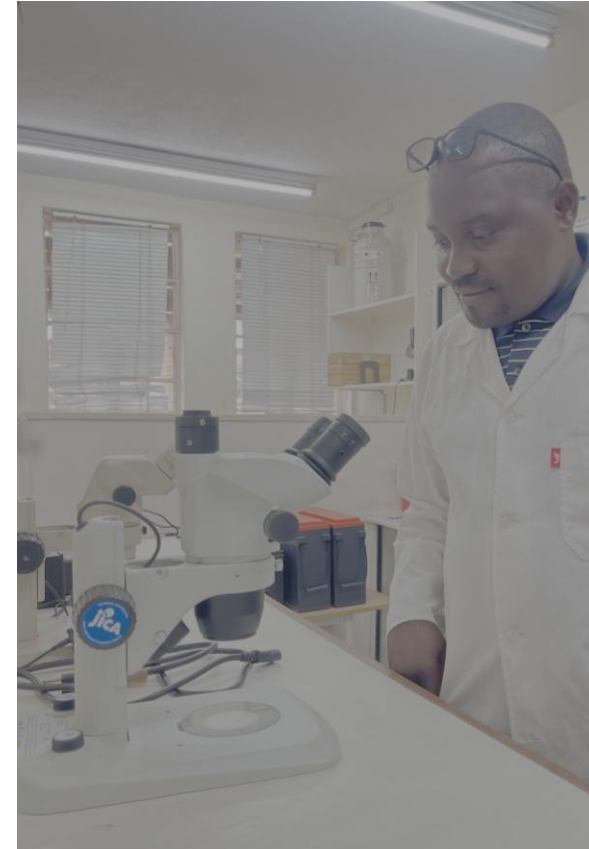


Examples of Collaboration with Japanese Institutions

Years	Programme/Project	Main Japanese Partners	Nature/Key Achievements
2020-2026	SATREPS - Integrated Natural Resource Management Systems (IntNRMS)	Ehime, Tokyo, Tokyo Agriculture, Ryukoku, Yokohama Natl. Univ.	Joint transdisciplinary research and capacity Building. Local conservation, a model for sustainable livelihoods
2021 - Ongoing	Japan-Africa Triangle Education	Hiroshima	Student exchange, policy/peace training, research links
2011 – 2013	Mosquito vector-borne virus Research (JICA -funded)	JICA	Joint research - spatial-temporal distributions and tools for monitoring vectors and viruses for re-emerging infectious diseases in Malawi
1998-2001	Lake Malawi ecology project (JICA -funded)	JICA, Tokyo	Joint research - Lake Malawi ecosystem for conservation and sustainable utilisation of its fish stocks.

Research facilities

- Vector-borne disease diagnostics lab
- General DNA Lab (JICA)
- Field station for underwater research



Research facilities

- eDNA iSeq 100 lab



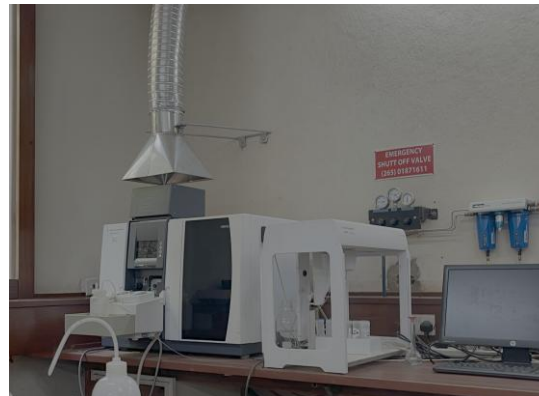
SATREPS Project

- Technical assistance for the eDNA iSeq 100 lab



Research facilities

- Other lab space and equipment



Collaboration with Japanese Universities

- **Types of collaboration**

1. Co-development and implementation of research and capacity building
2. Postgraduate student co-supervision
3. Staff and student academic exchange



Collaboration with Japanese Universities

- **Areas of collaboration**



1. Food process engineering
2. Genetic engineering for crop and livestock improvement
3. Atmospheric & Environmental Dynamics (Satellite Data)
4. GIS and remote sensing applications in agriculture
5. Machine Learning & Advanced Information Processing

Thank you

Please, get in touch!

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CRAFS

(Centre for Resilient Agri-Food Systems)

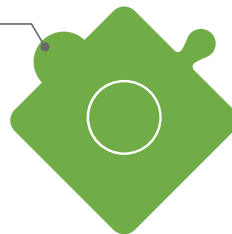
Scan this QR Code
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CRAFS brochure.



crafs@unima.ac.mw

Research Focus

Information processing
and systems



- Weather forecast advisories
- National Agriculture Management Information systems (NAMIS)



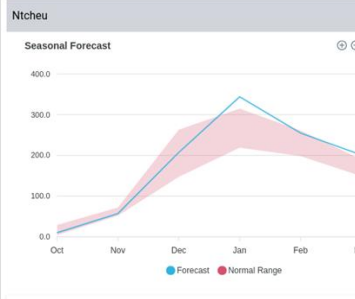
Seasonal Forecast

Season
2024-2025

Month
October

☒ District

Update



Adapted DHIS2



MINISTRY OF NATURAL RESOURCES AND CLIMATE CHANGE

DEPARTMENT OF CLIMATE CHANGE AND METEOROLOGICAL SERVICES

NTCHEU DISTRICT DOWNSCALED SEASONAL FORECAST, 2024-2025



Overview of 2024/2025 Rainfall Season

The 2024-2025 rainfall season is expected to be influenced by a **weak La Nina**. La Nina is the unusual cooling of ocean waters over eastern-central equatorial Pacific Ocean. Ntcheu district is expected to receive **normal to above normal** rainfall amounts. However, there is chance of **more rains** in the month of February 2025 than that of last year.

October 2024



During October, Ntcheu district will receive rainfall in the range of 0 - 30mm.

The first rainfall also known as Chidzimalupsya accompanied by strong winds and lightning is very likely.

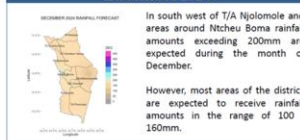
November 2024



In November, areas of TA Njomole are expected to receive over 100mm of rainfall. Most areas of the district will receive rainfall amounts in the range of 20 - 50mm.

The onset is expected between the last week of November and the first week of December.

December 2024



In south west of T/A Njomole and areas around Ntcheu Boma rainfall amounts exceeding 200mm are expected during the month of December.

However, most areas of the district are expected to receive rainfall amounts in the range of 100 - 160mm.

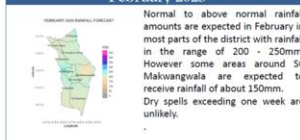
January 2025



January is expected to be the wettest month of the season. Rainfall of more than 250mm is expected over most areas. The wettest areas include those of TA Njomole, Ntcheu Boma, and south west of TA Mpando. Rainfall of around 150mm is expected in areas around of SC Champiti.

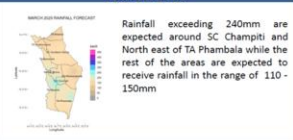
The likelihood of dry spells of more than 7 days is small.

February 2025



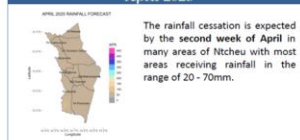
Normal to above normal rainfall amounts are expected in February in most parts of the district with rainfall in the range of 200 - 250mm. However some areas around SC Makwawala are expected to receive rainfall of about 150mm. Dry spells exceeding one week are unlikely.

March 2025



Rainfall exceeding 250mm are expected around SC Champiti and North east of TA Phambala while the rest of the areas are expected to receive rainfall in the range of 110 - 150mm.

April 2025



The rainfall cessation is expected by the second week of April in many areas of Ntcheu with most areas receiving rainfall in the range of 20 - 70mm.

Ntcheu district is expected to receive **normal to above normal** rainfall amounts. However, there is chance of **more rains** in the month of February 2025 than that of last year. The **Onset** of rainfall in Ntcheu is expected between **last week of November and 1st week of December**. Rainfall **Cessation** is expected from the **2nd week** into **1st week of April**. The **seasonal length** is expected to be between **120 to 130 days**. Dry spells of not more than 7 days are expected in February.

The table and figure below show monthly rainfall distribution for the season with a normal band in grey.

