KADI-PYTHON-DATA-GYM

RECAP FOR THURSDAY 1ST MAY 2025

PREPARED BY: Francis & Brayson

TABLE OF CONTENTS

Table of Contents…….. 1

Morning Session

Recap from Wednesday……. 2

1st Session……... 2

Presentation of participants projects…… . 2

Presentation of participants projects…… . 3

Presentation of participants projects…… . 4

Tea-Break

2nd Session…… 4

Continuation of Presentations……..… 4

Presentation of participants projects…… . 5

3rd Session……... 6

Presentation of participants projects…… . 6

Voting of the Best projects…….…….. 6

Vote of Thanks and closing remarks…… 7

Lunch Break & Departure for Nairobi……..…..… 7

MORNING SESSION

- An early morning walk to Kapiti Plains scenery.
- Breakfast

0930hrs

- A recap for the activities done on the previous day. This covered mostly the personal projects which were being worked on the previous day (Wednesday).

Presentation of Project

- We had presentation of the following projects and objectives by the participants:

1st Session

PROJECT 1

Project Title: Development and Evaluation of a Predictive Model Using AOD Data for Forecasting Future Trends

Presenter: Silas

Project Objectives:

1. To develop a simple predictive model trained on Aerosol Optical Depth (AOD) data for analyzing temporal patterns and trends.
2. To evaluate the performance of the developed model against a baseline method to assess accuracy and reliability.
3. To test the model's forecasting capabilities by applying it to unseen data and measuring its effectiveness in predicting future AOD trends.
4. To explore the potential use of the model as a tool for environmental monitoring and decision-making.

PROJECT 2

Project Title: Evaluation of the ozone data measurements at the Mt Kenya Global Atmospheric Watch (GAW) Station

Presenter: Njiru

Project Objectives:

1. To evaluate the ozone data measurements at the Mt Kenya Global Atmospheric Watch (GAW) Station through plotting a time series.

PROJECT 3

Project Title: Time series plot for Dobson Spectrophotometer data for NRB station.

Presenter: Syprose

Project Objectives:

1. To run a time series for DU data from NRB station.

PROJECT 4

Project Title: Visualization of the Ozone and Temperature vertical profile.

Presenter: Francis

Project Objectives:

1. To plot a vertical Temperature profile using Ozone sonde data
2. To plot a vertical Ozone profile Ozone sonde data
3. To explain the correlation between Ozone and Temp and how each behaves in both Troposphere and Stratosphere.

PROJECT 5

Project Title: Plotting tephigram to show vertical profile of the atmosphere

Presenter: Brayson

Project Objectives:

1. To migrate from the manual way of plotting to using Python script.

Tea-Break

2nd Session

PROJECT 6

Project Title: Plotting O3 against time and then create a 3 axis of O3 Vs time Vs BNCHT

Presenter: Mutuku

Project Objectives:

1. To run a time series for O3 from MKN station data

PROJECT 7

Project Title: Decode meteo data and analyze climate data

Presenter: Peterson

Project Objectives:

1. To parse and decode METEO upper-air data files into structured CSV format, appending descriptive column headers to enhance interpretability.

This objective was successfully accomplished using Python libraries such as Polars and Pandas, which enabled efficient handling and transformation of large and complex datasets.

2. To develop Python scripts for analyzing climate station data, particularly monthly climatic returns. The scripts compute essential statistics — mean, maximum, and minimum values — for key parameters.

This process supports the visual identification of outlier values through graphical plots using Matplotlib, facilitating quality assurance before integration into the controlled climate database. Additionally, it yields valuable climatological summaries for broader analysis.

The two specific objectives were successfully achieved.

PROJECT 8

Project Title: Rainfall distribution over Kenya for the last dekad_11th to 20th of April 2025.

Presenter: Dorcus

Project Objectives:

1. Spatial distribution of rainfall over Kenya

2. The impact to the crops and pasture

PROJECT 9

Project Title: Indoor Household Air Quality Using Black Carbon (BC) Data and Feedforward Neural Networks (FNNs)

Presenter: Levis

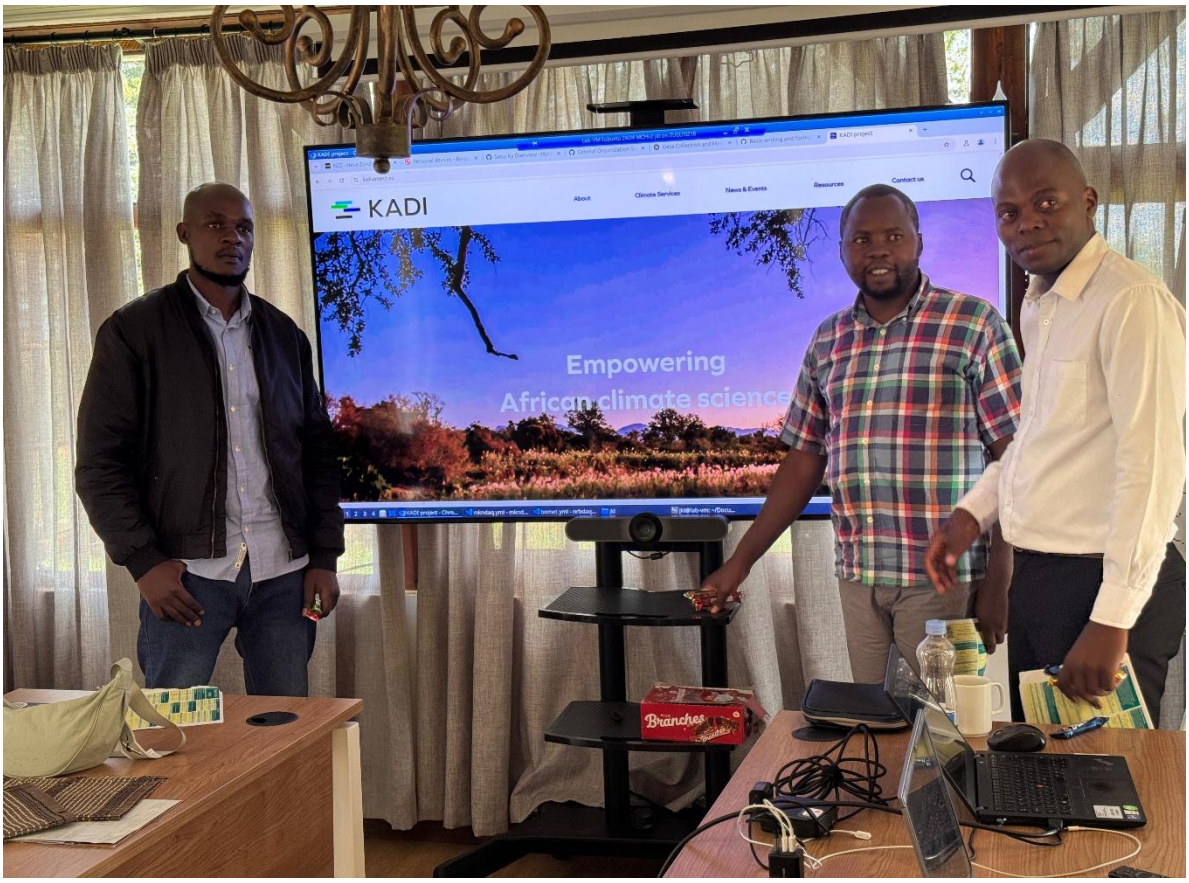
Project Objectives:

- **Goal**: Try to identify local patterns in Black Carbon (BC) concentration data (recorded every second for 3 days) using a Basic Feed forward Neural Network (FNN),

- **Motivation**: Trying test whether a basic feedforward neural network (FNN) can detect concentration peaks in a home using Black Carbon data — IMPROVING DATA QUALITY

3rd Session

- We had a voting session for the top three project presentation were Levis was voted best followed by Brayson and Silas. They all received some awards from the facilitator.



Picture. 1: Top three project presenters

- We then finally had a vote of thanks and closing remarks from the participants who expressed their gratitude for the training and how this training would play a major role on their daily office duties.
- The training was officially closed by Sir JÖRG KLAUSEN.
- We had our lunch thereafter and departed for Nairobi.

Picture 2: A picture of the team enroute to Nairobi