

# THE GLOBAL STOCKTAKE

## CLIMATE DATATHON

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### PROMPT OWNER

West African Science Service Centre on Climate Change and Adapted Land Use (WASCAL)

### PROMPT TOPIC

Using primary climate data to provide information that will enhance the resilience of communities within experimental sites (i.e., basins) in Benin, Burkina Faso, and Ghana

### PROMPT DATASET

<https://drive.google.com/drive/folders/1sLaRtlcxziMOWoWj05xm4FMZ6aJDAEzQ>

The folder contains:

- Primary time series climate/weather variables obtained from weather stations: Rainfall, temperature, relative humidity, solar radiation, wind speed, wind direction
- Shapefiles of the outline of the basins and locations of the stations

### PROMPT BACKGROUND

Weather stations in these basins have been installed in such a way that they cut across different types of land uses. The importance of the data is that as we learn how climate is changing across the different types of land uses, we can better understand how people can adjust to the changing climate in these areas. The earliest stations have been there since 2012 and have been collecting data in sub-hourly timescales until now. The main idea is to see how the climate is changing in these experimental sites so that we can develop different adaptation strategies. Thus, the goal is to be able to determine how changes in climate in the three experimental sites affect the resilience and adaptive capacities of local communities in the sites. The following questions could be explored: How do changes in climate likely to affect livelihood in the communities inside the sites? How is climate changing in the basins across different types of land uses? Are the different land use types impacting the sites' local climate?

### MAIN PROMPT QUESTION/CHALLENGE

First, there are some data gaps, and we ask participants to contribute to cleaning and processing the data while helping to understand where the data gaps are. Secondly, as the stations are scattered across the sites, we want to know what other information can be used to better interpolate climate variability across the different sites. In other words, what datasets should we combine with the weather station data to have a more complete understanding of the climate change patterns of specific sites (e.g., towns) within the sites?

Thus, considering both temporal and spatial scales, how can we interpret and combine this data to get data coverage across the sites?

Finally, using the spatially and temporally complete data, how best can the variability in local climate (as derived from the data) be represented to capture the climate-induced exposure both within and across the different experimental sites ?

## **SUPPLEMENTARY QUESTIONS**

We would like participants to kindly contribute in cleaning and processing our data by:

- Identifying data gaps
- Performing cluster analysis on the stations to evaluate a possibility of grouping stations according to zones/regions.
- Adopting and implementing their preferred data gap filling techniques through a data book.
- Performing statistical tests to compare the data distributions before and after gap filling.
- Reporting their progress through a summary of statistical tests that they subjected the data, the data book, a data frame of gap-filled records with a column giving a flag giving a clear indication of entries that are gap filled and the as well as a unique flag for the original data entries.
- Developing climate indices to understand climate hazards in the sites
- Carrying out exposure analyses.