

AfriNet

AI for Climate in Africa

Sabrina Amrouche,

Resilience to Natural Hazards through Al Solutions, 8 May 2025, Frascati, Italy

africlimate.ai



AfriClimate AI is an NGO with + 200 members, our missions are capacity building in Africa and fundamental research in AI and Climate Science

AfriNet is our citizen science and research initiative to deploy automatic weather stations and fine tune ML models on the continent



Overview of AfriClimate AI Activities

Capacity Building Monthly Seminars -Community Maintenance DLI Workshop -۱ 1 Data Collection AIMS Master Thesis AfriClimate AI AfriWiki --' Model Fine-Tuning WeatherBenchmarking Framework SOTA models: African Data Catalogue GraphCast, GenCast Performance Evaluation over Africa Reanalysis/Ground obs by Region datasets by Usecase

AfriClimate AI Initiatives

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Worldwide distribution map of ground-based weather radar sites (2019 WMO)

AfriNet A Future Without Weather Surprises

Stations across the continent

A free weather API for students and researchers



An interactive weather dashboard



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Weather model fine-tuning



Partners, data and forecasts







EN/ACTS











Partners, data and forecasts

The Trans-African Hydro-Meteorological Observatory (TAHMO) aims to develop a vast network of weather stations across Africa.

TAHMO has over 600 stations on the continent.

None in the North.





Our solution : A community driven weather station network !

Network building

Hundreds stations across the continent



Community projects, events and challenges



Knowledge base

Weather model fine-tuning



Real-time and historical Weather database



Solutions and services for free and paid users

An interactive weather dashboard

A free weather API for students and researchers



Real-time weather alerts for farmers, authorities, etc.



Analytics and reports





Low maintenance, low cost stations



Variable	Specs
temperature	Temperature Accuracy: ±1°C or ±2°F Temperature Resolution: 0.1°C or 0.1°F Temperature Range: -40°C to 60°C (-40°F to 140°F)
humidity	Humidity Range: 10% ~ 99% Humidity Accuracy: ±5% Humidity Resolution: 1%
air pressure	
rainfall	Rainfall Measurement Range: 0 - 6000 mm Rainfall Accuracy: ±10% Rainfall Resolution: • 0.3 mm (for volumes < 1,000 mm)
wind speed/direction	Wind Speed Range: 0 - 50 m/s (0 ~ 100 mph) Wind Speed Accuracy: • ±1 m/s (for speeds < 5 m/s)
UV index, sunlight (light), moon phase, weather forecast, max/min daily, windchill, heat index, dew point	



Low maintenance, low cost stations



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Logo

Home

Dashboard

- J. Discussion
- _ Profile
- Visualization
- Tracking
- 🚖 Community

Hi Sabrina,

Welcome Back!



ACTIVITY



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Most Contribution









- Northern region known for cereal and vegetable production but increasingly affected by rainfall variability.
- Central region has semi-arid zones where mixed farming and livestock systems are vulnerable to prolonged dry spells.
- South known for **oasis** agriculture and **pastoral livelihoods** are under pressure from extreme heat and water scarcity.



Challenges



Shipping and Policies: Potential delays in delivering stations to their intended locations due to shipping restrictions and local policies.



Funding Limitations: Budget constraints could limit the number of weather stations we can deploy, leading to low coverage



Data Quality and Maintenance: Once activated, we anticipate challenges in ensuring consistent data quality and proper maintenance of the stations



- We are already collecting and analyzing data from our ground stations and it is publicly available at https://storage.googleapis.com/afrinet/
- We are implementing a WeatherBenchAfrica to allow forecast evaluation

across regions and datasets

• We are supporting African startups for the design and development of

ground weather stations





You Can Help!







About Me

- 2023 Present Co-founder/Director at AfriClimate AI, Project lead of AfriNet
- 2021 Present Head of Data Science at ZYTLYN, AI travel startup
- 2016 2020 PhD at CERN / Geneva Uni on AI and particle physics
- Data scientists in industry : Pervasive computing, bioinformatics, LHC physics