2-3 OCTOBER 2023, TUNIS

AI Super-Resolution Weather Forecast for the Developing World: A Multi-Stakeholder Approach

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EMA

iken

AI Weather Forecasting Benefits

- 10,000 times faster!

- Not limited by Chaotic theory (can predict much more into the future)

AI Solution Challenges in Arab and African Countries

- Very sparse weather stations in comparison to the developed world

- We need to dramatically decrease the computation cost for training (Pangu-Weather needed 16 days on a 192 GPU cluster, costing ~$4M USD)!
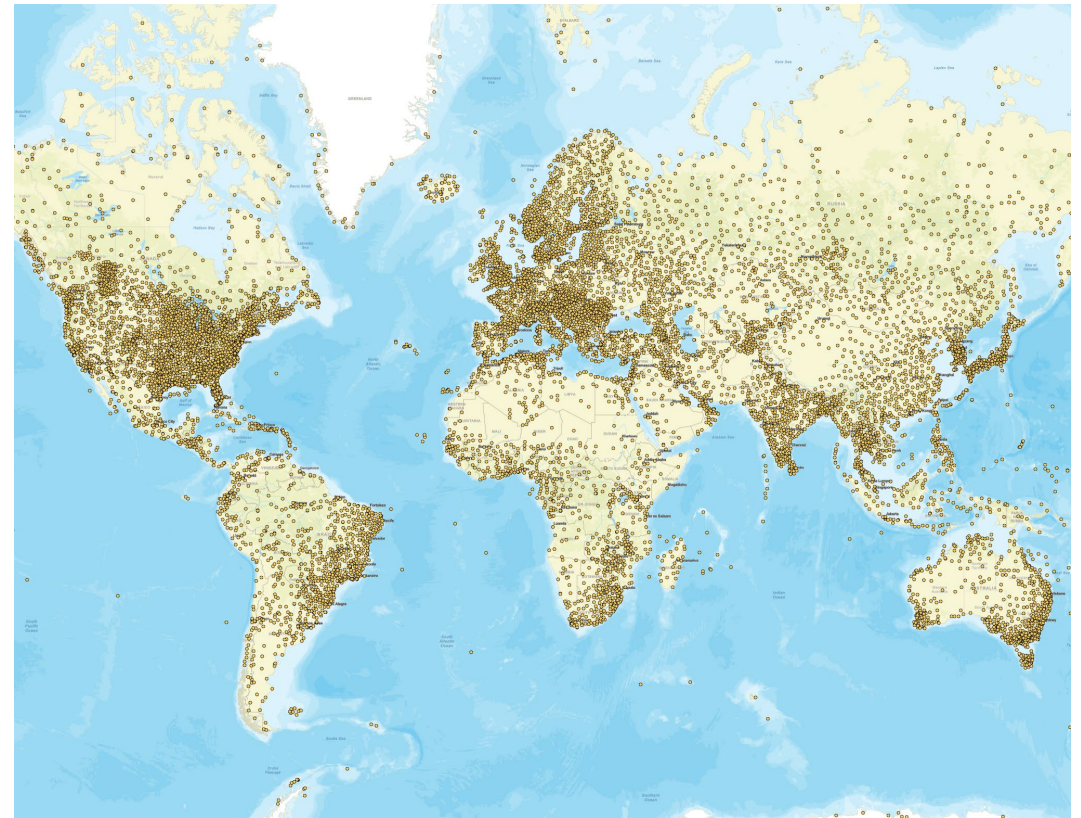
Currently Active Hourly Land Weather Stations as of 1/10/2023

Source: NOAA

What is Needed?

- Technological:

  - Simplifying the AI model while keeping accuracy (decreasing computation power)

  - Incorporate '**super-resolution**' aspects into AI (innovation)

  - Work directly on observation data (not reanalysis data)

- Organisational: Multi-Stakeholder Approach:

  - Academia: Nile University -> Technology development

  - Private Sector: Iken -> Outreach, deployment and sustainable development

  - Government: Egyptian Meteorological Authority -> Acquiring data, Continuous validation and dissemination
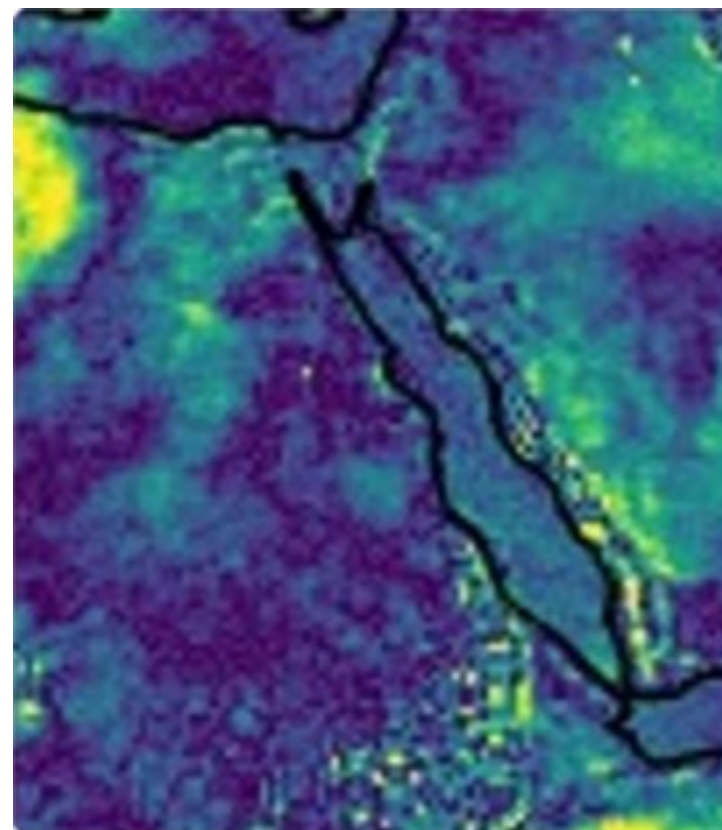
Crude Initial Results: Prediction Errors for Egypt
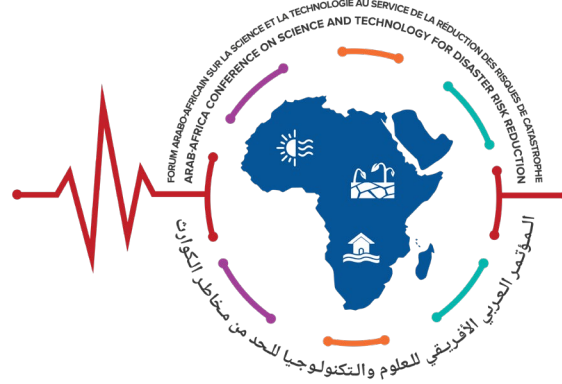## Our model delivers (bluer) much less error
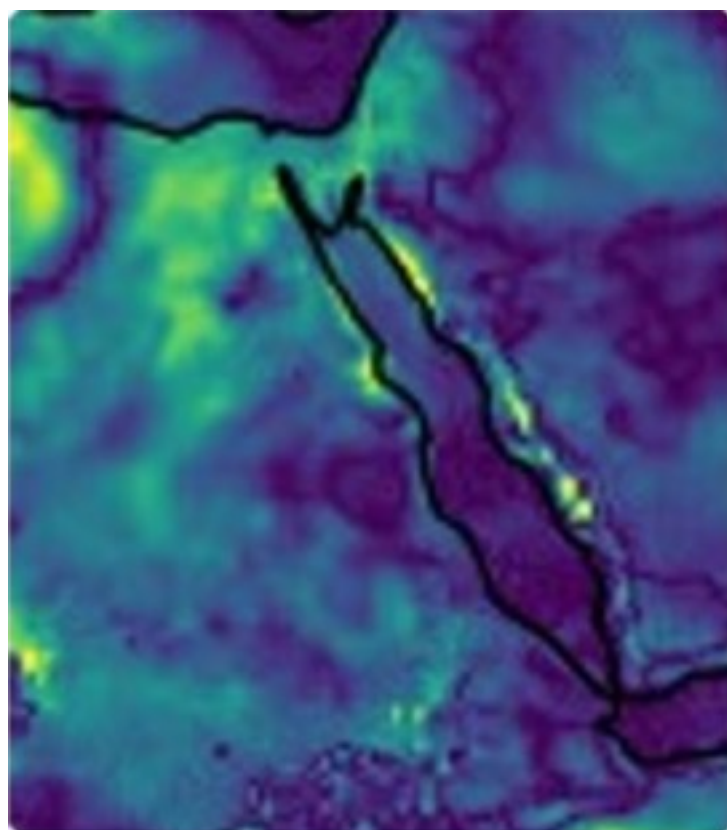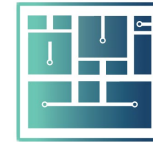

Pangu-Weather

Our Approach

Error (Degrees Celsius)

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THANK YOU