

HeatGuard Data-Driven Decision Support for Workforce Protection

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The Team

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MSc Data Science (UEL)

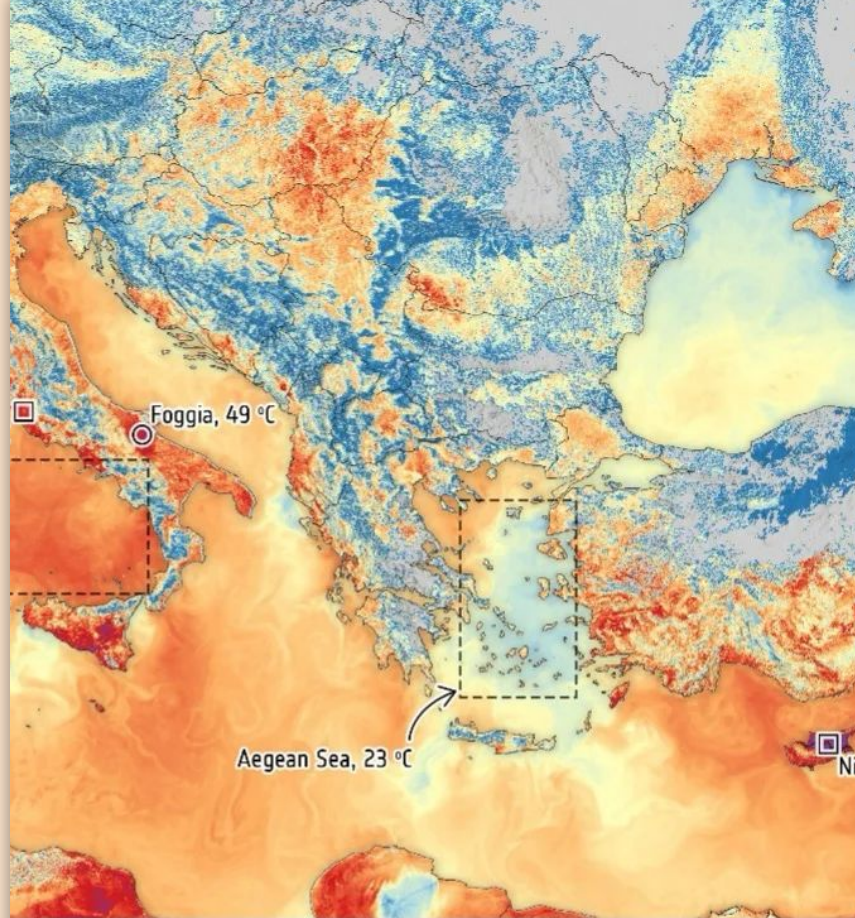
Data Analysis Bootcamp (Workearly)

BSc Meteorologist (NCO Academy)



Business Challenge

- **Goal:** To deliver real-time heat alerts and risk intelligence, enabling businesses to protect outdoor workers and comply with safety regulations.
- **What?** Real-time and forecast-driven alerts for 5 major Greek cities, based on temperature and discomfort index.
- **Why?** Heatwaves cause health risks, lost productivity, legal exposure.
Need for timely, data-driven stop-work decisions.
- **Solution:** Automated data pipeline, ML forecasting, instant alerting, and interactive BI dashboards.



Sea surface temperature

29 June 2025

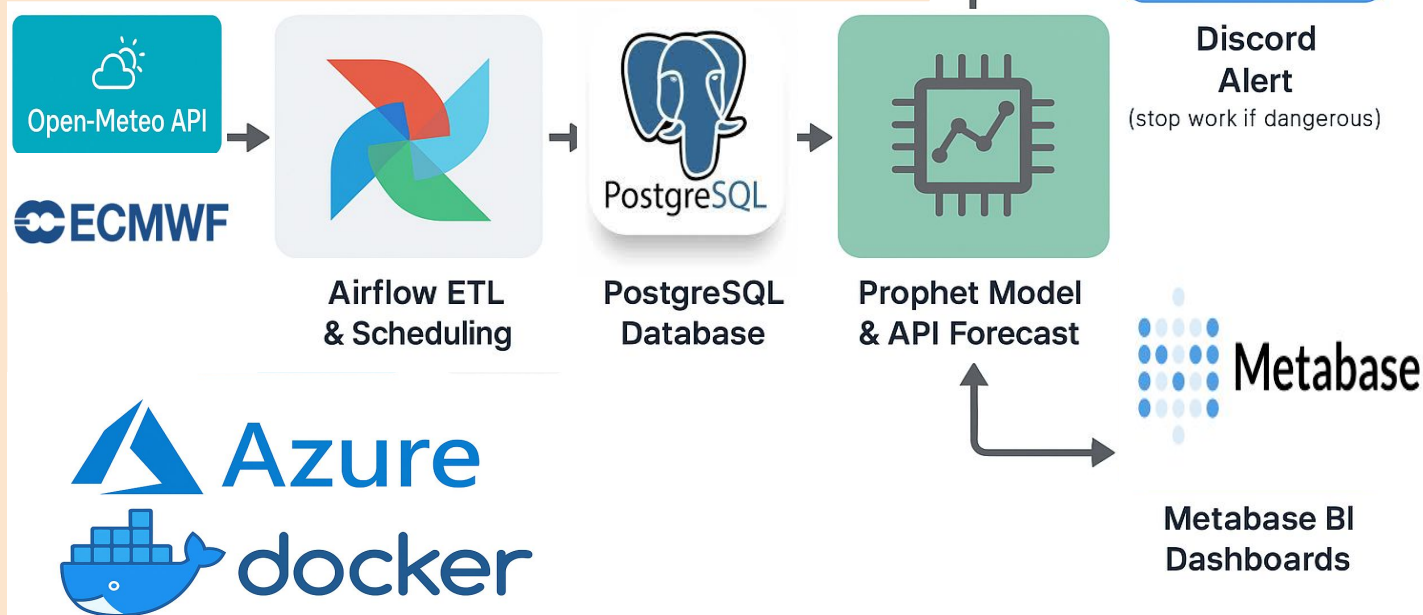


How We Did It



- **Cloud:** Azure Virtual Machine for scalable, secure environment
- **Data:**
 - **API:** Hourly historical and forecast weather data
 - **Cities:** Athens, Thessaloniki, Patras, Heraklion, Larisa
- **Forecasting:** Prophet time series model (ML) for 48-hour predictions
- **Database:** PostgreSQL for centralized storage
- **Workflow Orchestration:** Apache Airflow (Dockerized)
- **Alerts:** Discord Webhook (real-time notifications)
- **BI Tool:** Metabase (interactive dashboards)

Robust and Enabling Data Delivery Pipeline



Analysis & Key Features



DEMO: Metabase Dashboard

- [Metabase](#)

DEMO: Discord Alerts

- [Discord](#)

Summary

- **Automated, end-to-end system for heat safety**
- **Data-driven decisions:** less guesswork, more safety, legal peace of mind
- **Alerts:** real-time Discord alerts & notifications



Outlook

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Recommendations

Outlook:

- Expand to more cities and other risk factors (e.g. wind, thunderstorm, snow, air quality)
- Integrate SMS or mobile alerts
- Provide customizable safety thresholds per client
- Add daily/weekly summary reports to management

Recommendations:

- Use this system to support safety meetings and daily operational decisions
- Share dashboard access with safety managers
- Regularly review forecast vs actual for continuous improvement



Questions?

Thank You

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