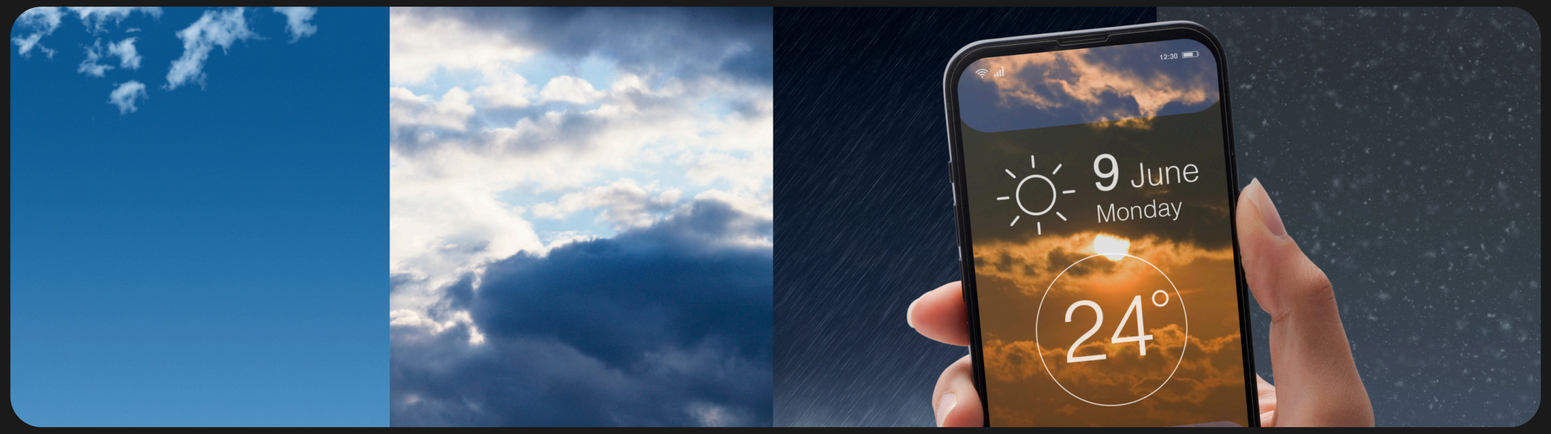
QMatter

QWeather
Weather Web

A NASA-Powered Platform for Real-Time Weather & Astronomy Insights designed by : **QMatter Team**

Start Slide →



Why We Built QWEATHER

Across the world, weather and astronomy data are available — but scattered across dozens of sources.

Scientists, students, and enthusiasts often struggle to access, visualize, and combine both atmospheric and cosmic insights in one place.

Challenges we identified:

- Most weather tools ignore astronomical data like moon phases or visibility.
- Astronomy apps rarely integrate environmental factors like humidity or wind.
- Decision-makers and explorers need unified, real-time data for better planning

Our Mission:

To merge NASA's reliable climate data with astronomical awareness, creating a single, interactive, and educational platform for everyone — from researchers to curious minds.

Solution Overview

QWEATHER is an interactive web platform that unites weather forecasting and astronomical observation into one seamless experience.

It leverages NASA POWER API to deliver accurate, location-based environmental insights — while also generating live astronomy data such as sunrise, sunset, and moon phases.

What makes it special:

1. Combines Earth's climate data with space events in real time.
2. Uses an intuitive map-based interface powered by Leaflet.js for easy location selection
3. Offers smart recommendations for outdoor or indoor activities based on NASA metrics.
4. Presents everything in a modern, glassmorphic design that feels futuristic and educational.

Core Features

Core Functionalities of QWEATHER

QWEATHER brings together powerful technology and an intuitive interface to make NASA data interactive, visual, and useful.

01

🌤️ Weather Forecasts

Get accurate temperature, rainfall, humidity, and wind data directly from the NASA POWER API, covering up to 30 days.

02

🪐 Astronomy Insights

Displays sunrise and sunset times, moon phases, and major celestial events such as meteor showers and ISS passes.

03

🗺️ Interactive Map

Built with Leaflet.js, allowing users to pick locations globally or use their current coordinates in real time.

04

💡 Smart Activity Suggestions

AI-based recommendations depending on weather and sky conditions — from hiking and cycling to indoor learning.

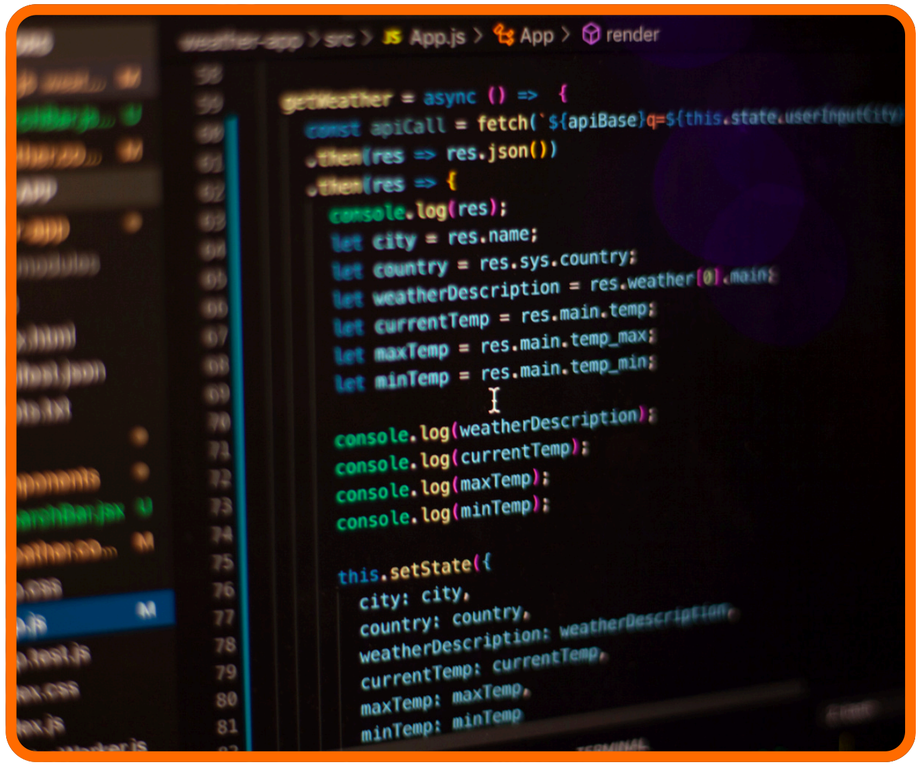
05

📊 Data Export

Export collected data as CSV files for scientific research, educational analysis, or mission planning.

Technical Architecture

QWEATHER is powered by a modern, lightweight tech stack designed for real-time performance and scalability — connecting users directly to NASA's climate intelligence systems.



Architecture Overview:

🧠 Frontend Framework

Built entirely with HTML, CSS, and JavaScript (ES6) for accessibility and speed — no heavy frameworks required.

🛰️ Data Source — NASA POWER API

Provides reliable, open-access meteorological data including:

- Temperature (T2M)
- Rainfall (PRECTOTCORR)
- Wind Speed (WS2M)
- Humidity (RH2M)

🗺️ Mapping & Geolocation

Integrated with Leaflet.js and OpenStreetMap, enabling users to visualize global data, select coordinates, or detect their current location dynamically.

⚙️ Core Logic

- Fetches NASA data asynchronously via fetch() requests.
- Parses JSON responses to update UI metrics instantly.
- Generates random astronomical events when API data is unavailable to maintain user engagement.

🎨 Interface Design

Styled using Glassmorphism with high-contrast color palettes for both night and day usability.

Innovation & Impact

QWEATHER isn’t just another weather app — it’s a fusion of environmental intelligence and cosmic awareness, built to make NASA’s data accessible, visual, and meaningful for everyone.

Key Innovations:

- 🚀 Unified Platform — Combines meteorological and astronomical data in one interactive dashboard.
- 🌐 Global Accessibility — Works anywhere on Earth using open NASA APIs and real-time maps.
- 💡 Smart Decision Support — Suggests optimal outdoor or research activities based on NASA environmental metrics.
- 🎨 Human-Centered Design — Minimal, futuristic UI that turns scientific data into engaging experiences.

Impact Areas:

- 📚 Education: Helps students and teachers explore NASA datasets visually.
- 🌿 Environmental Awareness: Encourages sustainable planning and understanding of climate patterns.
- 🔭 Research & Exploration: Aids scientists, space enthusiasts, and engineers in mission preparation.

Future Enhancements

01

Deeper NASA Data Integration

Add datasets from NASA EPIC, MODIS, and Landsat missions for richer environmental visualization.

02

Machine Learning Predictions

Use AI to forecast extreme weather, solar radiation trends, and ideal observation windows for astronomers.

03

AR & 3D Visualization

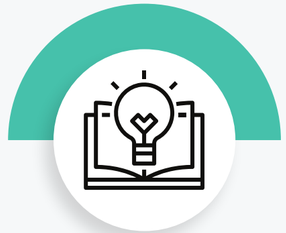
Implement Augmented Reality (AR) views to display constellations, satellite paths, and planetary alignments in real time.

04

Smart Notifications System

Provide live alerts for meteor showers, ISS passes, or weather anomalies in the user’s location.

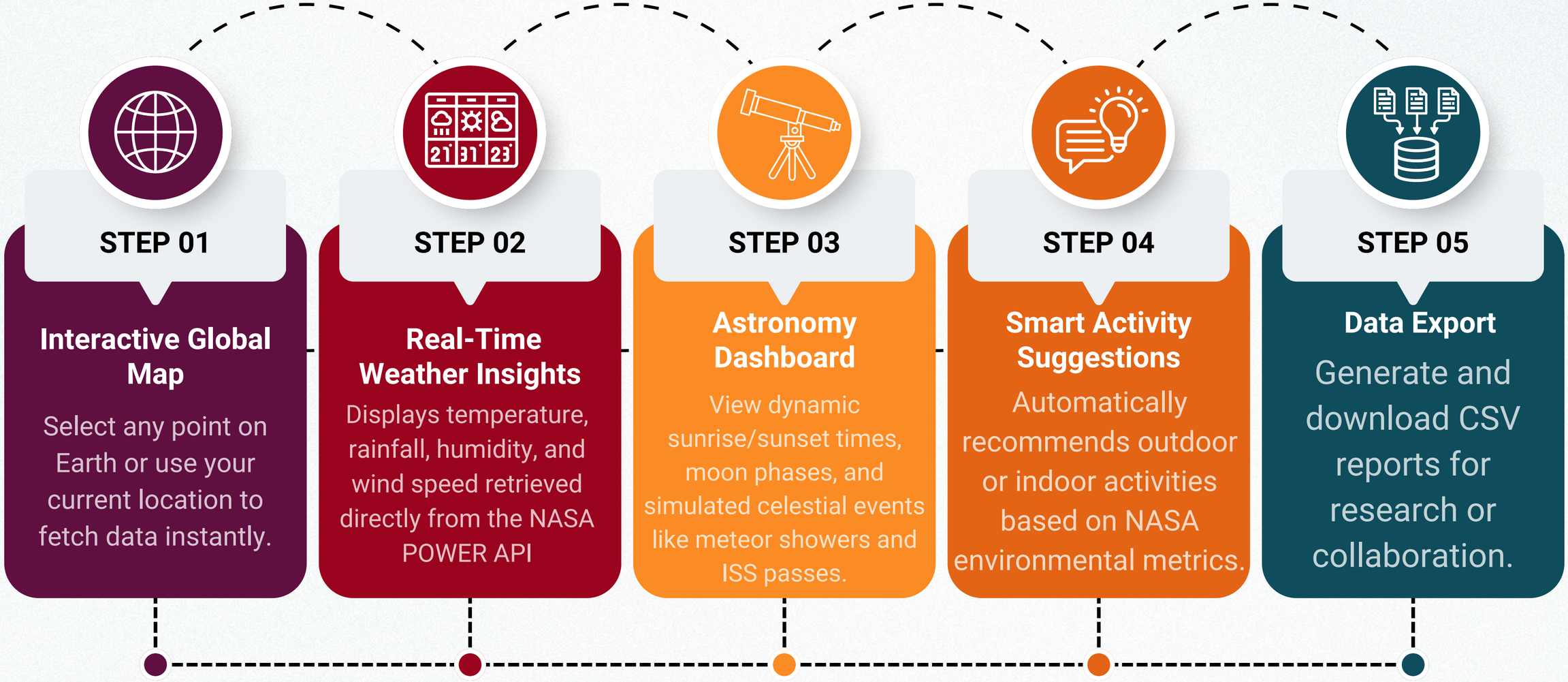
05



Collaboration & Education

Partner with schools, research institutes, and citizen-science communities to expand QWEATHER’s global impact.

LIVE DEMO

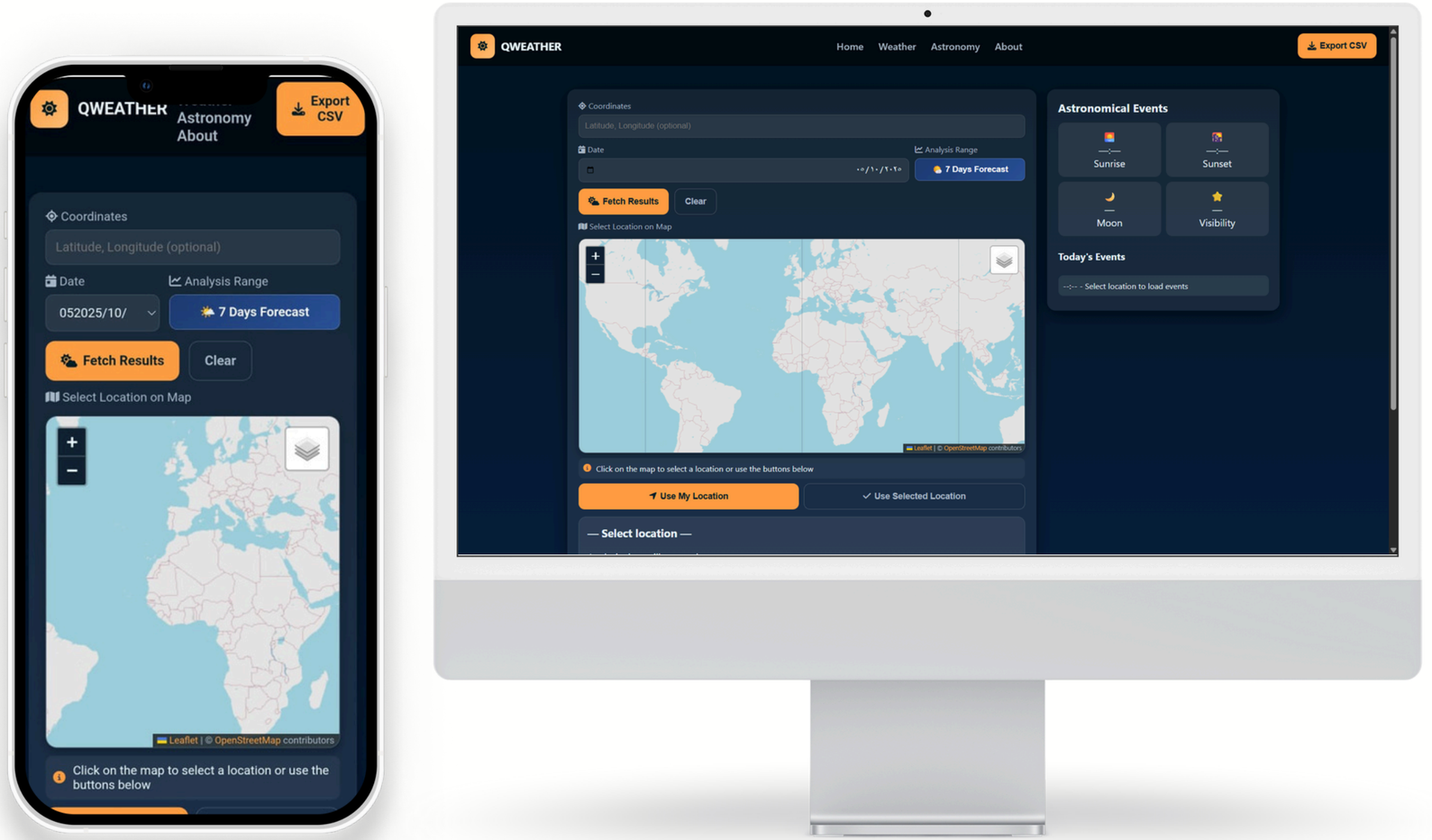

STEP 01
Interactive Global Map
Select any point on Earth or use your current location to fetch data instantly.
STEP 02
Real-Time Weather Insights
Displays temperature, rainfall, humidity, and wind speed retrieved directly from the NASA POWER API
STEP 03
Astronomy Dashboard
View dynamic sunrise/sunset times, moon phases, and simulated celestial events like meteor showers and ISS passes.
STEP 04
Smart Activity Suggestions
Automatically recommends outdoor or indoor activities based on NASA environmental metrics.
STEP 05
Data Export
Generate and download CSV reports for research or collaboration.

Conclusion

QWEATHER redefines how we connect with our planet and the universe.
By blending NASA’s environmental data with astronomical insights, it transforms complex science into an accessible, interactive experience for everyone.

Key Takeaways:

🌍 Unified Data Experience: Earth and space — visualized together in one platform.
🛰️ Powered by NASA: Trusted, scientific, and globally relevant datasets.
💡 Empowering Exploration: Encourages curiosity, research, and awareness of our world’s dynamic systems.
🌟 Open for Growth: A foundation ready for AI, AR, and global collaboration.

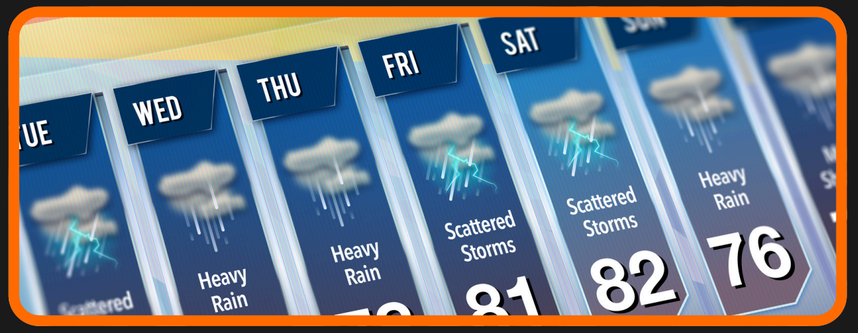


Built With:

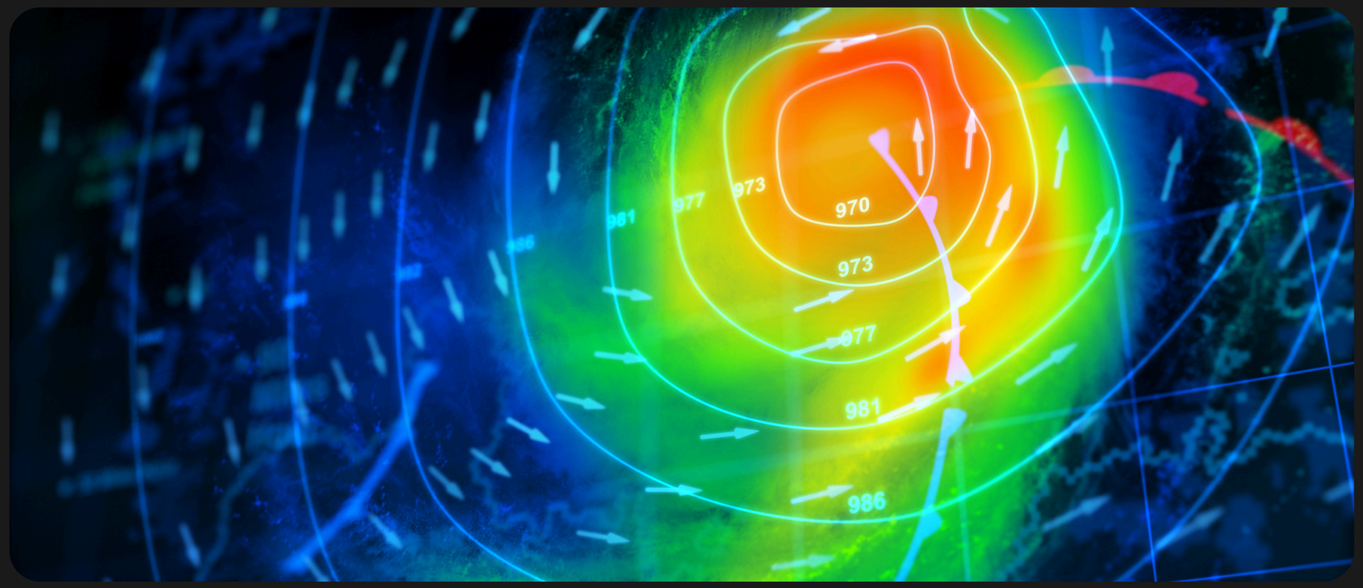
- NASA POWER API
- HTML, CSS, JavaScript (ES6)
- Leaflet.js & OpenStreetMap
- Font Awesome

Credits:

- Concept & Development: QMatter Team
- Data Source: NASA POWER API
- Inspiration: NASA Space Apps Challenge



End Presentation



Thank You