



Huracanes Caribe

Localized hurricane intelligence for the Caribbean, by the Caribbean.

Huracanes Caribe delivers precise, city- and county-level insights on hurricanes—wind, rainfall, storm-surge, tornado risk, timing, and impact—while cultivating a vibrant regional community that can coordinate aid and share knowledge in real time.

Table of Contents

1. [About the Project](#)
 2. [Key Features](#)
 3. [Tech Stack](#)
 4. [Getting Started](#)
 5. [Prerequisites](#)
 6. [Installation](#)
 7. [Running Locally](#)
 8. [Deployment](#)
 9. [Repository Structure](#)
 10. [Roadmap](#)
 11. [Community & Support](#)
 12. [Contributing](#)
 13. [License](#)
 14. [Acknowledgements](#)
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About the Project

Vision. Empower individuals, organizations, and governments across the Caribbean with actionable, hyper-local hurricane information and a platform to collaborate on preparedness, response, and recovery.

Mission Goals

- **Forecast accuracy** — ingest authoritative data (NOAA/NHC, ECMWF, local meteorological agencies) and enhance it with bespoke analytics.
 - **Impact visualisation** — publish intuitive impact-style maps (wind, surge, rainfall, tornado probability) for every Caribbean basin.
 - **Community network** — host regional chat groups and information channels to crowd-source reports and mobilize aid.
 - **Sustainable model** — fund operations via premium tools, a token-based rewards system, and transparent donation funnels.
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Key Features

- **Interactive risk maps** with dynamic vectors (GTWO disturbances, forecast tracks).
- **Automated tropical weather outlooks** for Atlantic & Eastern Pacific basins.
- **Regional WhatsApp community** (`Avisos`, `Chat General`, country-specific groups).
- **Token & rewards economy** (planned) to incentivize data sharing and donations.
- **Charity storefront** for rapid relief fund-raising.
- **API & widgets** enabling third-party apps to embed Huracanes Caribe data.

Tech Stack

Layer	Tools/Libraries
Data ingestion	<code>earthkit</code> , ECMWF CDS, NOAA/NHC shapefiles, AWS S3 datasets
Processing	Python 3 · <code>pandas</code> · <code>xarray</code> · <code>cartopy</code> · <code>matplotlib</code> · <code>Pycairo</code>
Web app	Next.js (static export for GitHub Pages; server mode on Vercel later)
Styling/UI	Tailwind CSS · <code>shadcn/ui</code> · Lucide icons
Maps & graphics	Leaflet/React-Leaflet · MapLibre GL
CI/CD	GitHub Actions (<code>build-and-deploy.yml</code>)
Hosting	GitHub Pages (static) → Vercel (dynamic roadmap)
Storage	AWS S3 (processed GeoJSON, tiles)
Auth & social	NextAuth.js → custom social graph (planned)
Crypto layer	Solana · Orion Tools · Raydium LP (roadmap)

Getting Started

Prerequisites

- **Node 20 + npm 10** (web front-end)
- **Python 3.12** (data pipeline)
- Git 2.44+
- (Optional) AWS CLI configured for S3 access

Installation

```
# 1. Clone the repo
$ git clone https://github.com/yourusername/huracanes-caribe.git && cd huracanes-caribe

# 2. Install web dependencies
$ npm ci
```

```
# 3. Install Python dependencies
$ python -m venv .venv && source .venv/bin/activate
$ pip install -r requirements.txt
```

Running Locally

```
# Start the Next.js dev server
$ npm run dev

# Generate latest outlook maps (sample)
$ python scripts/generate_gtwo_maps.py --basin atlantic --output public/maps/
```

Visit `http://localhost:3000` to view the site.

Deployment

Static — push to `main`; GitHub Actions builds and deploys to **GitHub Pages**.

Dynamic — connect the repo to **Vercel**; `main` → production, `dev` → preview.

Repository Structure

```
/
├─ data/           ← small sample datasets or fetch scripts
├─ public/         ← static assets (logos, icons, map tiles)
├─ src/
│   ├─ components/ ← React UI + map widgets
│   ├─ pages/      ← Next.js routes
│   └─ styles/     ← Tailwind + global CSS
├─ scripts/        ← Python pipelines & map builders
├─ .github/workflows/ ← CI definitions
└─ docs/           ← project docs, ADRs, specs
```

Large raw datasets live in an external S3 bucket and are streamed or cached locally during builds.

Roadmap

Version	Target Date	Highlights
v0.1 (MVP)	Q3 2025	Static site, daily outlook maps, WhatsApp bridge
v0.2	Q4 2025	Interactive map viewer, user location opt-in
v0.3	Q1 2026	Account system, alert subscriptions, API beta

Version	Target Date	Highlights
v1.0	2026	Token launch, donation storefront, regionalized forecasts

See [docs/ROADMAP.md](#) for granular tasks and issues.

Community & Support

- **WhatsApp Community:** [Join here](#) \ — [Avisos](#) (broadcast) \ — [Chat General](#) \ —
Country-specific sub-groups (Cuba, DR, Puerto Rico, etc.)
- **GitHub Discussions:** use the *Q&A* and *Ideas* categories.
- **Twitter / X:** [@HuracanesCaribe](#)
- **Email:** info@huracanescaribe.com

Contributing

1. Fork the repo & create your branch: `git checkout -b feature/my-feature`.
2. Commit your changes using conventional commits.
3. Push to the branch and open a PR.
4. Give your PR a clear title and description; reference open issues.

See [CONTRIBUTING.md](#) for coding standards, design tokens, and the contributor license agreement (CLA).

License

Distributed under the **MIT License**. See [LICENSE](#) for details.

Acknowledgements

- **NOAA/NHC** for GTWO, forecast tracks, and advisory data.
- **ECMWF** for reanalysis and ensemble datasets.
- **UNDRR Caribbean** for regional hazard guidelines.
- All open-source libraries and community contributors!