Weather Insights & Forecast Advisor

The Challenge - Weather Readiness

The weather is often more than just a little rain; it can pose **major threats** and create serious chaos. Let's build a system to keep everyone safe. Emergency managers, non-profits, and community leaders need more than just a forecast; they need **actionable intelligence** that contextualizes real-time threats against historical risks to coordinate effective relief and evacuation efforts.

Although the U.S. National Weather Service (NWS) and NOAA publish detailed weather and climate data, this information is often too technical, disparate, and slow to access for personnel on the ground making critical, time-sensitive decisions.

Your Mission

Build a multi-agent system designed to support **weather disaster relief and preparedness.** Your system must fuse real-time severe weather warnings. Some examples include National Weather Service (NWS) API , NOAA public datasets in BigQuery (e.g., historical storm tracks, flood records, temperature extremes, and community impact metrics).

The goal is to provide synthesized, immediate threat assessment to protect communities. Your agent can be intended for use by community decision-makers, community members themselves or both.

Your AI Agent (DIA) could answer ~~crucial~~ questions like:

- "We have a Hurricane Category 3 approaching. Which census tracts in the predicted path have a history of major flooding **and** high elderly populations, requiring immediate evacuation priority?"
- "Show me the 48-hour severe heat risk for this city compared to the duration and intensity of the worst heat wave on record, to help us stage cooling centers."
- "What is the historical probability of a flash flood in this specific river basin when the current NWS rainfall rate is 2 inches/hour to justify deploying water rescue teams?"

Directions

You can use the public data we've provided, find your own data, or use a combination of both. You can combine the data with live data from the National Weather Service API.

Focus on making the system interactive and insightful — a weather assistant that feels genuinely useful. You must at least do the following steps, but you can add more features if you'd like:

Find your data → Leverage BigQuery → Create your agents using ADK → Deploy to Agent Engine → Show A2A (Agent-to-Agent)

Remember, your team must also submit a Pitch Video and Pitch Deck, along with this project.

Tech Stack: Use of Google AI technologies is mandatory.

Suggested Agent Roles

- **Root Agent:** Greets users and interprets questions (e.g., "Hi! I can tell you about current conditions or compare today's storm with historical data.")
- **Data Agent:** Queries BigQuery NOAA datasets (e.g., temperature, precipitation, lightning) and formats results.
- **Forecast Agent:** Calls the NWS API to retrieve current or upcoming weather conditions.
- **Insights Agent:** Correlates the data and generates a natural-language summary of what's happening and what to expect.

Stretch Goals (Optional)

- Any multimodal inputs (image/video inputs) that can make the agent experience stronger.
- Visualize results with charts or maps.
- Add "Weather Alerts" when forecasted conditions become dangerous or require evacuation.
- Integrate location-based filtering (e.g., ZIP code).
- Compare multiple years or regions to gain insights into climate trends.