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AI-Council Canvas

- Evaluate and prioritize AI use cases by characterizing how AI can improve decision-making, augment people's capabilities, or automate processes
- Determine which resources are needed to build and operate Artificial Intelligence
- Anticipate project risks and barriers

Project: Flood Prediction & Resource Allocation

1 The task and the decision

Task: Transform multi-source hydrological and meteorological data into actionable, multi-horizon river level forecasts (24h–72h) and optimize the deployment of heterogeneous emergency resources.

AI-improved decision (actions):
- Automated alerting based on predictions
- Fair, rule-based allocation of units to prevent harm

Current approach: Manual data aggregation
→ subjective risk interpretation
→ reactive dispatch
→ latency and inconsistent distribution.

AI improvement goals:
- Optimization for Zero Missed Floods
- Explainability through rule-based system

2 Added value proposed

Added value of an AI-based solution
What kind of value does it generate?

- Earlier warnings, saves lives
- Smarter resource deployment
- Less manual monitoring
- Protects infrastructure
- Predicts flood severity & impacts
- Recommends best response actions

3 Data

Access:
USGS Hydrological Data (River stages);
Open-Meteo (Precipitation, Soil Moisture);
Static indicators (Population Density, …)

Quality: Good, gaps are handled by polynomial interpolation

Data Drift: Climate change.

4 Judgement (decision criteria)

Safety-First: prioritize Public Safety (minimizing floods) over Economic Continuity (false alarms)

Explainable Logic: base resource decisions on human-readable rules

5 Results

Quantitative: 100% recall on the 2019–2025 test set, positive prediction error for safety buffer, minimized false alarm ratio

Qualitative: Fair resource distribution, transparent IF-THEN rules, can handle extreme events (-> see 2019)

6 Deployment

What do I need to launch the AI solution?
Access to OpenMeteo & USGS API, predictive models, Web application

How do I deploy?
WEB UI.

Who is involved?
Government,disaster protection, emergency workers, NGOs, first responders.

How do I ensure human agency?
We provide quantitative metrics to human stakeholders to make decisions.
Recommendations are advisory, and predictions are explained.

How do I monitor GoS?
Prediction recall (false positives are better than false negatives), time and resource savings

What infrastructure do I need?
One server with one GPU and internet connection, DB and web app

7 Risks

Privacy/Security: Fake alerts if system is hacked.
External Dependencies: Reliance on API uptime (USGS/Open-Meteo)
Climate Drift: Ensuring model adaptation to evolving precipitation patterns (flashier floods)
Robustness & reliability: Sensor/feed outages; server down; extreme events not seen in training.

8 Barriers

Operational Trust: Staff change thresholds or silence/ignore alerts; Too much false negative (Alert Fatigue), overreliance on predictive systems.
Integration with potential legacy administrative systems

Coments:

Dimension	Comentaris
Technologies	Python, APIs, Statistics, Geographic and Weather information
Risks	Missed/false alerts, Lack of trust
Data	OpenMeteo API , USGS API (government provided data)
References	* see next slide
Viability	Mid to high viability (paper1)

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