NASA SPACE APPS CHALLENGE

FLOODPATH AI

Satellite-powered flood exposure and road accessibility intelligence

TEAM OF THREE • PROJECT CONCEPT & PROTOTYPE



Flooding disrupts access when it matters most

Floodwaters can cut off roads, services and entire communities.

01 Limited visibility

Flood extent is difficult to interpret alongside local road networks.

02 Fragmented data

Satellite observations and transport maps are often viewed separately.

03 Uncertain access

A road shown on a map may not be passable during a flood.

OUR SOLUTION

Meet FloodPath AI

One visual workspace for understanding flood-related route exposure.



MAP

Visualize satellite-observed flood extent

COMPARE

Compare alternative road routes

EXPLAIN

Show exposure and uncertainty, not false safety guarantees

Grounded in open Earth observations

The MVP should use a real, dated flood layer and openly mapped roads.

NASA OPERA DSWx

Satellite-derived surface-water observations

NASA GPM IMERG

Historical rainfall estimates for event context

OpenStreetMap

Road geometry and geographic context

GeoJSON + geospatial analysis

Intersections between mapped floodwater and roads

Data must be cited by product, date, location and processing method.

HOW IT WORKS

From satellite observation to route insight

A transparent geospatial workflow — no black-box flood predictions required.

1

SELECT

Choose a historical flood event and area.

2

OVERLAY

Load observed water extent and mapped roads.

3

ANALYZE

Calculate route length intersecting mapped water.

4

COMPARE

Explain lower vs. higher observed exposure.

Not an operational evacuation or road-safety service.

What the judges will see

Replace this concept image with a real screenshot once your prototype is running.



ILLUSTRATIVE IMAGE — NOT A VALIDATED NASA FLOOD MAP

LIVE DEMO FLOW

01 Open flood event map

02 Show two route options

03 Compare water overlap

04 Explain data limitations

Smarter flood preparedness starts with clarity

Making Earth-observation evidence understandable and actionable.

Potential users

Community planners, disaster researchers and emergency preparedness teams.

Next development milestones

Validate against historical events; integrate dated observations; quantify uncertainty.

OUR VISION

Help communities understand which connections flooding may disrupt.

Sources: earthdata.nasa.gov • gpm.nasa.gov • openstreetmap.org