ISPRS CATCON 9 — Judges' Summary

Project

Title. Remote Sensing Teaching and Practice Platform for Flood Analysis and Student Interaction
One-sentence pitch. A web-based teaching environment built around a real Sentinel-1 SAR flood case — every figure is a real model output, every pipeline step is reproducible, and students close the loop with a guided inquiry form.
Category. Web information package · education-oriented (CATCON Track C).
Public URL. `https://rs-observatory.pages.dev` *(placeholder — update after Cloudflare Pages deploy)*
Source / reproducibility. Private repository; source available to judges on request.

Team

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Design concept and purpose

Traditional remote sensing teaching shows finished maps and finished equations. This platform teaches the **workflow** — the messy middle where raw satellite archives become decisions. We pick one real disaster (Banda Aceh flood, 2025-11-26), one operational SAR pipeline, and one clearly-explained segmentation model (UNet-RSMamba), and we walk learners through it from L1C GRD to interpreted flood map without hiding the steps.

Functions

1. **SAR physics primer** — VV/VH/RGB imagery paired with backscatter intuition.
2. **End-to-end flood case** — Sentinel-1 GRD to model prediction, with side-by-side comparison across four input-clamp configurations.
3. **Walkable 6-stage pipeline page** — real commands, real artefacts, TL;DR and check-yourself prompts per stage.
4. **Interactive training replay** — scrubbable 50-epoch loss/IoU trajectory with milestone annotations and a live prediction preview.
5. **Student inquiry loop** — feedback form backed by Cloudflare Workers + D1.
6. **Reproducible artefacts** — every image is a real output; one command re-runs the pipeline.

System requirements

Viewing (judges, learners): any modern browser (Chrome 110+, Firefox 110+, Safari 16+, Edge 110+); responsive 360 px–4K; JavaScript required; no sign-in.
Rebuilding (instructors, reproducers): Node 18+ with Nuxt 3 / Vue 3 / Tailwind; Cloudflare Workers + D1 for the inquiry API; Python 3.10 + PyTorch 2.x + SNAP 9 + rasterio for the modelling pipeline; Cloudflare Pages for static deploy.

Originality

- Built around **one real disaster**, not a catalogue of toy datasets.
- Parameter sensitivity is a **first-class lesson**: same model, four input-clamp configs, four visibly different flood maps.
- **Every figure is a real artefact** — no stock images, no staged screenshots.
- The teaching loop closes with an **inquiry form backed by a real database**, not a mailto link.
- The pipeline page exposes **real shell commands** so students can rebuild the case at home.

Target learners

- Undergraduates: first contact with SAR. Suggested path: Home, Primer, Flood Case.
- Graduates: reproducibility and parameter sensitivity. Suggested path: Pipeline page, Training replay, then run `reproduce-no-sar`.
- Instructors: a self-contained case for a one-hour lecture. Suggested path: Flood Case + teaching-flow prompts.