Preliminary Flood Mapping using Remote Sensing Data for the 2025 Southeast Asia Floods

リモートセンシングデータを用いた洪水マッピング

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Acknowledgements

Satellite Data

https://global.jaxa.jp/

https://dataspace.copernicus.eu/

International Cooperation Project

https://global.jaxa.jp/

Flood Extent Mapping Methods

The method is based on pixel-based image analysis of Synthetic Aperture Radar (SAR) data, such as Sentinel-1 and PALSAR-2.

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A Semiautomatic Pixel-Object Method for Detecting Landslides Using Multitemporal ALOS-2 Intensity Images

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List of Data

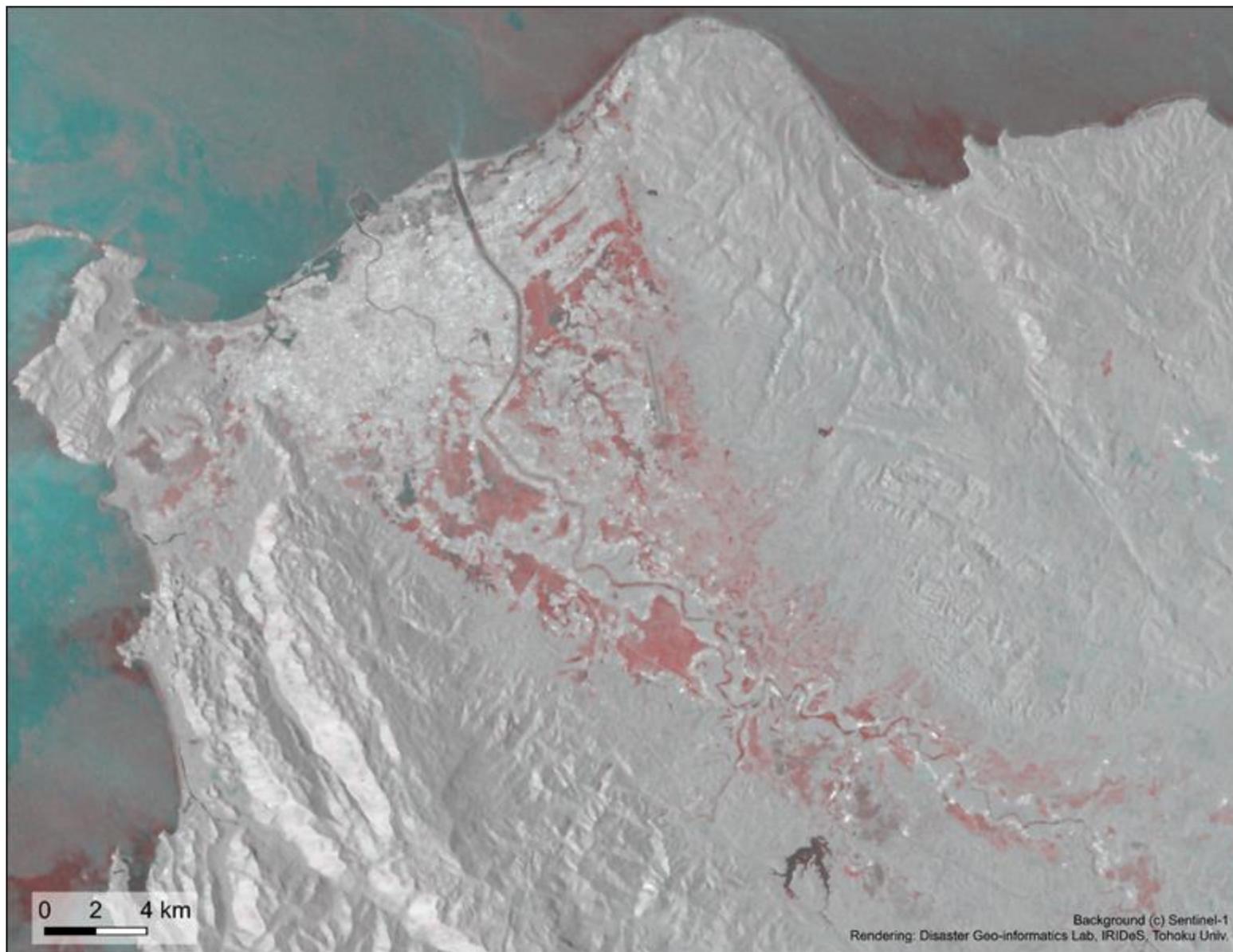| Sensor	Pre-event	Post-event	Region	Source
Sentinel-1	Oct. 22, 2025	Nov. 27, 2025	Aceh	Copernicus EU
Sentinel-1	Oct. 23, 2025	Nov. 28, 2025	North Sumatra	Copernicus EU
PALSAR-2	Apr. 12, 2022	Dec. 02, 2025	Aceh	SentinelAsia
PALSAR-2	Apr. 12, 2022	Dec. 02, 2025	Aceh	SentinelAsia
PALSAR-2	Apr. 12, 2022	Dec. 02, 2025	Aceh	SentinelAsia
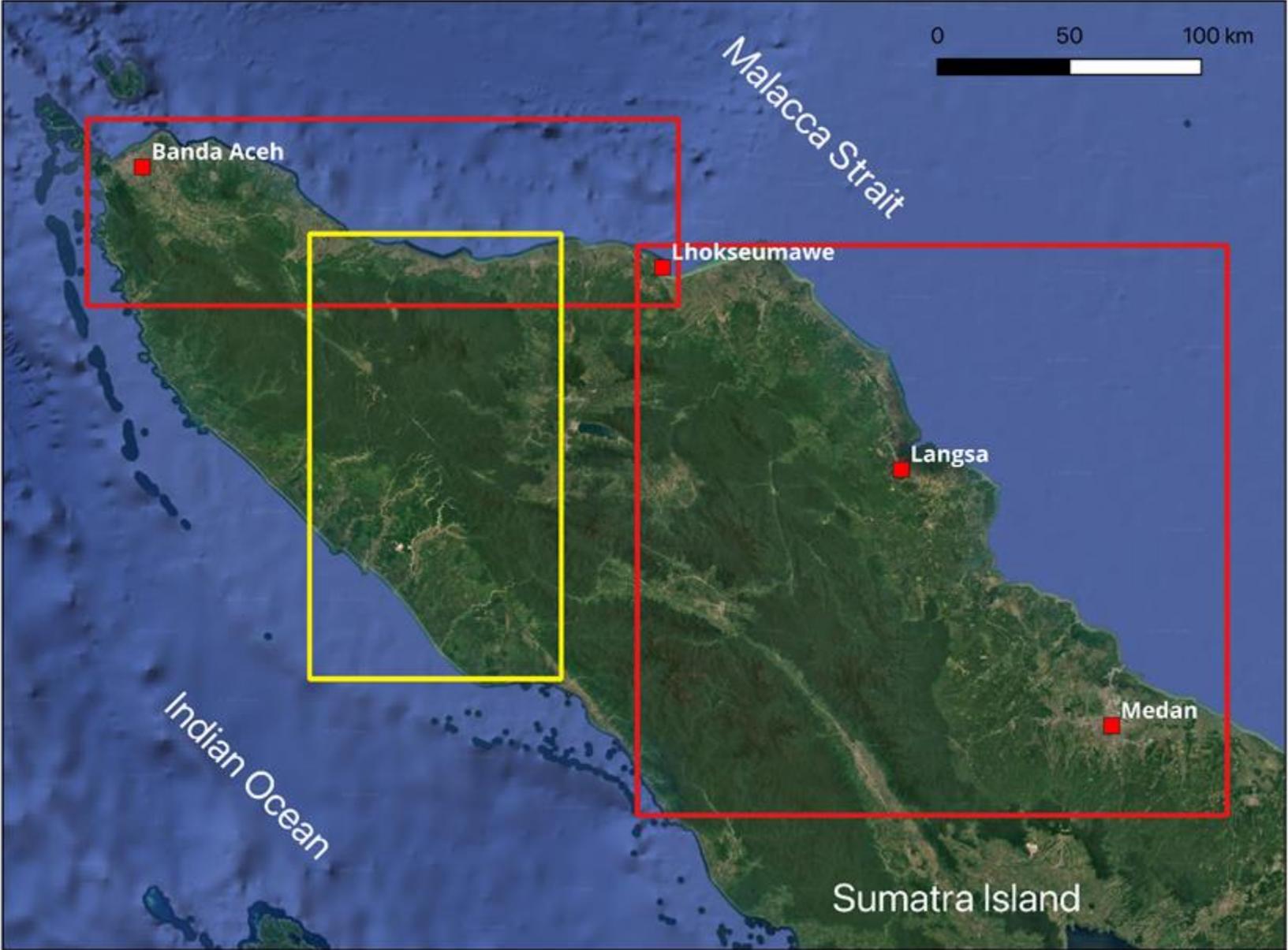
SAR Data Image Analysis

Color Composite Image (Sentinel-1)

- 🟥 Pre-event (Oct. 22, 2025)
- 🟩 Post-event (Nov. 27, 2025)
- 🟦 Post-event (Nov. 27, 2025)

Areas marked in red indicate a decrease in SAR intensity after the event, which are often linked to flooded regions.

Our method automatically identifies the red areas through pixel-based image analysis.

0 2 4 km

Background (c) Sentinel-1
Rendering: Disaster Geo-informatics Lab, IRIDeS, Tohoku Univ.

Web Mapping (https://arcg.is/0CiPCK1)

Flood Extent Map in Banda Aceh

Flooded areas

Example of flooded area mapping results using Sentinel-1 data in Banda Aceh.

The results indicate widespread flooding in the southeastern part of the city through November 27 (post-event Sentinel-1 data).

Background (c) Google Satellite Image
Rendering: Disaster Geo-informatics Lab, IRIDeS, Tohoku Univ.

0 2 4 km