Earth Observation and GIS to Strengthen Disaster Resilience

ASIAN DEVELOPMENT BANK

7th JPTM Sentinel Asia
Bangkok, Thailand on 12 November 2019

ADB

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Introduction of ADB

ADB at a glance

FOUNDED IN 1966

- 68 members; 49 in the region
- 40 borrowing members
- Japan and the United States are the 2 largest members

Introduction of ADB

ADB at a glance

ADB's 2017 OPERATIONS

TOTAL OPERATIONS

$32.22 BILLION

- **$20.01 billion** in loans and grants and others
- **$201 million** for technical assistance
- **$11.92 billion** from cofinancing partners

ADB

Introduction of ADB

ADB strategy 2030 and Disaster risk management (DRM)

- Addressing remaining poverty and reducing inequalities
- Accelerating progress in gender equality
- **Tackling climate change, building climate and disaster resilience, and enhancing environmental sustainability**
- Making cities more livable
- Promoting rural development and food security
- Strengthening governance and institutional capacity
- Fostering regional cooperation and integration

Strategy 2030 includes disaster resilience as a core element of one of its seven operational priorities and is addressed in the supporting operational plan (OP3).

https://www.adb.org/documents/strategy-2030-prosperous-inclusive-resilient-sustainable-asia-pacific

Types of ADB support for DRM

Investments in disaster risk reduction (DRR) and preparedness

- Standalone projects and programs with enhanced disaster resilience as the primary goal
- Embedded projects, addressing disaster resilience in a project component or integrating disaster risk considerations into engineering design

Post-disaster support

- Technical support for post-disaster damage and needs assessments
- Small-scale humanitarian grants
- Fast-tracked emergency assistance loans (EALs)
- Longer-term reconstruction projects

Knowledge

- Technical assistance projects tackling upstream enabling environment issues
- Workshops, conferences
- Publications

https://www.adb.org/documents/strategy-2030-prosperous-inclusive-resilient-sustainable-asia-pacific

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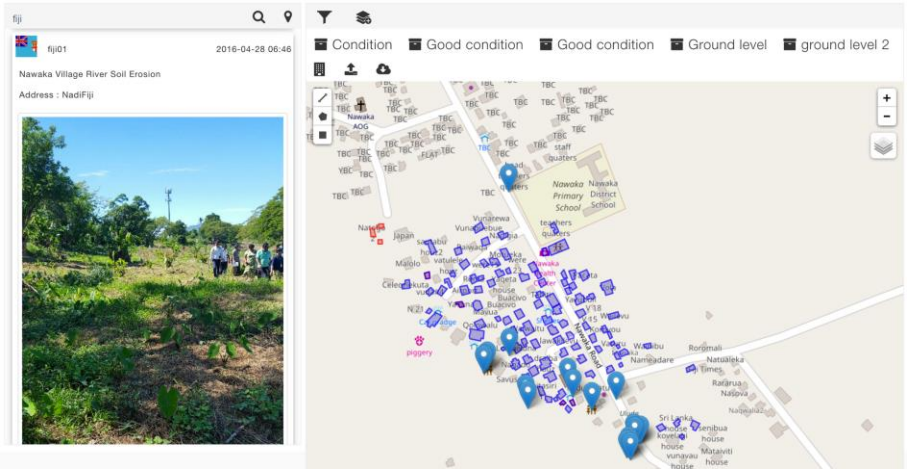
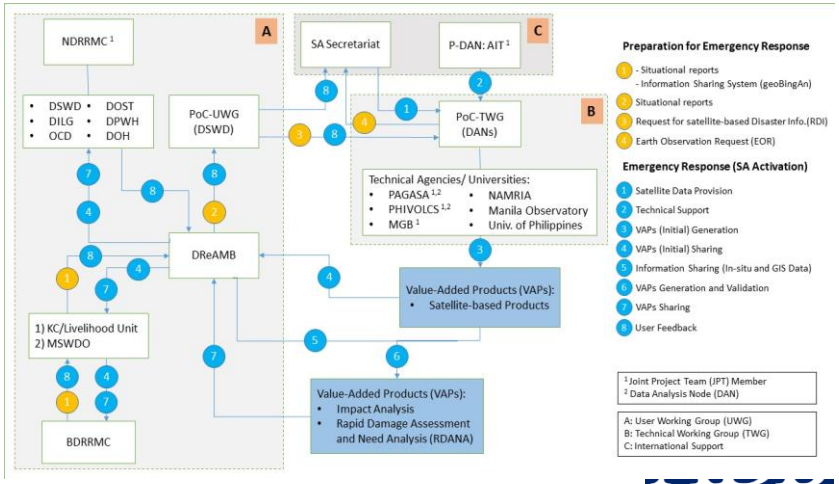
Investments in (DRR) and preparedness

Applying Space-Based Technology and ICT to Strengthen Disaster Resilience

- RETA to improve quality and timeliness of information for disaster preparedness and response using SBT and ICT (Armenia, Bangladesh, Fiji and Philippines) in cooperation with JAXA and AIT
- Built a mobile application and web-GIS plant form for hazard mapping, evacuation planning and crisis report with satellite-based remote sensing data
- Policy guidelines developed regarding sustainable SBT and ICT applications for DRM in each country, including establishment of Sentinel Asia framework





http://www.geoinfo.ait.ac.th/resilience/

Post-disaster support

Sulawesi Tsunami Emergency Response in Indonesia

- UCCRTF Direct Charge (USD 225 K) for providing technical support to identify needs for recovery and reconstruction by utilizing GIS and satellite observation data
- APDRF Grant (USD 3.0 M) for delivering life supporting services (Temporary shelters)
- Loan (USD 500 + 297.75 M) for rehabilitation and reconstruction including critical infrastructure

Emergency observation results by Sentinel Asia and International Disaster Charter were shared with the above project teams as an initial reference information for project preparation.

UCCRTF : Urban Climate Change Trust Fund
APDRF: Asia Pacific Disaster Response Fund;

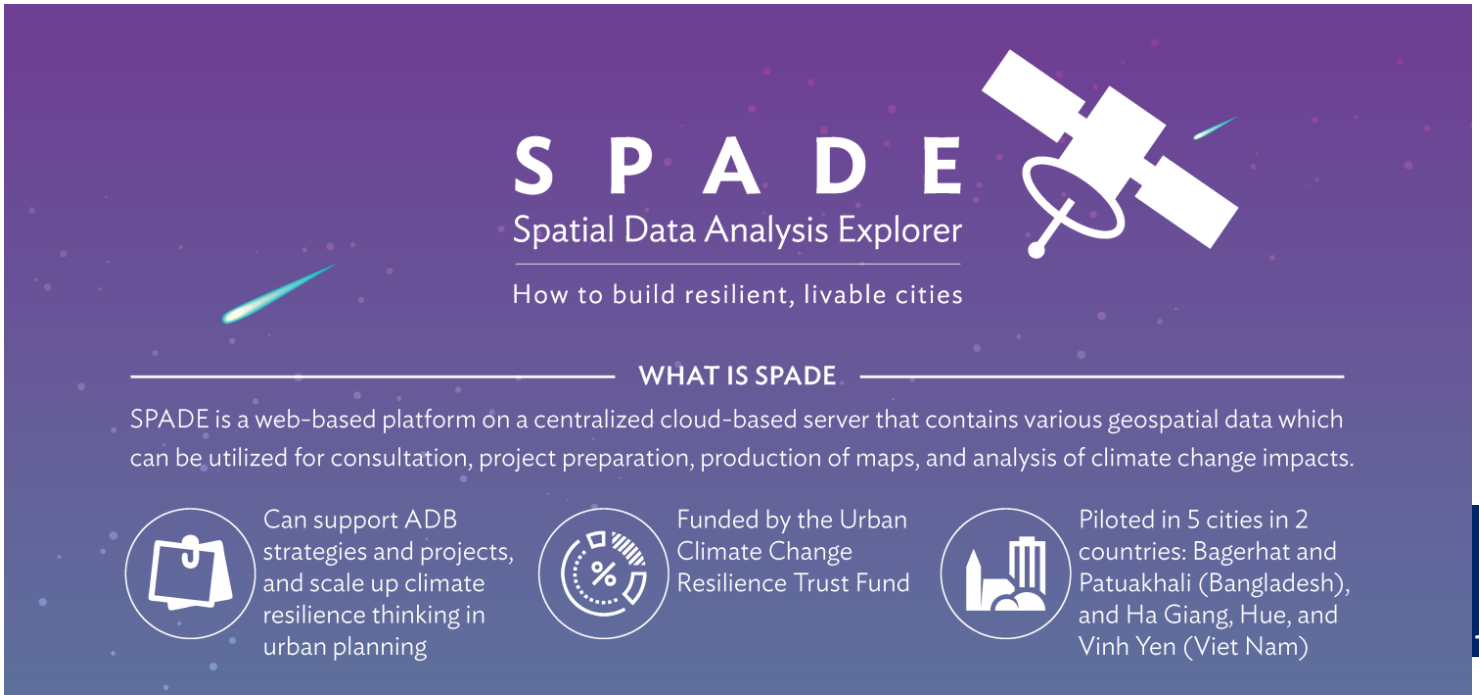
Toward better utilization of Sentinel Asia in ADB

Investments in DRR and preparedness:

- Establishing linkages with the Sentinel Asia community in project countries and target areas for more effective DRR

Post-disaster support:

- Utilizing the ADB Web-GIS platform (SPADE) for more smooth information sharing



Use Case: Viewing devastation in Palu using SPADE basemaps

Palu, Indonesia

Summary

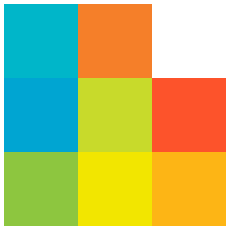
- In ADB strategy 2030, building climate and disaster resilience is the one of 7 operational priorities and satellite data has a potential to support the priority

- ADB TA was conducted with JAXA and Sentinel Asia on DRM in four countries, and the Sentinel Asia framework in the Philippines

- Emergency observation is useful as initial information for preparing post disaster response activities, and SPADE, ADB web-GIS system has potential to enhance the utilization of Sentinel Asia within ADB

Thank you.

Presentation by



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Post-disaster support

Performance of ADB's emergency assistance loan modality

- EALs are intended as fast-tracked short-term, small loans and grants to provide transitional support in response to disasters and emergencies

- Between 2004 and 2018, ADB approved 40 EALs totaling $6.6 billion to 20 DMCs

- A number of these EALs have gone beyond intended small loans and grants to provide transitional support after emergencies:
  - 68% of EALs have been higher than average loan/grant size for the relevant country.
  - 80% of EALs have supported longer-term reconstruction.

Spatial Data Analysis Explorer

SPADE overview

HOW IT WORKS

1 Data is gathered from different sources

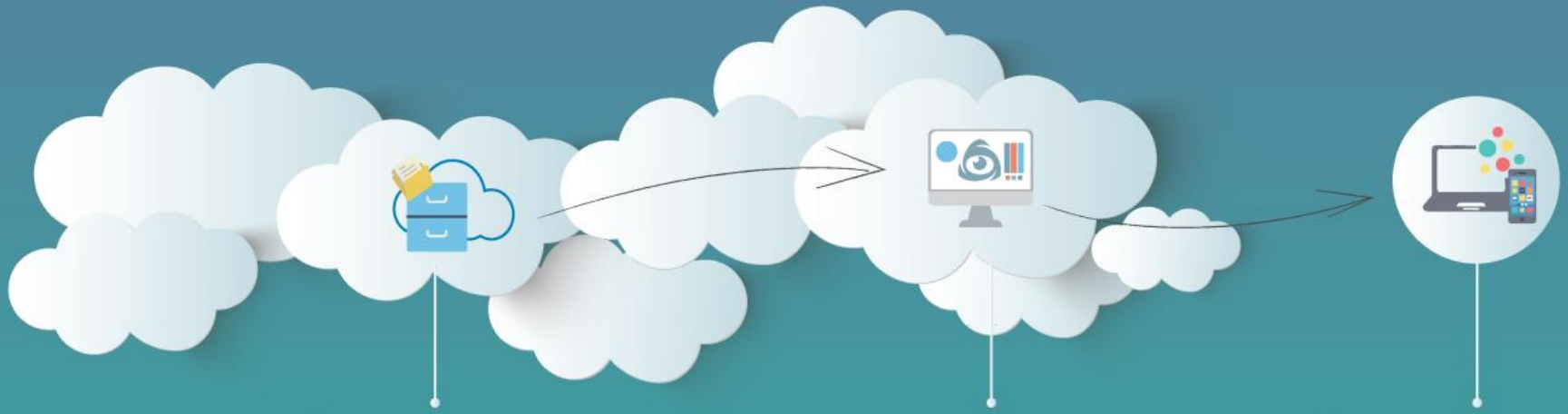
Earth observation and meteorological satellite data, and hydrometeorological data

Climate change simulations from University of Tokyo's Data Integration and Analysis System

Socioeconomic data from field surveys and a mobile application for data collection created by Asian Institute of Technology

2 Data is integrated into a cloud-based database

3 Data becomes SPADE



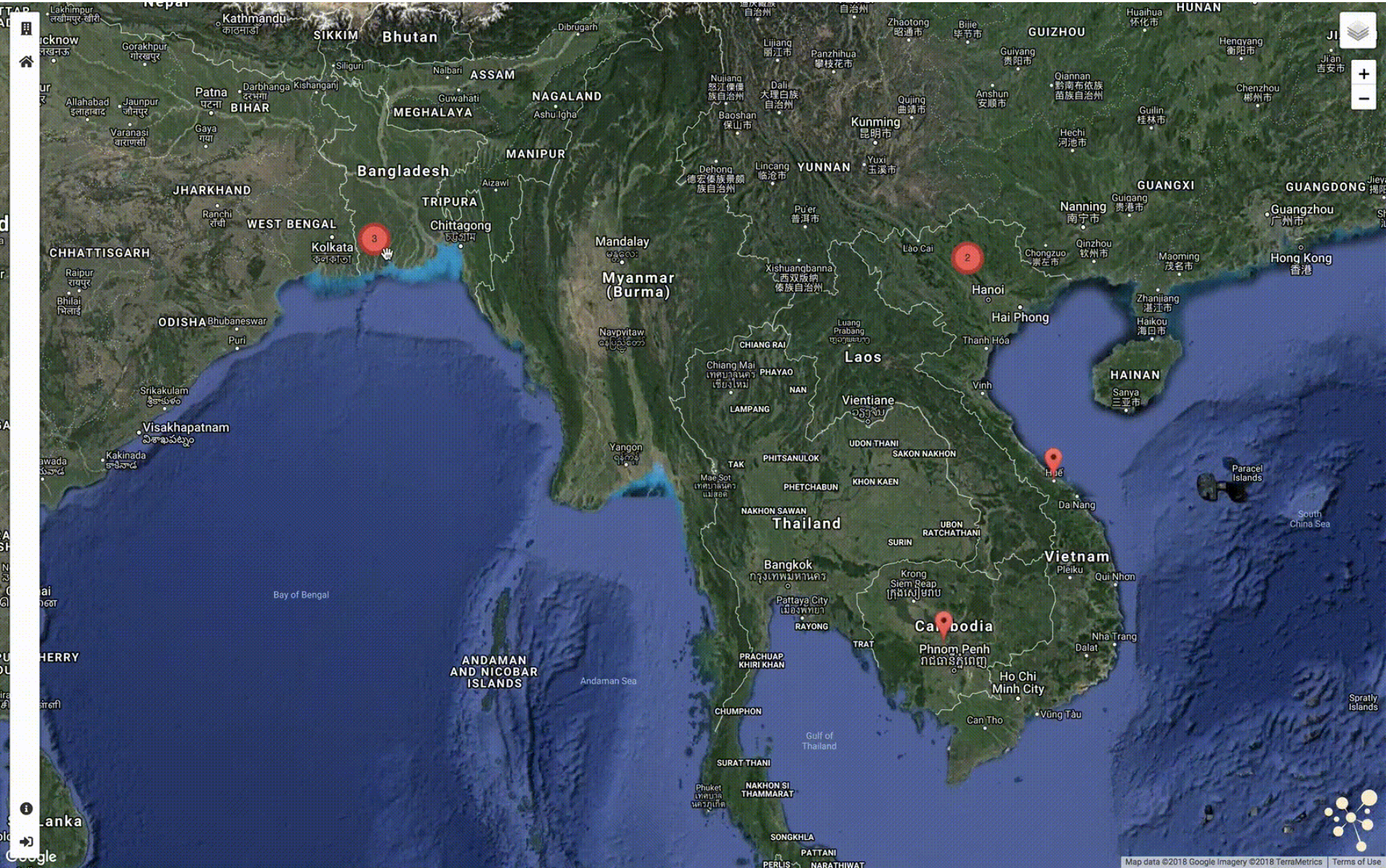
Data is integrated, standardized, and stored in a cloud-based system

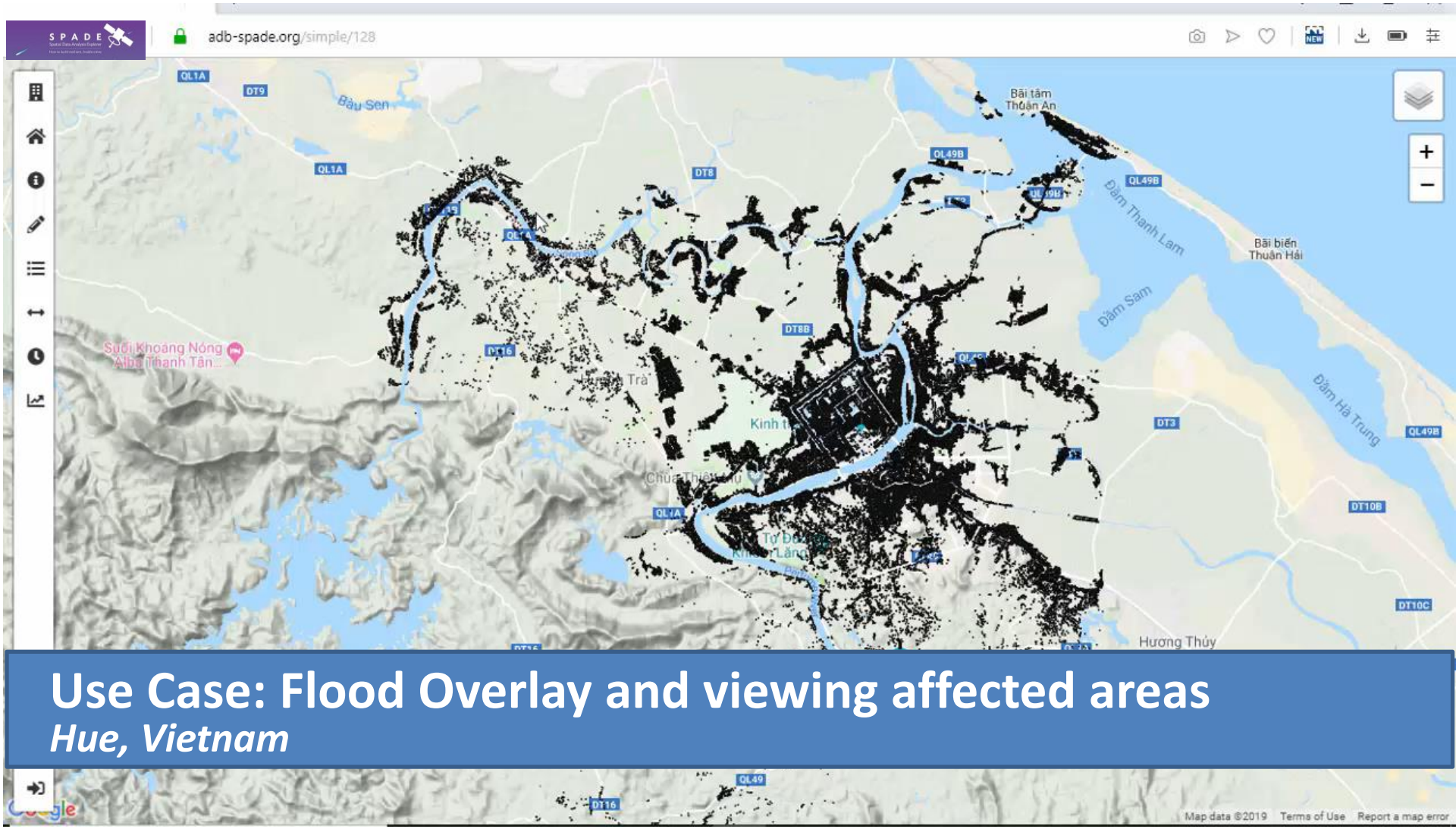
Integrated system enables queries, analysis, and visualization of impacts

Data is presented as a website that is user-friendly and accessible on computers and mobile phones

Spatial Data Analysis Explorer

SPADE overview





Use Case: Flood Overlay and viewing affected areas

Hue, Vietnam