Demand driven data services for humanitarian aid

UN-SPIDER / ZFL Regional Virtual Expert Meeting
"Space-based Solutions for Disaster Risk Management and Emergency Response for Southern Africa"

Gina Schwendemann & Anne Schneibel
German Aerospace Center
Georisks and Civil Security
Center for Satellite Based Crisis Information

Wissen für Morgen

Demand Driven Data Services for Humanitarian Aid

Data requirements
In the case of a
crisis event

⏱ UP-TO-DATE   📊 DIFFERENT SCALES   🧩 MULTI-SOURCE

🏅 RELIABLE   🔓 EASILY ACCESSIBLE   👥 USER-ADAPTED
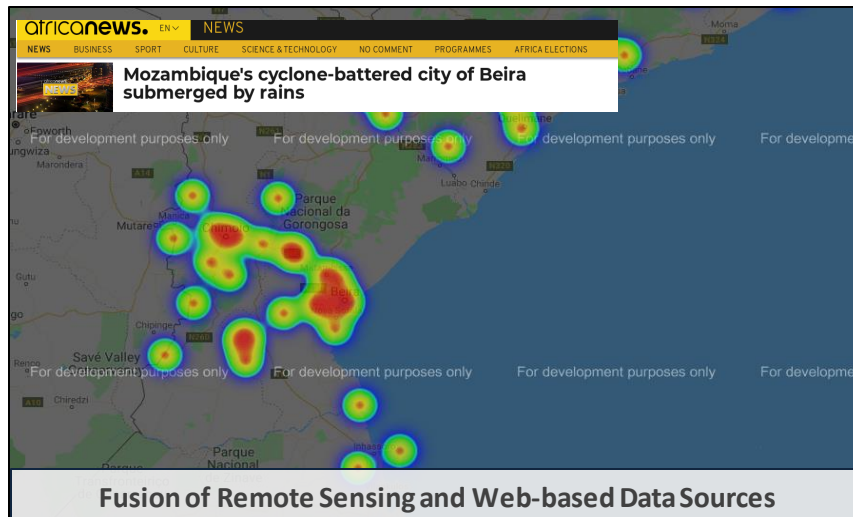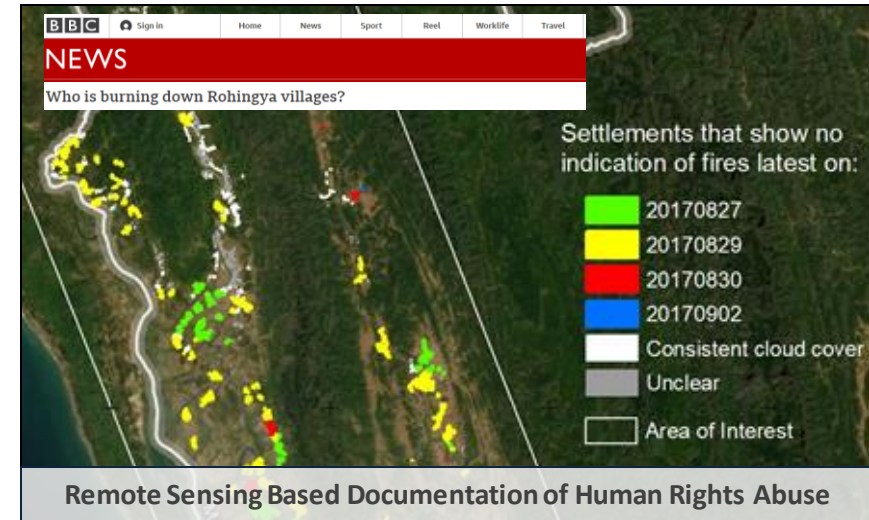
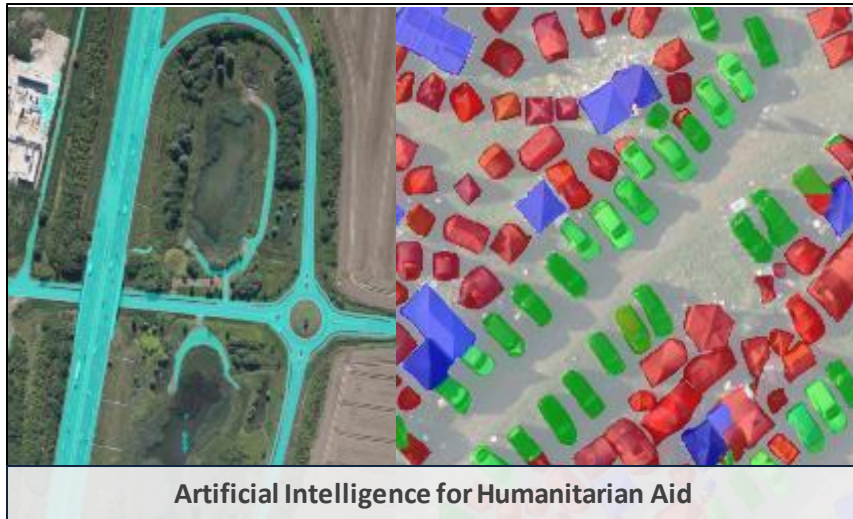**Crisis information**   **Demonstrations**   **Prototypes**

Key Aspects

Artificial Intelligence for Humanitarian Aid

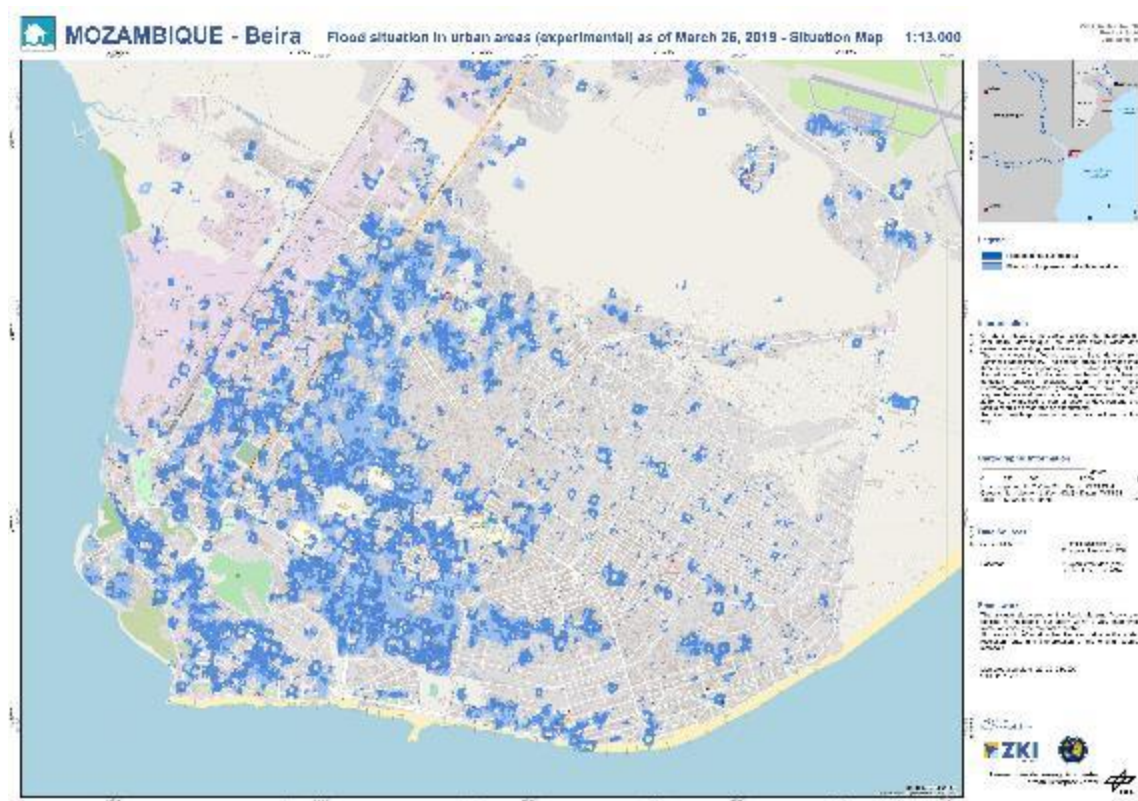**Remote Sensing Based Documentation of Human Rights Abuse**

Fusion of Remote Sensing and Web-based Data Sources

Automatisation of Crisis Information Exchange

Key Aspects

Artificial Intelligence for Humanitarian Aid

Remote Sensing Based Documentation of Human Rights Abuse

Fusion of Remote Sensing and Web-based Data Sources

Automatisation of Crisis Information Exchange

Cyclone Idai Mozambique

- Idai hit **Mozambique, Zimbabwe, and Malawi** in Spring 2019

- On 15 March 2019, Idai made **landfall near Beira**, Mozambique

- The cyclone caused **more than 1,300 fatalities**

- Idai is therefore recorded as **deadliest tropical cyclone** recorded in the South-West Indian Ocean basin.

MODIS image captured by NASA's Aqua satellite.
Cyclone Idai approaching Mozambique on 14 March 2019

MOZAMBIQUE - Central Sofala   1:180,000
Total flood duration between March 15 and March 25, 2019 - Situation Map

Artificial Intelligence for Humanitarian Aid

- Automated detection and **damage assessment** of infrastructure and buildings

- **Combine the expertise** from DLR and Humanitarian organizations, i.e. WFP

- **Provide tools** to interpret satellite and drone imagery in the case of emergency

Before   **After**

| No damage |
| Minor damage |
| Major damage |
| Destroyed |

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Artificial Intelligence for Humanitarian Aid

Predictions from post-event satellite image

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Artificial Intelligence for Humanitarian Aid
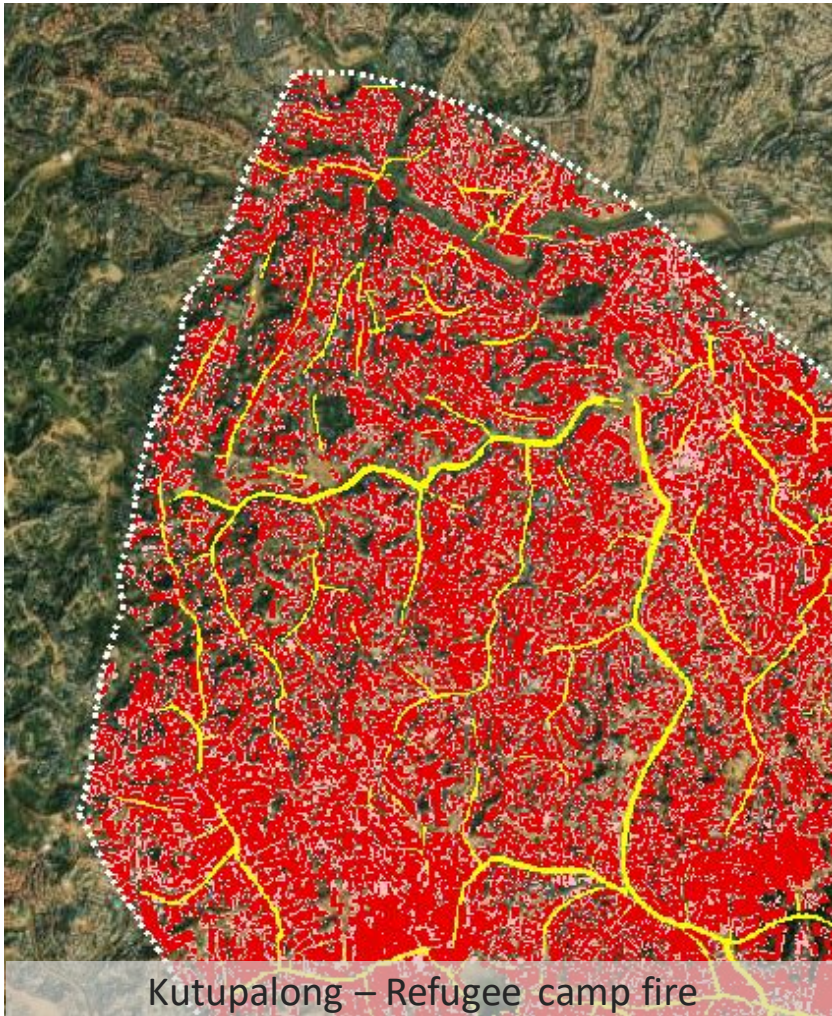
Kutupalong – Refugee camp fire

Beirut – Warehouse explosion

Moria – Refugee camp fire

Using web data to increase information in crisis events

- **Detect hot spots** from keyword, locations, descriptions of geographical settings
- Detection of **unusual increase** for certain keywords or places
- Application:
  - Early detection of crises
  - Complementation of information
  - Satellite tasking
- Filtering and classification of Twitter and news data
- Aggregation and visual presentation
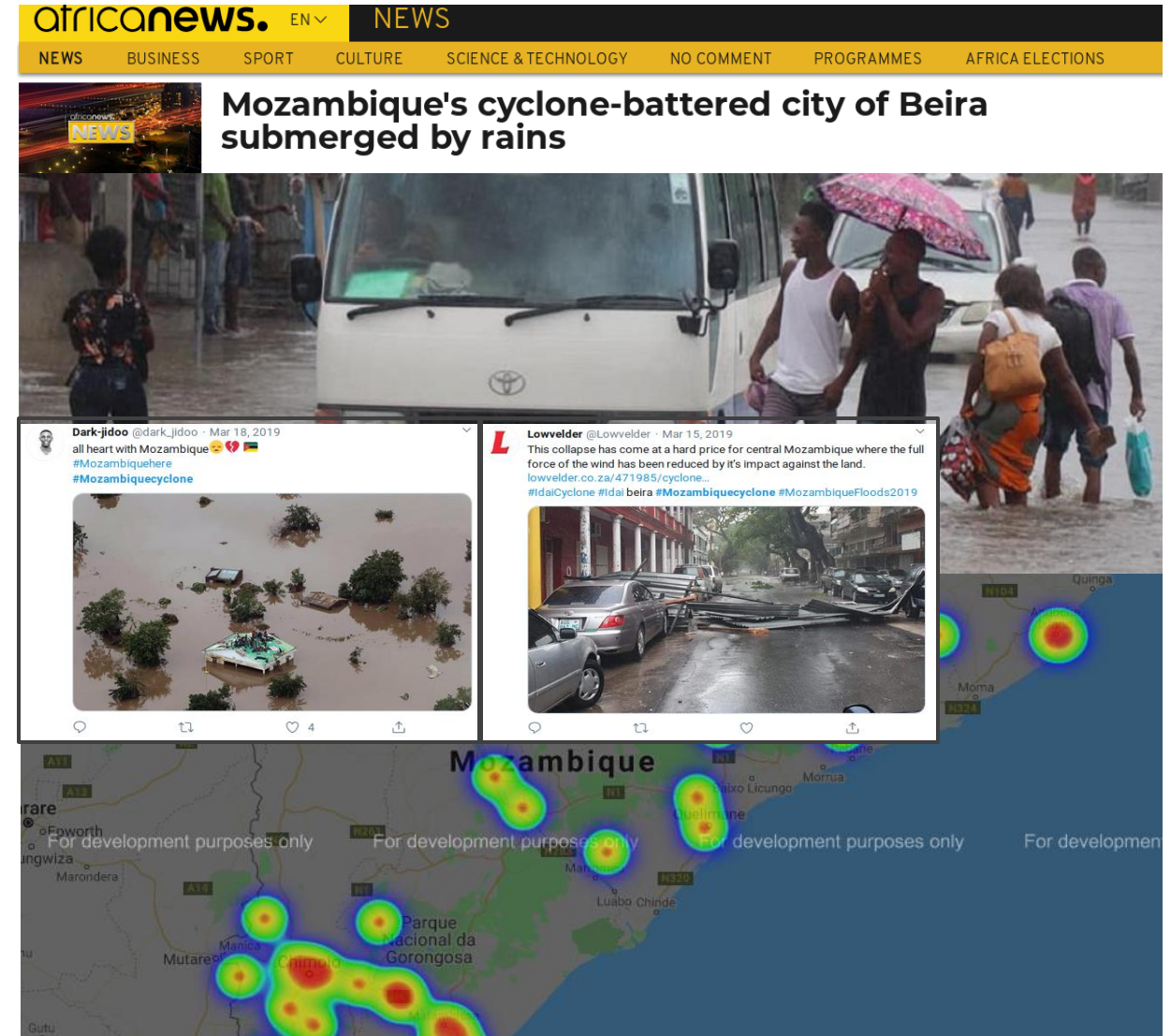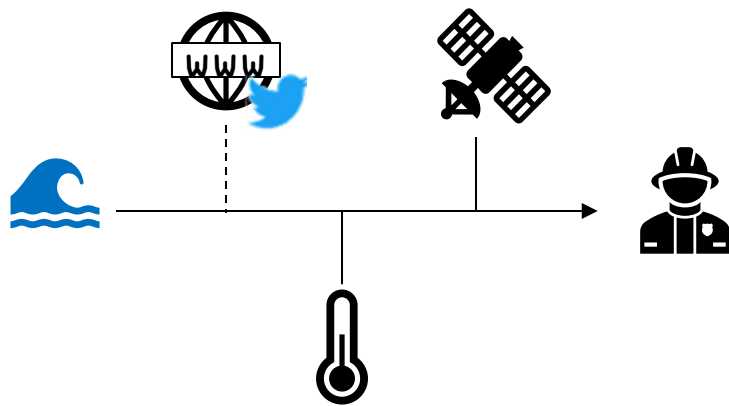
Using web data to increase information in crisis events

(Source: DLR-DW)

Monitoring and automatic provision of **flood information** for the coastal area of Mozambique

S-1/S-2 Processor

Flood analysis

Transfer & Ingestion

Publication EOC Geoservice

ZKI Mapping (optional)

ZKI Webserver

In case of ZKI activation

Initial GeoRSS-Feed

Update GeoRSS
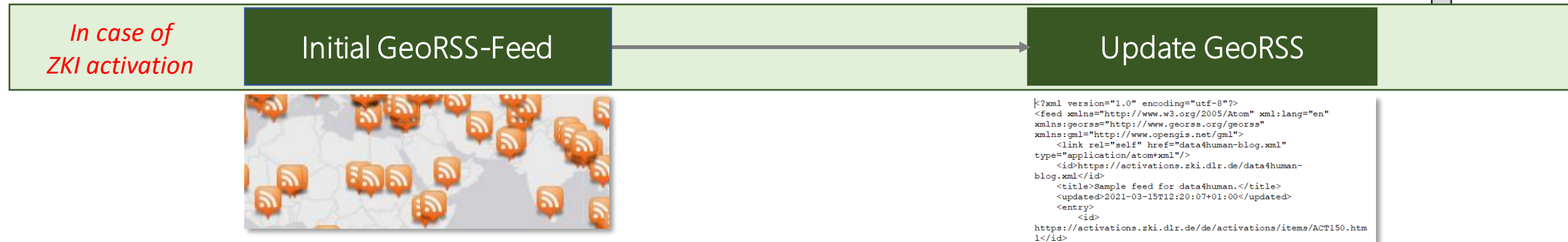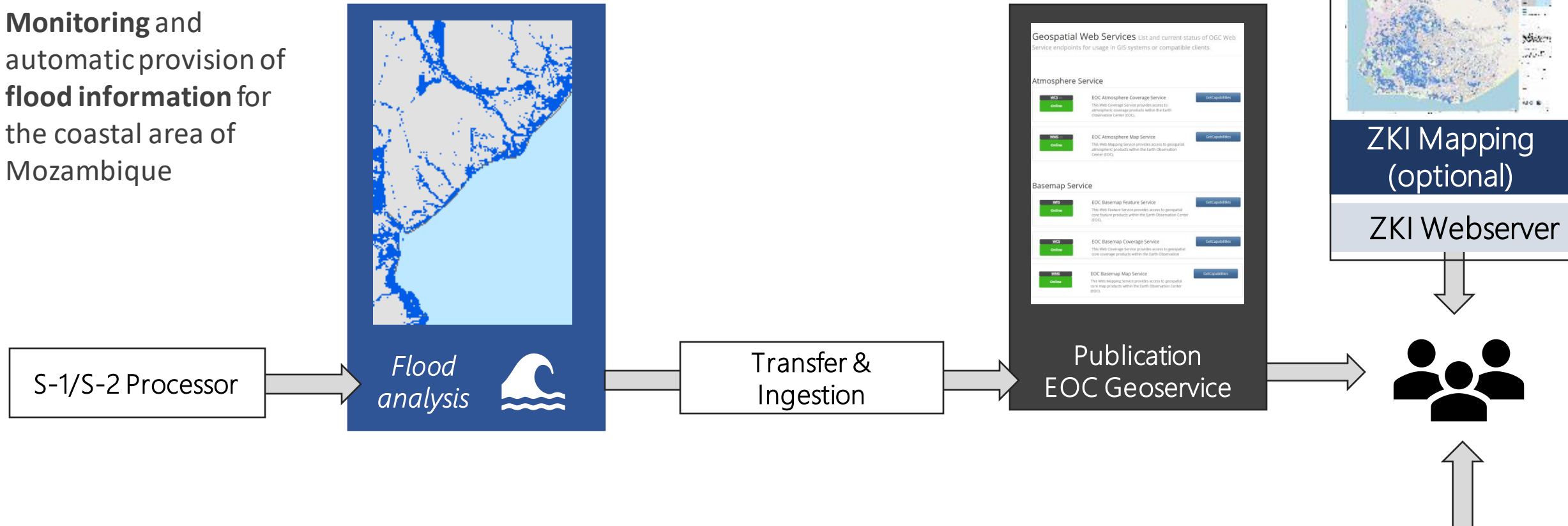
Thank you very much for your attention