

Flood mapping and monitoring

DOMAIN: Surface Water

Content

This EO service is dedicated to the identification, mapping and analyses of flood events and flooding potential. It supports a broad range of services comprising the continual monitoring of flooding, the delineation of historical flooding events, the identification of flooded or unflooded (i.e. safe). By integrating soil moisture data with precipitation data within river basins, system conditions conducive for flooding can be determined and used as a vital input for the forecasting of potential flooding.

Relevance

Ongoing climate change undoubtedly affects the hydrological cycle leading to the occurrence of more extreme weather events and an increased potential for severe flooding in many parts of our planet. As flooding has a huge impact on human settlements and economic assets, an understanding of associated risks and their mitigation is absolutely necessary. The EO flood mapping and monitoring service provides a basis for assessing fluvial discharge, hazard zoning, flood risk assessments, mitigation measures and planning of urban and critical infrastructure.

This service is relevant for e.g.

- Hydrological modelling and river navigation
- Flood risk management
- Historical flood event analyses
- Water reservoir storage estimations
- Water management

Input data and methods

Various input datasets will be considered for flood mapping and monitoring. Beside earth observation satellite data from various sensors as Sentinel-1, multispectral image data from Sentinel-2, Sentinel-3 and Landsat, as well as MODIS, SMAP and SMOS. Also other in-situ and derived products can be used, as well as precipitation data from TRMM and Multi-sensor products from the National Snow and Ice Data Centre. The mapping approach is based on matured pixel-based spectral index thresholding methods fusing both optical and radar (SAR) imagery where possible.

Product examples

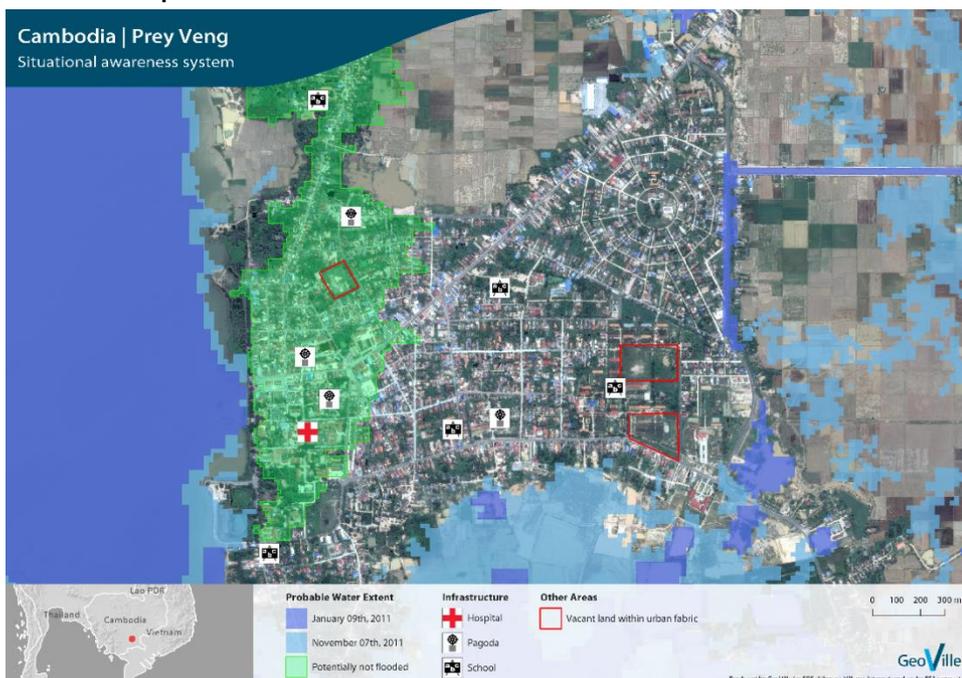


Figure 1: Flood risk assessment of potential building sites in Cambodia.

Technical specifications

SPATIAL COVERAGE

100's of km²

DATUM / PROJECTION

User defined

FORMAT

Data: GeoTiff

Analysis: XLSX or PDF

SPATIAL RESOLUTION

10m – 30m

TEMPORAL COVERAGE

1980's - now

TEMPORAL RESOLUTION

Event-based, Monthly -
Seasonal

THEMATIC ACCURACY

>85% overall accuracy

POSSIBLE OUTPUTS

- Time series maps of surface water body extents
- Historic flood extent maps
- Identification of flooding potential