

# Soil erosion potential mapping

DOMAIN: Soil

## Content

Satellite Earth Observation (EO) is a powerful technique for identifying and assessing the extent and severity of water-related soil erosion over large areas in a consistent and repeatable manner. EO information can be used to establish a baseline, to track changes over time and to monitor soil erosion mitigation measures. The water-based soil erosion product is useful for a screening of areas that are prone to erosion by their land cover, soil, terrain and climatic setting giving an overview over the extent and severity of areas with an elevated soil erosion potential. The potential of erosion is linked to environmental factors of a site, such as terrain slope, soil type, land cover/use and amount of precipitation. With satellite Earth Observation imagery and advanced GIS analyses we can determine these parameters and combine them to a map accompanied by multiple statistical analyses possibilities.

## Relevance

Climate change is a driving force behind soil erosion due to its effect on precipitation, growing conditions, vegetation types and land cover. The evaluation of erosion risk enhances understanding of area characteristics and can support land use planning and sustainable land management, thus providing a baseline for various utilisation purposes. Applications related to sustainable land and water management (SLWM) may assist in the prioritization of restoration or rehabilitation measures and monitoring of critical locations. The service could be combined with land degradation assessments to obtain a more complete picture of the condition of the land.

This service is relevant for e.g.

- Monitoring soil erosion mitigation measures
- Sustainable land and water management
- Land Use Planning

## Input data and methods

Input data comprises various datasets such as precipitation data (TRMM), soil information data (Harmonised World Soil Database, HWSD), DEM information (STRM) and landcover/landuse information derived from Landsat and Sentinel-2 multispectral sensor data.

## Product examples

## Technical specifications

### SPATIAL COVERAGE

100's of km<sup>2</sup>

### DATUM / PROJECTION

User defined

### FORMAT

Data: GeoTiff

Analysis: XLSX or PDF

### SPATIAL RESOLUTION

10-250m

### TEMPORAL COVERAGE

Status

### TEMPORAL RESOLUTION

Monthly - Seasonal

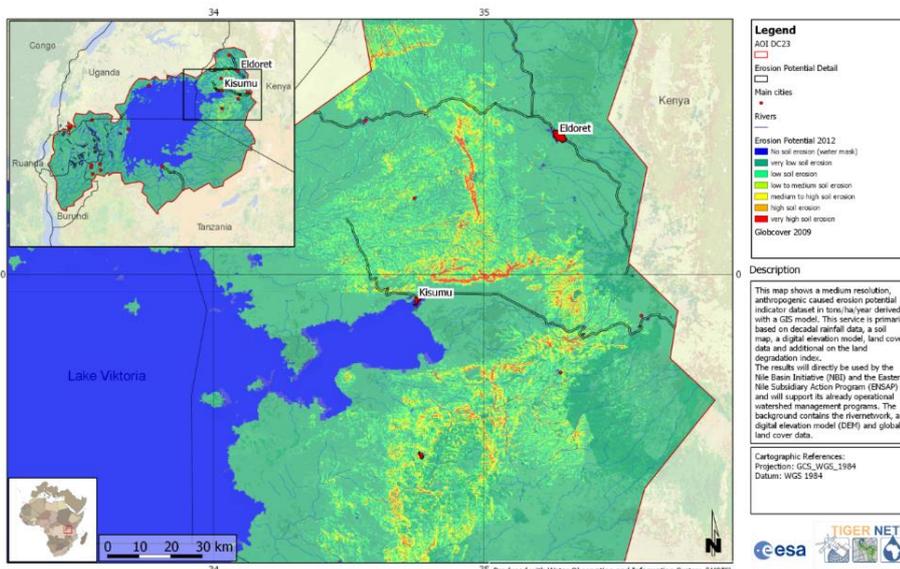
### THEMATIC ACCURACY

>85% overall accuracy

### POSSIBLE OUTPUTS

- Soil erosion potential maps

## Erosion Potential 2012 - Nile Basin Initiative



**Fig. 1:** The map shows an anthropogenic caused erosion potential indicator dataset in tons/ha/year. Source: GeoVille for ESA TIGER NET project. The product is derived with a GIS model and includes decadal rainfall data, soil information, digital elevation model, land cover information and additional information on land degradation index.

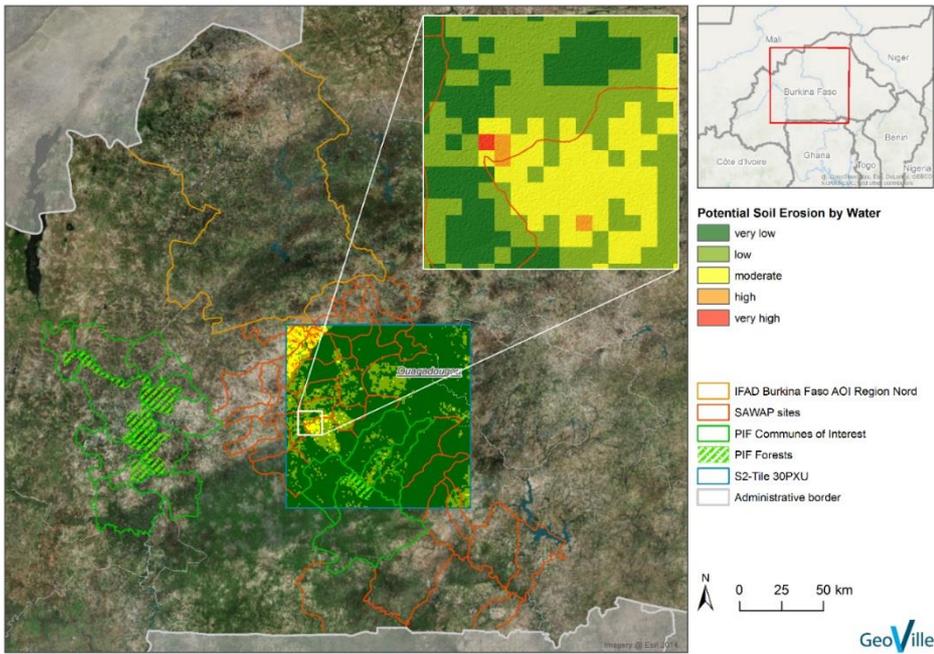


Figure 2: Potential water-driven soil erosion in central Burkina Faso.