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ETHIOPIA

Geographic Base Map

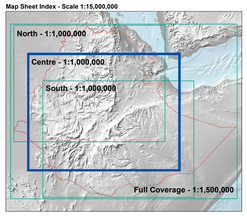
Tile Centre Overview Map Series 1:1,000

Map Sheet # 2 Benishangul/Amhara/Addis Abeba

Annual Precipitation 2017

Precipitation Data based on CHIRPS Model / 6km Grid

Map Sheet Index - Scale 1:15,000,000



1:1,000,000

0 10 20 40 60 80 100 km

UTM Grid: 250 km Interval
Geographic Grid: 5 Degree Interval
Projection: Universal Transverse Mercator (UTM)
UTM Zone: UTM2 37 (UTM2 36 & 38 projected)
Meridian of Origin: Equator
Horizontal Datum: WGS84
Vertical Datum: Mean Sea Level
Spheroid: WGS84

UNIVERSITÄT BERN
CDE CENTRE FOR DEVELOPMENT AND ENVIRONMENT
Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra
Federal Department of Foreign Affairs FDFA
Swiss Agency for Development and Cooperation SDC
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WATER & LAND RESOURCE CENTRE

Legend

Administration
- National Border

Settlement
- Region capital
- Large settlement
- Medium settlement

Infrastructure
- Airport
- Runway
- Meteo station
- Gauging station
- Health post
- Dam

Precipitation Distribution
- < 200 mm
- 200 - 400 mm
- 400 - 600 mm
- 600 - 800 mm
- 800 - 1'000 mm
- 1'000 - 1'200 mm
- 1'200 - 1'400 mm
- 1'400 - 1'600 mm
- 1'600 - 1'800 mm
- 1'800 - 2'000 mm
- > 2'000 mm

Transport
- Railway
- Transnational road
- Primary road
- Secondary road
- Tertiary road
- Track
- Path
- Ressidential road
- Railway under construction

Surface Water
- Lake
- Episodic lake

Drainage
- Seasonal river (cat. 4)
- Perrenial river (cat. 5)
- Main river (cat. 6)
- Stream (cat. 7)
- Large stream (cat. 8)

Topography
- Mountain peak
- Contour lines (500m interval)

How to read the "Annual Precipitation Map 1:1,000,000/1:1,500,000"

A variety of global spatial interpolation models for rainfall estimates (e.g. TRMM: Tropical Rainfall Measurement Mission; GPM: Global Precipitation Measurement; CHIRPS: Climate Hazards Infrared Precipitation with Stations) are freely available at the global level. For Ethiopia, however, rainfall patterns are strongly influenced by topography and the monsoon regime. Strong deviations from the precipitation estimates are therefore quite common. In preparation of the map, the geostatistical interpolation model (CoKriging) was used to validate the gridded models for best fit regarding annual average rainfall estimates for Ethiopia. A cross-validation based on 107 long-term monthly NMAE station data (National Meteorological Agency of Ethiopia), terrain data (altitude, aspect, slope), NDVI and temperature data resulted in a best RASE fit (error of differences between values predicted and observed) by using CHIRPS geospatial modelling framework. The model combines 0.05 degree resolution satellite imagery with in-situ station data to create gridded rainfall time series for trend analysis and the seasonal drought monitoring.
For improved reading, the map contains various geographic feature classes derived from a wide range of individual data sources: Open Street Map data from https://osmaxx.hu/, terrain features (e.g. mountain peaks, contour lines, hillshades) derived from https://www.eoc.jaxa.jp/ALOS/en/aw3d30/index.htm. Please ignore the slivers along the model boundaries and use the scale bar for measurements on the map when resized to scales other than the original A0 pdf-format! The detailed 1:1,000,000 or 1:500,000 Thematic Overview Map Series best suits the needs of regional/national project management and policy advice.

MapServer technology

The MapServer Ethiopia platform builds on ESRI's ArcGIS Enterprise software components for Windows. From the MapServer Ethiopia HTML Website with its three sections, users directly enter ESRI's portal technology with WebGIS apps developed using Web AppBuilder and AppStudio for ArcGIS. ArcGIS Desktop 10.6.1 and Data Driven Pages were used to compose the pre-produced maps of section 1 and ArcGIS Pro 2.2 was deployed for publication of layers in the desktop mapping app of section 2.

Geospatial information

National spatial data infrastructure (NSDI) plays a significant role in the development of Ethiopia's fast-growing economy, but it contributes just as much to sustainable use of natural resources, infrastructure planning, and efficient management of food crises. **Maps are means of visual communication** and foster understanding of complex problems. They are containers of data, show spatial patterns, enable geographic analysis, and contribute to the UN's "data revolution" initiative. It is common knowledge that people retain 80% of what they see, 20% of what they read, and 10% of what they hear. Maps and visuals are understood a thousand times faster than text, and content with visuals gets 94% more total views on the Internet. This makes maps an ideal means of development and communication on all levels.

The MapServer Ethiopia project

MapServer Ethiopia is a web-based open-source platform for the dissemination of geospatial data maps and information about Ethiopia. The website contains three main web services that enable **(1) mapping based on pre-produced maps, (2) online mapping of selected information layers, and (3) open geospatial data download.** The MapServer Ethiopia data platform and website are intended to improve mapping and spatial understanding in the context of project management, natural resources governance, humanitarian aid work, and academic education.
The MapServer Ethiopia project is part of the activities of the Water and Land Resource Centre (WLRC) to improve data sharing and dissemination in support of land and water resources management. The MapServer Ethiopia is funded by the Swiss Agency for Development and Cooperation (SDC).

The Water and Land Resources Centre

The Water and Land Resource Centre (WLRC) in Addis Abeba, Ethiopia www.wlrc-eth.com was established by the Centre for Development and Environment, University of Bern, Switzerland www.cde.unibe.ch in 2011 as an institution associated to Addis Abeba University. Since its inception the centre systematically monitors, collects, integrates, and disseminates data and knowledge in support of sustainable management of natural resources. Today, the centre builds on long-standing achievements to reduce land degradation, improve livelihoods in rural areas and serves as regional knowledge hub and cross-scale dialogue in land governance.

Origin of map data

Building on **EthioGIS-3**, the new (2018) release of the National Geospatial Database System for Ethiopia, the MapServer Ethiopia www.mapserver-ethiopia.org aims at providing a web-based gateway for open and non-authoritative geospatial information for the Federal Democratic Republic of Ethiopia. The mapping services are designed to provide improved decision support for development actors, government authorities, NGOs, international organizations, and the civil society. The MapServer Ethiopia is part of WLRC's Water and Land Resources Information System (WALRIS) and adds a portal for environmental and socio-economic data, data sharing facilities and server capabilities for registered user through www.walris.wlrc-eth.org.
Beside of WLRC's own geospatial data foundation, the main MapServer Ethiopia product lines are scalable on- and offline mapping services based on a wealth of free and open geodata providers

Disclaimer

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Reference

Please note that you must indicate the source of geospatial data or map layers when using this information in other products, as follows: WLRC Ethiopia and CDE, University of Bern, Switzerland. MapServer Ethiopia: Thematic and Geographic Overview, Field and Base Map Series [map] 1:100,000-1:1,500,000. Release 3.0/December 2018.
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