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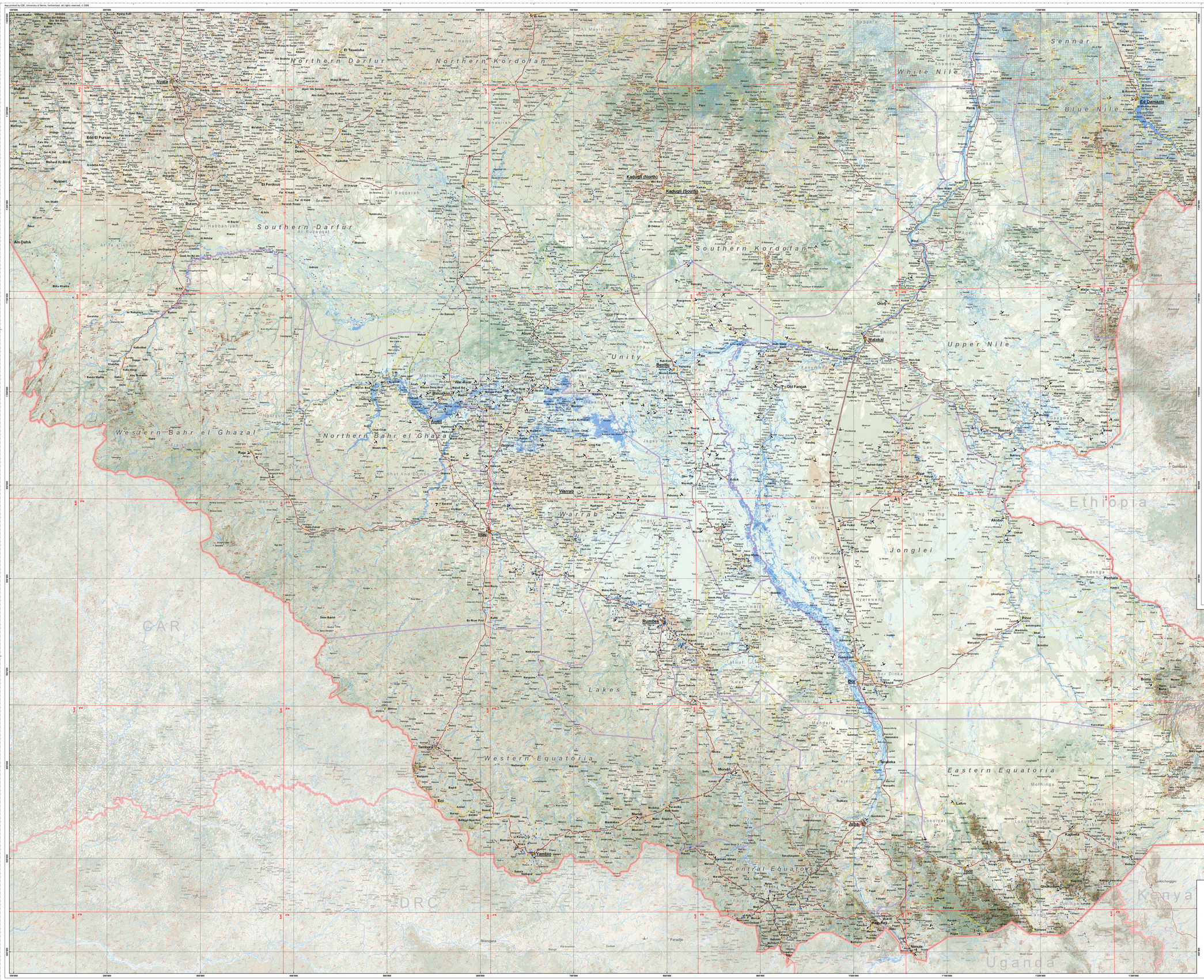

Topographic Map Series

SOUTHERN SUDAN

Topography

Geographic Overview

1:1'000'000

0 25 50 75 100 km

Raster Resolution: 90 meters
UTM Grid: 100 kilometer interval
Geographic Grid: 1 degree interval
Projection: Universal Transverse Mercator (UTM)
UTM Zone: UTMZ 35
Meridian of Origin: 27 degrees 00 minutes E of Greenwich
Latitude of Origin: Equator
Horizontal Datum: WGS84
Vertical Datum: Mean sea level
Spheroid: WGS84

Disclaimer:
The boundaries (north/south, state and international), denominations, and any other information shown on this map do not imply any judgment about the legal status of any territory, or constitute any official endorsement or acceptance of the boundaries on the part of any Government. The publisher, the Centre for Development and Environment (CDE), is not responsible for claims by any third party and assumes no liability for any direct, incidental, or consequential damages whatsoever.

Project information

The Southern Sudan Topographic Overview and Topographic Base Map Series (Release 1) are part of a **Capacity Development Programme in Geoinformation Management** funded by the **Swiss Agency for Development and Cooperation (SDC)** to support the Government of Southern Sudan. The geospatial database covers the entire area of the States of Southern Sudan. The map series consists of five completely revised, updated and enhanced map sheets 1:500,000 and a single map sheet 1:1 Mio. The geographic database consists of field data provided by GoSS- and UN-agencies (e.g. UNMI, UNDESA, UNJLC, UNICEF, etc.), a compilation of thematic layers derived from satellite imagery and geospatial models, all developed and composed by the **Centre for Development and Environment (CDE)**, University of Bern, Switzerland.

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Map reference: Please note that when information is used in other mapping products, the source of the map must be credited or cited: CDE, University of Bern, Southern Sudan Topographic Overview and Base Map Series (map) 1:500.000 and 1:1 Mio. Release 2, 1 December 2008. Bern, CDE, 2008.

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Settlements
- State capital
- Principal town
- Secondary town
- Administrative town
- Settlement (verified)
- Settlement (not verified)
- Built - up area
- Vulnerable area (camp, idp)
- School

Geographical features
- Hills and mountains

Infrastructural features
- Airstrip (CDE)
- Main road (CDE)
- Gravel road (CDE)
- Track (CDE)
- Street (CDE)
- Railway (CDE)
- Bridge
- River crossing

Topography
- Spot height
- Main contour (100m interval)
- Intermediate contour (50m interval)
- Supplementary contours (25m interval)

Elevation classes
- below 400 m
- 401 - 450 m
- 451 - 500 m
- 501 - 550 m
- 551 - 700 m
- 701 - 900 m
- 901 - 1'300 m
- 1'301 - 1'800 m
- 1'801 - 2'500 m
- above 2'500 m

Political boundaries (not authoritative)
- National boundary
- State boundary (tentative)
- County boundary (tentative)

Tribal area
- Dinka Nomadic or tribal area

Hydrological features
- Main river
- Seasonal river
- Occasional river
- Episodic river
- Dry river
- Canal (wet or dry)
- Canal (unfinished)
- Pipeline
- Borehole (machine / hand drilled)
- Culvert
- Pond / Pool
- Reservoir
- Spring
- Waterhole
- Well
- Wetland

Land cover classes
- Sparse vegetation (single shrubs, grassland)
- Shrubby vegetation (scrubland)
- Dense vegetation (groves, mature crops)
- Agriculture (irrigated, rainfed)
- Settlement area (built-up area)
- Outcrop (basement, volcanic)
- Wetlands (marshes, swamps)
- Surface Water (perennial waterbodies)

Data sources

Most of the line and point features were added based on satellite image interpretation.
Satellite sensors used: Terra/ASTER v1or data for 2002-2006, Landsat ETM+ (7/42), EarthSat NaturalVue data of 2000, and Digital Globe QuickBird 2 imagery (2003-2005).
Internet sources: Geonetwork of SDI (Sudan Interagency Mapping) www.unsudanig.org, UNOCHA, UNICEF, UNJLC, UNMIS, UNHAS, WFP, Global Name and Gazetteer data.
Map sources: Eastview Information Services (EIS), Minneapolis, www.cartographic.com (mainly Russian Military Topographic Maps, 1:200k and 1:100k).

Data compilation

Georeferencing of spatial data was obtained through image-to-image and vector-to-image rectification. Except for the non-sloping area, NASA's Shuttle Radar Topography Mission (SRTM) 90m data was used for the orthorectification of satellite imagery and the development of the digital terrain and drainage model. The DTM has a 90-meter resolution and shows contours (50 m intervals), slopes, aspects, spot heights and shaded relief. In flat areas the DTM was calculated based on spot heights and contours from map sources. Ground control points were not applied. Average geometric distortion is estimated to be below +/- 500 m. Wetlands, forest, bush/shrub and agricultural areas were derived from Landsat ETM+, Terra MODIS (VCF, EVI), and FAO AfriCover data (agriculture). Land cover classification and change detection algorithms were not applied. Raster modelling, geodata compilations, and digital cartography were done with ESRI ArcGIS 9.3 and Leica ERDAS IMAGINE 9.2. Minor settlement, tracks and foot path features were extracted based on high resolution imagery (only partial coverage).