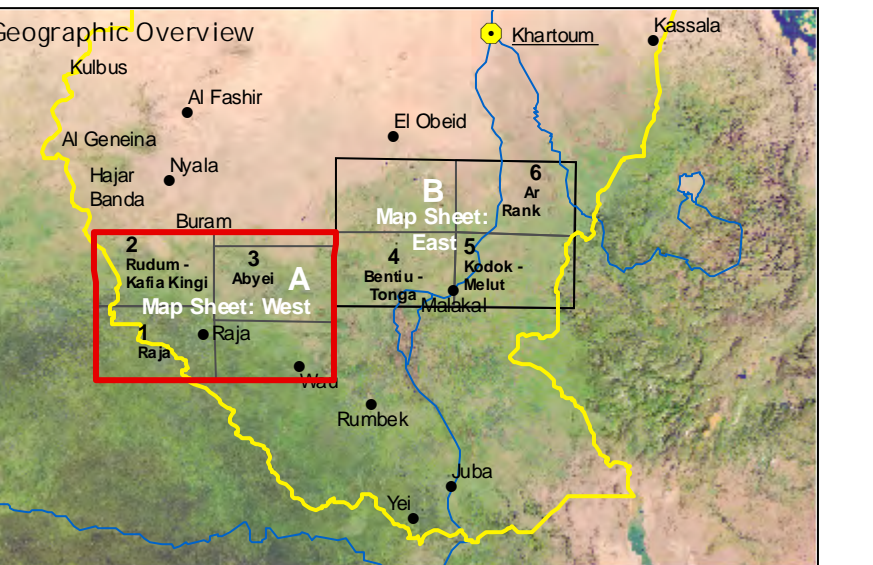


SUDAN

Topographic Overview Map North/South Border Map Series

Map Sheet: West South Darfur, Western- Northern Bahri el Ghazal West Kordofan, Warrap



1:500'000
0 10 20 30 40 50 km

Raster Resolution: 90 meters
UTM Grid: 50 kilometer interval
Geographic Grid: 1 degree interval
Projection: Universal Transverse Mercator (UTM)
UTM Zone: 37N
Latitude of Origin: 27 degrees 00 minutes E of Greenwich
Longitude of Origin: 31 degrees 00 minutes E of Greenwich
Horizontal Datum: WGS84
Vertical Datum: Mean sea level
Spheroid: WGS84

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- | | |
|------------------------------------------|------------------------------------------------|
| Settlements | Political boundaries |
| ● State capital | — National boundary |
| ● Principal town | — Geographical features |
| ● Secondary town | — Hill or mountain |
| ● Administrative town | — Tribal area |
| ● Settlement (verified) | — Dinka / Nomatic or tribal area |
| ● Settlement (not verified) | |
| Hydrological features | |
| ▲ Built-up area | — Main river |
| ▲ Mineable area (camp, 65) | — Seasonal river |
| ▲ Schools | — Occasional river |
| Infrastructure features | — Dry river |
| — Airstrip (CDE) | — Canal (wet or dry) |
| — Main road (CDE) | — Canal (unfilled) |
| — Gravel / Dirt road (CDE) | |
| — Track (CDE) | |
| — Street (CDE) | |
| — Railway (CDE) | |
| — Main road (ES) | |
| — Gravel road (ES) | |
| — Street (ES) | |
| — Dirt road or track (ES) | |
| — Bridge | |
| — River crossing | |
| | — Pipeline |
| | — Borehole |
| | — Irrigation hand (filled) |
| | — Culvert |
| | — Pond / Pool |
| | — Reservoir |
| | — Spring |
| | — Well |
| | — Wetland |
| | — Wetland |
| Topography | Land cover classes |
| — Spot height | — Sparse vegetation (single shrubs, grassland) |
| — Main contour (100 m interval) | — Shrubby vegetation (scrubland) |
| — Intermediate contour (50 m interval) | — Dense vegetation (forest, mature crops) |
| — Supplementary contours (25 m interval) | — Agriculture (irrigated, rainfed) |
| | — Settlement area (built-up area) |
| | — Outcrop (basement, volcanic) |
| | — Wetlands (marshes, swamps) |
| | — Surface Water (perennial waterbodies) |
| Elevation classes | |
| — below 400 m | |
| — 401 - 500 m | |
| — 501 - 599 m | |
| — 600 - 699 m | |
| — 700 - 799 m | |
| — 800 - 899 m | |
| — 900 - 999 m | |
| — 1,000 - 1,099 m | |
| — 1,100 - 1,199 m | |
| — 1,200 - 1,299 m | |
| — 1,300 - 1,399 m | |
| — 1,400 - 1,499 m | |
| — 1,500 - 1,599 m | |
| — 1,600 - 1,699 m | |
| — 1,700 - 1,799 m | |
| — 1,800 - 1,899 m | |
| — 1,900 - 1,999 m | |
| — 2,000 - 2,099 m | |
| — 2,100 - 2,199 m | |
| — 2,200 - 2,299 m | |
| — 2,300 - 2,399 m | |
| — 2,400 - 2,499 m | |
| — 2,500 m and above | |

Disclaimer:
The boundaries, 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 (CDE) assumes no liability for any direct, incidental, special or consequential damages whatsoever. The publisher (CDE) is not responsible for claims by any third party.

Project information
The present map was prepared for the **North-South Border Commission**, whose work is in progress as part of the implementation of the Comprehensive Peace Agreement signed on January 9, 2005. The map sheet is part of a series of maps 1:500,000, 1:250,000 and 1:100,000 covering the tentative border area of the northern and southern part of Sudan. The map and the geographical database were prepared by the Centre for Development and Environment (CDE) of the University of Bern, Switzerland. Map authors: Hissi Christoph, Krauer Jörg, Hergarten Christian, Gampert Ursula, Ehrhartwiler Emanuel, Geoprocessing Unit, Centre for Development and Environment, Institute of Geography, University of Bern.

Technical data sources
Imagery source: Most of the line and point features (mainly roads, tracks, pipelines, air strips, as well as resettled villages, water surfaces and meanders) were added, based on satellite image interpretation by CDE.
Satellite sensor used: Terra / ASTER-vnr data for 2002-2006, Landsat ETM+ 7/4/2 and Landsat TM5 5/1/1 data for 2000 and Digital Globe QuickBird 2 imagery for 2002-2005.
Internet sources: Geonetwork of UNOCHA, www.unocha.org, UNICEF, UNICEF, UNAMS, UNAMS, WFP, DHS data on CERHA server, FAO AGIS cover project, Global Name and Gazetteer data, Global Wetland Data (GLWD), Google Earth Pro, NCR North-South Sudan, and individual communications within the international aid community.
Map sources: Cartview Information Services (ES), Minneapolis, USA
www.cartview.com (mainly Baobab Military Topographic Map 1:200,000 and 1:100,000 Series).
Other data sources: In particular the Topographic Map Series 1:250,000 published by the Sudan Survey Department 1934-1937 partly revised 1976).

Data compilation
Georeferencing of spatial data was obtained through image-to-image and vector-to-vector rectification. Layers for the non-stippled area, NANA's Source-Buffer Topography Mission (SBTM) data were used as the principal reference for topographical features and the development of the digital terrain and the highly detailed drainage model. The DTM has a 90-meter resolution and shows contours (5m intervals, additional levels 100m intervals). Slope, aspect, spot heights and a shaded relief. In flat areas the DTM was calculated based on spot heights and contours from map sources. Contour control points were not applied by image rectification. Average geographic distortion is estimated to be below +/- 100 m. Wetlands, forest, bush and scrub cover were derived from Landsat ETM+, Terra MODIS (V2 and V1), and FAO AGIS cover data (agricultures). Information was classified and cross-validated. In situ verification of data was not applied. Raster modeling, geodesic compilation, and digital cartography were done with ESRI ArcGIS 9.2 and Leticia ERDAS IMAGINE 9.1. Minor settlement, track and path features were extracted based on satellite data provided by Google Earth Pro 4.2.7.
The CDE (University of Bern) would welcome any information that could improve this map. For comments and suggestions, please contact the CDE at info@unibe.ch. Digital maps, pdf, 8 jpg files, and further project information are accessible on CDE's Sudan Map Download Server at <http://www.cde.unibe.ch>.

Please note that when information is used in other mapping products, the source of the map must be credited as sheet 028, University of Bern, Sudan Topographic Overview Map (map) 1:500,000, Draft Release 1.0/December 2007, North/South Border Map Series, Bern, CDE, 2007.

