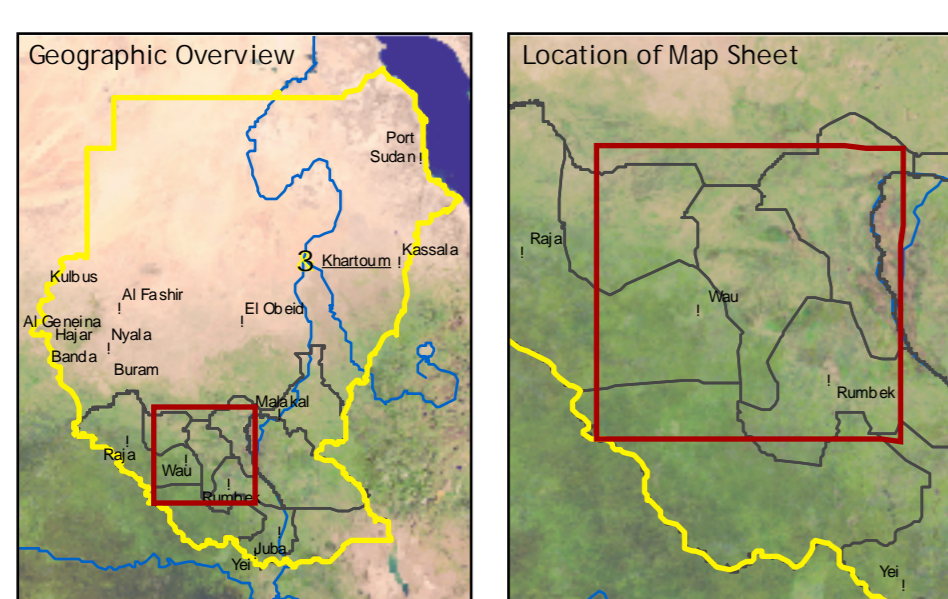


Southern Sudan State Map Series

Warrap State

Sudan
1 : 500'000

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3003 Berne, Switzerland



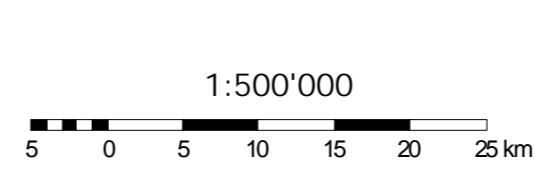
- Political boundaries**
- State boundary (tentative)
 - National boundary
 - North-South demarcation line 1956 (tentative)
- Topography**
- Spot height
 - Main contour (10m interval)
 - Intermediate contour (40m interval)
 - Supplementary contour
- Settlements**
- State capital
 - Principal town
 - Secondary town
 - Administrative town
 - Settlement (verified)
 - Settlement (not verified)
 - Built-up area
- Geographical features**
- Hills and mountains

- Infrastructure features**
- Airstrip (CIE)
 - Main road (CDE)
 - Gravel road (CDE)
 - Dirt road (CDE)
 - Street (CDE)
 - Railway (CDE) (non-operational)
 - Bridge (ES)
 - Main road (ES)
 - Gravel road (ES)
 - Street (ES)
 - Dirt road and track (ES)

- Hydrological features**
- Canal (unfurnished)
 - Pipeline
 - Main river
 - Seasonal river
 - Occasional river
 - Episodic river
 - Dry river
 - Canal
 - Lake and riverbed

- Elevation classes**
- below 40m
 - 401 - 450m
 - 451 - 500m
 - 501 - 550m
 - 551 - 700m
 - 701 - 900m
 - 901 - 1300m
 - 1301 - 1700m
 - 1701 - 2500m
 - above 2500m

- Land cover classes**
- Forest
 - Rubland
 - Sparse vegetation
 - Arable land
 - Surface water
 - Wetlands
 - Freshwater marshes and floodplains
 - Rain brackish and saline wetland



Raster Resolution: 90 meters
 UTM Grid: 25 Kilometre interval
 Geographic Grid: 30 minutes interval
 Projection: Universal Transverse Mercator (UTM)
 UTM Zone: UTM 35 (EAF/36 reprojected)
 Meridian of Origin: 27 degrees 50 minutes (central meridian)
 Latitude of Origin: Equator
 Horizontal Datum: WGS84
 Vertical Datum: Mean sea level
 Spheroid: WGS84

Project information
 The present map sheet is composed of field maps (1:250,000) and 1:500,000. The maps and the geodatabase were prepared by the Centre for Development and Environment (CDE) of the University of Berne, Switzerland, with funding from the Swiss Federal Department of Foreign Affairs. The map is being released as a technical contribution to support the humanitarian, peace-keeping and reconstruction efforts in Southern Sudan. Boundaries, town locations, settlement locations and the North-South demarcation line of 1956 shown on this map are not authoritative and should not be considered as such. The CDE (University of Berne) would not be liable for any information that could improve the map. For comments and suggestions, please contact the CDE at info@cdet.uzh.ch.

Data sources
 Most of the line and point features were provided by EarthView Information Services, Minneapolis, USA (ES) based on the Russian Military Topographic Map, 1:200,000 and 1:500,000 Series. Many recent objects (mainly infrastructure, such as roads, pipelines, air strips, as well as resettled villages, water surfaces and meadows) were added, based on satellite image interpretation by CDE.

32/717 Landsat ETM+ data of NASA's GeoCover Program (2000)
 Further sources: Interpolated, CDE data on ES/BA server, UNLCC, UNICEF, UNMAS, FAO AirCover project, Global Name and Gazetteer server, CIA/OD Global Wetland Data, MCD/NDVI South and North, individual communications among the international aid community.

Digital compilation
 Georeferencing of spatial data was obtained through vector-to-image rectification. Except for the non-sloping area, NASA's SRTM data were used as a reference for topographic features and for the development of a digital terrain model (DTM). The DTM has a 90-meter resolution and shows contours, artificial built and shaded relief. In flat areas the DTM was calculated based on spot heights and contours from map sources. Ground truthing and control points were not applied. Average geometric distortion is estimated to be below +/- 150m. Wetlands, forest, built and shrub cover were derived from Landsat ETM+, Terra MODIS (VCI and LVI), and FAO AirCover data (geography). Information was classified and cross-validated. Verification on terrain was not applied. Border modelling, geodatabase compilation and digital cartography were done with ArcGIS 9.1 and Lucra ERSS (IMAGINE 8).

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University of Berne
 Centre for Development and Environment
 Geoprocessing Unit
 Stägerstrasse 3
 CH-3008 Berne, Switzerland
 Internet: www.cde.unibe.ch

CDE centre for development and environment