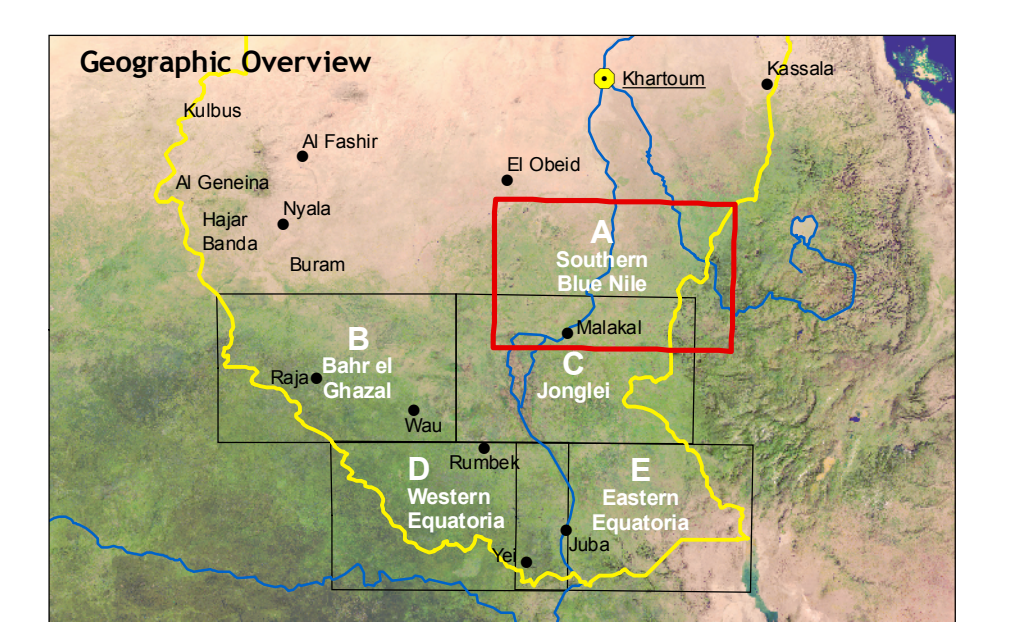


SOUTHERN SUDAN

Topographic Base Map Series
Map Sheet: A Southern Blue Nile



1:500 000
Scale bar: 0 10 20 30 40 50 km
Raster Resolution: 90 meters
UTM Grid: 25 kilometer interval
Geographic Grid: 30 minute interval
Projection: Universal Transverse Mercator (UTM)
UTM Zone: UTM 35
Meridian of Origin: 27 degrees 00 minutes E of Greenwich
Latitude of Origin: 0°
Horizontal Datum: WGS84
Vertical Datum: Mean sea level
Spheroid: WGS84

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cde centre for development and environment
University of Bern
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CH-3012 Bern, Switzerland

- Settlements**
 - State capital
 - Principal town
 - Secondary town
 - Administrative town
 - Settlement (verified)
 - Settlement (not verified)
 - Built-up area
 - Migratable area
 - Scout
 - School
- Political boundaries (not authoritative)**
 - National boundary
 - State boundary (tentative)
- Geographical features**
 - Hills and mountains
 - Dunes
- Tribal area**
 - Dinka / Ndomic or tribal area
- Hydrological features**
 - Main river
 - Seasonal river
 - Occasional river
 - Episodic river
 - Dry river
 - Canal
 - Canal (unflooded)
 - Pipeline
 - Borehole
 - Structure / hand drilled
 - Culvert
 - Pond / pool
 - Reservoir
 - Spring
 - Waterhole
 - Well
 - Wetland
- Infrastructure features**
 - Asphalt
 - Main road
 - Gravel road
 - Track / path (dry weather)
 - Street
 - Railway (not operational)
 - Bridge
 - River crossing
- Topography**
 - Spot height
 - Main contour (100m interval)
 - Intermediate contour (50m interval)
 - Supplementary contours (25m interval)
- Elevation classes**
 - < 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
 - > 2,500 m
- Land cover classes**
 - Sparse vegetation (single shrubs, grassland)
 - Steady vegetation (scrubland)
 - Dense vegetation (savanna, mature crops)
 - Agriculture (irrigated, rainfed)
 - Settlement area (built-up area)
 - Outcrop / no vegetation cover (basement, volcanic)
 - Wetlands (marshes, swamps)
 - Surface water / wet season (permanent waterbodies)

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 Base Map Series (Release B) is 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. The data base and cartographic models were developed and prepared by the CDE.

Data sources
The Southern Sudan Topographic Base Map Series (Release B) is 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. The data base and cartographic models were developed and prepared by the CDE.

Data compilation
Georeferencing of spatial data was obtained through image-to-image and vector-to-image rectification. Except for the non-sloping areas, NASA's Shuttle Radar Topography Mission (SRTM) data were used as the principal reference for topographic features and the development of the digital terrain and drainage models. The SRTM has a 90-meter resolution and shows contours (50 m intervals), slopes, aspects, spot heights and shaded relief. In flat areas the DEM 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 ± 100 m. Wetlands, forest, scrublands, and agricultural areas were derived from Landsat ETM+, Terra MODIS (VCF, EVI), and FAO ARI/Cover data (agricultural). The land cover model was cross-validated. In situ verification of data was not applied. Raster modelling, geodata compilation, and digital cartography were done with ESRI ArcGIS 9.2 and LecoS GIS/MapGIS 2.2. Minor settlements, tracks and road path features were extracted based on high resolution imagery (only partial coverage).

Data Modelling
The latest earth orbiting spacecrafts such as Terra/ASTER, SPOT-5 and NASA's space shuttle (SRTM mission 2000) were the main source for map updates, and terrain and drainage modeling. Geospatial information technology GIS, GPS, and Earth Observation were used to create a voluminous and detailed geospatial database of Southern Sudan. Image courtesy of SPOT Image S.A., France (SPOT-5 over Juba in 2003) and NASA HQ Washington, DC, USA (SRTM flight in 2000).

