



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

Map Information:
 Raster Resolution: 90 meters
 UTM Grid: 25 kilometer interval
 Geographic Code: 10 minute interval
 Projection: Universal Transverse Mercator (UTM)
 UTM Zone: UTM 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

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Legend:

Settlements		Political boundaries (not authoritative)	
● State capital	● Principal town	— National boundary	— State boundary (tentative)
● Administrative town	● Settlement (verified)	Geographical features	
● Settlement (not verified)	● Built-up area	■ Hills and mountains	■ Dunes
▲ Mineable area (containing 400)	● School	△ Tribal areas	△ Dinka: Nomaic or tribal area
Infrastructure features		Hydrological features	
— Main road	— Gravel road	— Main river	— Seasonal river
— Track / path (dry weather)	— Street	— Episodic river	— Dry river
— Railway (not operational)	— Bridge	— Canal (unfinished)	— Pipeline
— River crossing	— River crossing	— Culvert / hand drilled	— Culvert
— Reservoir	— Spring	— Well	— Wetland
Topography		Land cover classes	
● Spot height	— Contour (100m interval)	■ Sparse vegetation (single shrubs, grassland)	■ Shrubby vegetation (scrubland)
— Intermediate contour (50m interval)	— Contour (25m interval)	■ Dense vegetation (irrigated, rainfed)	■ Agriculture (irrigated, rainfed)
— Settlement area (built-up area)	— Outcrop / no vegetation cover (barren, 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 judgement 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 II) is part of a Capacity Development Programme in Geospatial Information 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 the completely revised, updated and enhanced map sheets. The data base and geospatial models were developed and prepared by CDE.

Map authors:
 Christoph Hösl, Jürg Krauer, Christian Hergetzen, Ursula Campanelli, Silvia Kintler-Reh, Simonuel Lankwara, Geoprocessing Unit, CDE, University of Bern.

Data sources:
 Most of the line and point features were added based on satellite image interpretation. Satellite sensor used: Terra ASTER-view data for 2002-2006, Landsat ETM+ 7x42, Earthstar Neotree data of 2009, and Digital Globe QuickBird 2 imagery (2002-2005). Internet sources: Geonetwork of SLM Sudan Interagency Mapping www.ususd.org, UNODD, UNICEF, FAO, UNHCR, UNWIS, UNWIS, UNWIS, Global Name and Geographical data.

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) data were used as the principal reference for topographic features 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 ± 100 m. Wetlands, forests, scrublands and agricultural areas were derived from Landsat ETM+, Terra MODIS (YVCF, EVI), and FAD AirCover data (vegetation). The land cover model was cross-validated, in its verification of data was not applied. Raster modelling, geodata compilation, and digital cartography were done with ESRI ArcGIS 9.2 and ESRI MapX 8.2. Minor settlements, trails 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 was used to create a systematic and detailed geospatial database of Southern Sudan. Image courtesy of SPOT-5 Image S.A., France (SPOT-5 over Juba in 2003) and NASA HQ Washington, DC, USA (SRTM flight in 2000).