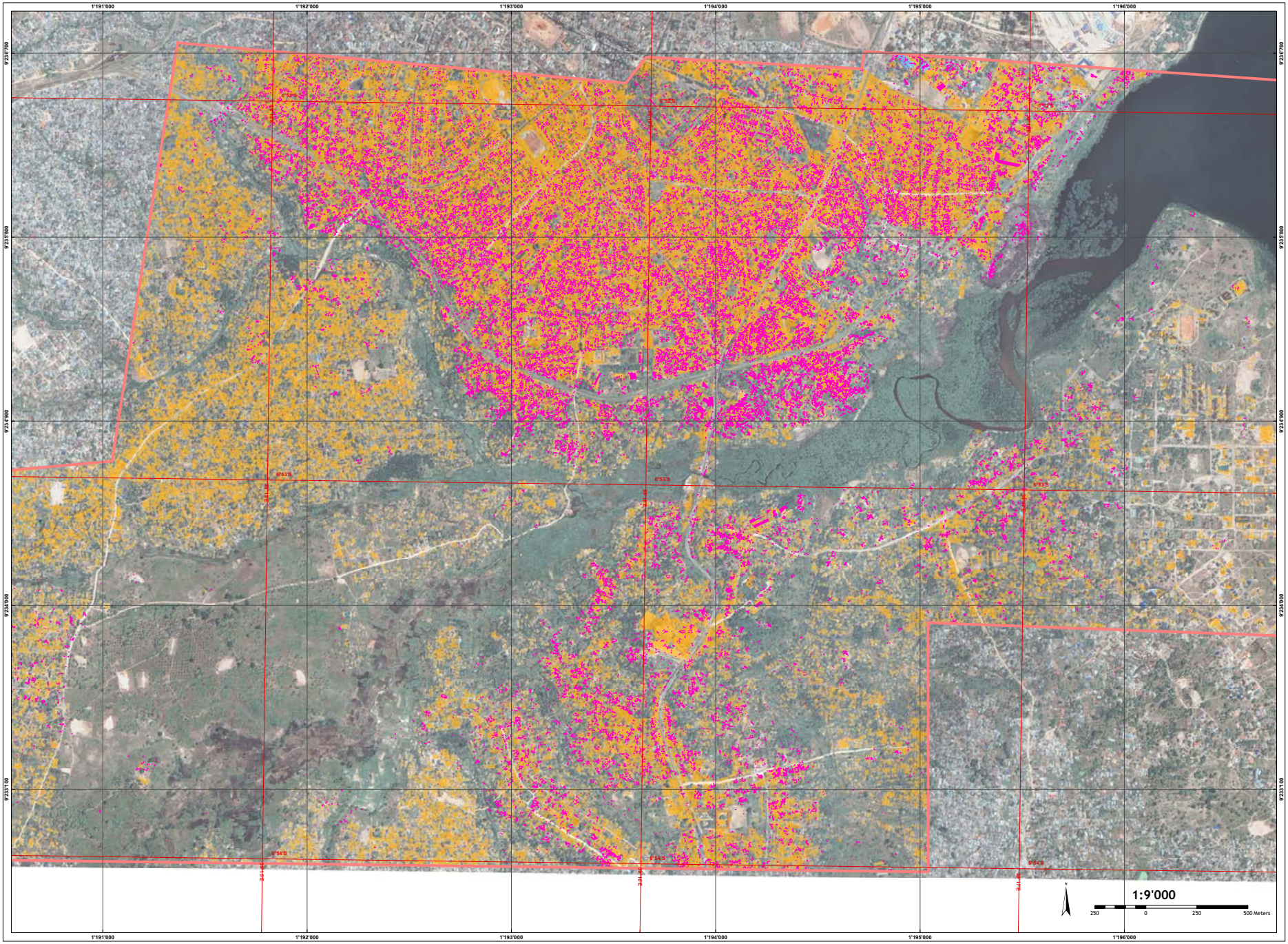
Urban Development between 1982 and 2007 in the Kizinga Valley - Dar Es Salaam



Dar Es Salaam

Geographic Overview

Version: Release 1
April 2010

Legend

- Built up area 2007
- Built up area 1982

Satellite Data: Quickbird
Aquisition Date: 25. Feb. 2007
Raster Resolution: 0.6 meters
UTM Grid: 1 kilometer interval
Geographic Grid: 1 minute interval
Projection: Universal Transverse Mercator (UTM)
UTM Zone: UTM2 35S
Meridian of Origin: 33 degrees 00 minutes E of Greenwich
Latitude of Origin: Equator
Horizontal Datum: WGS84
Vertical Datum: Mean sea level
Spheroid: WGS84

University of Bern
Centre for Development and Environment
Geoprocessing Unit
Hallerstrasse 10
CH - 3012 Bern, Switzerland

Disclaimer
The boundaries (county, 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 on the part of the Government of Southern Sudan. 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 map is providing additional information to support the project named **Wastewater irrigated agriculture as a mean to alleviate poverty: The case of Dar es Salaam City**. Residents of Dar es Salaam use wastewater, which includes industrial and domestic effluent for informal irrigation due to shortage and high cost of freshwater resource. Better understanding of the current practices with wastewater in agriculture, possible health risks and the role of this resource in the livelihood of the residents of Dar es Salaam is of parmount importance for both sustainable land management and sustainable human development. This project aims at quantifying the extent and significance of wastewater use in agriculture in Dar es Salaam as one of the means to alleviate poverty. The project serves as an opportunity to identify and/or improvise cost effective technologies for management of wastewater to minimise the negative impacts of wasterwater use in agriculture.

The project is part of the **Eastern and Southern Africa Partnership Programme** (ESAPP) funded by the **Swiss Agency for Development and Cooperation (SDC)**.

Map authors: Sandra Eckert, Geoprocessing Unit, CDE, University of Bern.

Data sources
Satellite data used: Digital Globe Quickbird 2 imagery and aerial photography. Aerial photography provided by ITC, Faculty of Geo-Information Science and Earth Observation.

Methodology:
The two built-up layers were derived from b/w aerial photography acquired in 1982 and satellite data of Quickbird 2 acquired in 2007. A anisotropic rotation-invariant built-up presence index [1] was applied to delineate urban and non-urban regions. The main component of the PanTex workflow computes the contrast textural statistic based on the grey-level co-occurrence matrix (GLCM). The PanTex method is based on image texture and therefore is advantageous for multisensor and multitemporal image analysis. The results provide structural information on the urban regions, including buildings, open spaces and, partially, roads. The final binary built-up mask is produced by interactively choosing a threshold value that delineates the image into built-up and non built-up areas. The derived information layers were further improved by applying a vegetation index for the 2007 data and manual editing.

[1] Pesaresi, M.; Gerhardinger, A.; Kayitakire, F. A robust built-up area presence index by anisotropic rotation-invariant textural measure. IEEE JSTARS 2008, 1, 180-192.

Satellite image courtesy of Digital Globe, acquired 27. February, 2007.