West Africa Coastal Vulnerability Mapping:
Subset of DMSP-OLS Nighttime Lights for Economic Activity, 2010

September 2018

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DESCRIPTION

This data set was used as an indicator in the analysis presented in the report, "Mapping the Exposure of Socioeconomic and Natural Systems of West Africa to Coastal Climate Stressors" (de Sherbinin et al., 2014; de Sherbinin et al., 2015). The table below provides information about the indicator as it was used in the analysis, including a description of the input data (where relevant) and of the processing completed to produce the indicator.

Title:	Urban Built-Up Areas
Indicator Code:	URBN
Component:	Economic Systems
Rationale:	Night-time lights intensity represents a proxy measure of economic activity.
Data Set:	Night time lights data are collected by the Defense Meteorological Satellite Program-Optical Line Scanner (DMSP-OLS) instrument. Version 4 DMSP-OLS Nighttime Lights Time Series represents 2010 annual global composite of radiance lights inter-calibrated to the digital number (DN) values of gain 55 for satellite F16 (2006) (Hsu et. al., 2015). These data are commonly used for

	identifying human settlements and economic activity. The DNs are on a unitless scale ranging from 0 (no light) to 4000 (greatest light intensity). The resolution of the grids is 30 arc-second, or approximately 1 km at the equator. Data were provided courtesy of Christopher Elvidge and Kimberly Baugh of the Earth Observation Group, NOAA National Geophysical Data Center. To produce the Subset of DMSP-OLS Nighttime Lights for Economic Activity, 2010 data set, a threshold of 13 DN was applied to the raw 2010 DMSP-OLS data, then the natural log was applied to the DN values, and the result was subset to the 200 km coastal zone of West Africa. Input data source citation: NOAA National Geophysical Data Center. 2013. Version 4 DMSP-OLS Nighttime Lights Time Series. 1999 and 2010 annual global composite of radiance lights inter-calibrated to the DN values of gain 55 for satellite F16-2006. Courtesy of C. Elvidge and K. Baugh, Earth Observation Group, NOAA/NGDC. http://ngdc.noaa.gov/eog/dmsp.html.
Units:	Natural log of DN (Digital Number)
Limitations:	Night-time lights are an imperfect measure of economic activity insofar as they do not adequately capture agricultural activities, but as a first approximation they do a far better job of spatially locating economic activity than equivalent gridded Gross Domestic Product (GDP) products.
Spatial Extent:	The spatial extent of the Subset of DMSP-OLS Nighttime Lights for Economic Activity, 2010 raster is the 200 km coastal zone of the ten Guinea Current countries of coastal West Africa: Guinea-Bissau, Guinea, Sierra Leone, Liberia, Cote d'Ivoire, Ghana, Togo, Benin, Nigeria, Cameroon.
Spatial Resolution:	30 arc-second (~1 km)
Time Period:	2010 annual global composite
Additional Notes:	Version 4 DMSP-OLS Nighttime Lights Time Series data set was received from Christopher Elvidge and Kimberly Baugh of the Earth Observation Group, NOAA National Geophysical Data Center. Whenever using or distributing DMSP data or derived images, use the following credit: Image and data processing by NOAA's National Geophysical Data Center. DMSP data collected by US Air Force Weather Agency.

ACCESSING THE DATA

SEDAC URL: http://sedac.ciesin.columbia.edu/data/collection/wacvm.

Permanent URL: https://doi.org/10.7927/H4222RQJ.

The data are available as compressed zipfiles of GeoTIFFs or shapefiles. Downloaded files need to be uncompressed in a single folder using either WinZip (Windows file compression utility) or similar application before they can be accessed by your GIS software package. Users should expect an increase in the size of downloaded data after decompression.

The data are stored in geographic coordinates of decimal degrees based on the World Geodetic System spheroid of 1984 (WGS84).

DISCLAIMER

CIESIN follows procedures designed to ensure that data disseminated by CIESIN are of reasonable quality. If, despite these procedures, users encounter apparent errors or misstatements in the data, they should contact SEDAC User Services at ciesin.info@ciesin.columbia.edu. Neither CIESIN nor NASA verifies or guarantees the accuracy, reliability, or completeness of any data provided. CIESIN provides this data without warranty of any kind whatsoever, either expressed or implied. CIESIN shall not be liable for incidental, consequential, or special damages arising out of the use of any data provided by CIESIN. The Subset of DMSP-OLS Nighttime Lights for Economic Activity, 2010 is an extract of Version 4 DMSP-OLS Nighttime Lights Time Series produced by the NOAA National Geophysical Data Center. See NGDC/NOAA disclaimer at http://ngdc.noaa.gov/ngdcinfo/privacy.html.

USE CONSTRAINTS

RECOMMENDED CITATION(S)

Data set:

National Oceanic and Atmospheric Administration (NOAA) National Geophysical Data Center (NGDC). 2018. West Africa Coastal Vulnerability Mapping: Subset of DMSP-OLS Nighttime Lights for Economic Activity, 2010. Palisades, NY: NASA Socioeconomic Data and Applications Center (SEDAC). https://doi.org/10.7927/H4222RQJ. Accessed DAY MONTH YEAR.

Scientific publication:

Hsu, Feng-Chi & Baugh, Kimberly & Tilottama, Ghosh & Zhizhin, Mikhail & Elvidge, Christopher. (2015). DMSP-OLS Radiance Calibrated Nighttime Lights Time Series with Intercalibration. Remote Sensing. 7. 1855-1876. https://doi.org/10.3390/rs70201855.

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de Sherbinin, A, T. Chai-Onn, M. Jaiteh, V. Mara, L. Pistolesi, E. Schnarr, and S. Trzaska. 2015. Data Integration for Climate Vulnerability Mapping in West Africa. ISPRS International Journal of Geo-Information 4(4):2561-2582. https://doi.org/10.3390/ijgi4042561.

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