

West Africa Coastal Vulnerability Mapping:
Commercial Crop Production, 2000

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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:	Crop Harvested Area and Yields
Indicator Code:	CROPS
Component:	Economic Systems
Rationale:	Commercial crops are economically valuable to the countries of West Africa, and some are at high risk of sea level rise and storm surge impacts.
Data Set:	The Harvested Area and Yields for 175 Crops data collection includes geographic distributions for 175 crops circa the year 2000 (Monfreda et al., 2008). We used this data collection to help estimate the value of crop production in West Africa. For the analysis, we focussed primarily on higher-value export crops (cocoa,

bananas, coconut, palm oil, and rubber) rather than on grains. We used the Harvested Area and Yield grids as inputs to produce the Commercial Crop Production, 2000 data set that consists of rasters of crop production in metric tons per 5 arc-minute (~10 km) grid cell.

Harvested Area and Yields for 175 Crops

Originally downloaded on 4/24/2014 from:

<http://www.geog.mcgill.ca/~nramankutty/Datasets/Datasets.html>.

Now available at: <http://www.earthstat.org/data-download>.

Method for producing the Commercial Crop Production, 2000 data set.

Input data from the Harvested Area and Yields for 175 Crops data collection:

crop_harea = Harvested Area as proportion of grid cell area

crop_yield = Yield in tons per ha

Regarding crop_harea: Note that values can be greater than 1.0 because of multiple cropping. According to Monfreda et al. (2008), "Some crops are harvested multiple times per year, which means that the harvested area exceeds the physical area of the cropland that they are grown on." Also, crop area was initially set to zero when the agricultural inventory data used in the study made no reference to a crop in a particular political unit. Missing data values were interpolated, but only to a distance of 2 degrees (~220 km). Grid cells missing data more than 2 degrees away from cells with data remained null.

Regarding crop_yield: According to Monfreda et al. (2008), yield was set to null in grid cells with crop area of zero.

We calculated crop production as crop yield in metric tons per grid cell, using the Harvested Area and Yields for 175 Crops grids and a 5 arc-minute land area grid in units of hectares created from Gridded Population of the World, Version 3 (GPWv3) country land area grids:

(1) *Calculate Harvested Area in hectares per grid cell:*

$\text{crop_harea} * \text{afareag_5min_ha} = \text{crop_harea_ha}$

(where, afareag_5min_ha is a 5 arc-minute grid of land area in hectares)

(2) *Calculate Crop Production in metric tons per grid cell:*

$\text{crop_harea_ha} * \text{crop_yield} = \text{crop_yield_tons}$

	<p>Input data source citation:</p> <p>Monfreda, C., N. Ramankutty, and J.A. Foley. 2008. Farming the planet. Part 2: Geographic distribution of crop areas, yields, physiological types, and net primary production in the year 2000. <i>Global Biogeochemical Cycles</i> 22, GB1022, https://doi.org/10.1029/2007GB002947.</p>
Units:	<p>Input data from the Harvested Area and Yields for 175 Crops data collection:</p> <p>crop_harea = Harvested Area (unit = proportion of grid cell area)</p> <p>crop_yield = Yield (unit = tons per ha)</p> <p>The units of the Commercial Crop Production, 2000 rasters are metric tons per grid cell.</p>
Limitations:	
Spatial Extent:	<p>The spatial extent of the Commercial Crop Production, 2000 rasters is the ten Guinea Current countries of coastal West Africa: Guinea-Bissau, Guinea, Sierra Leone, Liberia, Cote d'Ivoire, Ghana, Togo, Benin, Nigeria, Cameroon.</p>
Spatial Resolution:	5 arc-minute (~10 km)
Time Period:	2000
Additional Notes:	

ACCESSING THE DATA

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

Permanent URL: <https://doi.org/10.7927/H49K485P>.

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

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USE CONSTRAINTS

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RECOMMENDED CITATION(S)

Data set:

Center for International Earth Science Information Network (CIESIN), Columbia University. 2018. West Africa Coastal Vulnerability Mapping: Commercial Crop Production, 2000. Palisades, NY: NASA Socioeconomic Data and Applications Center (SEDAC). <https://doi.org/10.7927/H49K485P>. Accessed DAY MONTH YEAR.

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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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