

HRSL Madagascar

Raster Dataset

Tags

population, demography, Madagascar

Summary

Provide detailed population estimates for research in humanitarian, disaster response, sustainability, and infrastructure planning fields.

Description

The High Resolution Settlement Layer (HRSL) provides estimates of human population distribution at a resolution of 1 arc-second (approximately 30m) for the year 2015. The population estimates are based on recent census data and high-resolution (0.5m) satellite imagery from DigitalGlobe. The population grids provide detailed delineation of settlements in both urban and rural areas. The data were developed using computer vision techniques to classify blocks of optical satellite data as settled (containing buildings) or not. Proportional allocation was used to distribute population data from subnational census data to the settlement extents. The data are distributed as a GeoTIFF file with three bands. Band 1 represents the population estimates (in persons). Band 2 represents settlement extents and has a value of 1 where buildings were detected in the imagery. It is possible for buildings to be detected in pixels but no population values assigned in cases where the census data show a unit as uninhabited. Band 3 has a value of 1 where cloud was present in the source imagery.

Credits

Connectivity Lab at Facebook. Center for International Earth Science Information Network - CIESIN - Columbia University. Source imagery provided by DigitalGlobe. Census data collected as part of the Gridded Population of the World project.

Use limitations

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Extent

West 42.895741 **East** 50.759908
North -11.950734 **South** -25.606012

Scale Range

Maximum (zoomed in) 1:5,000
Minimum (zoomed out) 1:150,000,000

ArcGIS Metadata ►

Topics and Keywords ►

THEMES OR CATEGORIES OF THE RESOURCE society

* CONTENT TYPE Downloadable Data
EXPORT TO FGDC CSDGM XML FORMAT AS RESOURCE DESCRIPTION No

PLACE KEYWORDS Madagascar

THEME KEYWORDS population, demography

[Hide Topics and Keywords ▲](#)

Citation ►

TITLE HRSL Madagascar
CREATION DATE 2016-11-01 00:00:00
PUBLICATION DATE 2016-11-15 00:00:00

EDITION 1.0
EDITION DATE 2016-11-08

PRESENTATION FORMATS digital image

COLLECTION TITLE High Resolution Settlement Layer (HRSL)

OTHER CITATION DETAILS

Recommended citation: Facebook Connectivity Lab and Center for International Earth Science Information Network - CIESIN - Columbia University. 2016. High Resolution Settlement Layer (HRSL). Source Imagery © 2016 DigitalGlobe, Inc. Accessed [DAY MONTH YEAR]

[Hide Citation ▲](#)

Locales ►

LOCALE English (UNITED STATES)

[Hide Locales ▲](#)

Resource Details ►

DATASET LANGUAGES English (UNITED STATES)
DATASET CHARACTER SET utf8 - 8 bit UCS Transfer Format

SPATIAL REPRESENTATION TYPE grid

* PROCESSING ENVIRONMENT Version 6.2 (Build 9200) ; Esri ArcGIS 10.5.0.6491

CREDITS

Connectivity Lab at Facebook. Center for International Earth Science Information Network - CIESIN - Columbia University. Source imagery provided by DigitalGlobe. Census data collected as part of the Gridded Population of the World project.

ARCGIS ITEM PROPERTIES

* NAME hrsl_mdg.tif
* LOCATION http://www.ciesin.columbia.edu/data/hrs1
* ACCESS PROTOCOL web

[Hide Resource Details ▲](#)

Extents ►

EXTENT
GEOGRAPHIC EXTENT
BOUNDING RECTANGLE
WEST LONGITUDE -5.517502
EAST LONGITUDE 2.404998
SOUTH LATITUDE 9.40252
NORTH LATITUDE 15.080853
EXTENT CONTAINS THE RESOURCE Yes

EXTENT
GEOGRAPHIC EXTENT
BOUNDING RECTANGLE
WEST LONGITUDE -3.505342
EAST LONGITUDE 1.39438
SOUTH LATITUDE 4.738734
NORTH LATITUDE 11.169567
EXTENT CONTAINS THE RESOURCE Yes

EXTENT
GEOGRAPHIC EXTENT
BOUNDING RECTANGLE
WEST LONGITUDE 79.453139
EAST LONGITUDE 81.885639
SOUTH LATITUDE 5.918476
NORTH LATITUDE 9.835976
EXTENT CONTAINS THE RESOURCE Yes

EXTENT
GEOGRAPHIC EXTENT
BOUNDING RECTANGLE
WEST LONGITUDE 14.400218
EAST LONGITUDE 32.903551
SOUTH LATITUDE -34.837471

NORTH LATITUDE -22.129693
EXTENT CONTAINS THE RESOURCE Yes

EXTENT
GEOGRAPHIC EXTENT
BOUNDING RECTANGLE
EXTENT TYPE Extent used for searching
* WEST LONGITUDE 42.895741
* EAST LONGITUDE 50.759908
* NORTH LATITUDE -11.950734
* SOUTH LATITUDE -25.606012
* EXTENT CONTAINS THE RESOURCE Yes

EXTENT IN THE ITEM'S COORDINATE SYSTEM
* WEST LONGITUDE 42.895741
* EAST LONGITUDE 50.759908
* SOUTH LATITUDE -25.606012
* NORTH LATITUDE -11.950734
* EXTENT CONTAINS THE RESOURCE Yes

[Hide Extents ▲](#)

Resource Points of Contact ►

POINT OF CONTACT
INDIVIDUAL'S NAME CIESIN User Services
ORGANIZATION'S NAME Center for International Earth Science Information Network - CIESIN - Columbia University
CONTACT'S ROLE point of contact

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Resource Maintenance ►

RESOURCE MAINTENANCE
UPDATE FREQUENCY irregular

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Resource Constraints ►

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Spatial Reference ►

ARCGIS COORDINATE SYSTEM

* TYPE Geographic

* GEOGRAPHIC COORDINATE REFERENCE GCS_WGS_1984

* COORDINATE REFERENCE DETAILS

GEOGRAPHIC COORDINATE SYSTEM

WELL-KNOWN IDENTIFIER 4326

X ORIGIN -400

Y ORIGIN -400

XY SCALE 11258999068426.238

Z ORIGIN -100000

Z SCALE 10000

M ORIGIN -100000

M SCALE 10000

XY TOLERANCE 8.983152841195215e-009

Z TOLERANCE 0.001

M TOLERANCE 0.001

HIGH PRECISION true

LEFT LONGITUDE -180

LATEST WELL-KNOWN IDENTIFIER 4326

WELL-KNOWN TEXT

GEOGCS["GCS_WGS_1984",DATUM["D_WGS_1984",SPHEROID["WGS_1984",6378137.0,298.257223563]],PRIMEM["Greenwich",0.0],UNIT["Degree",0.0174532925

REFERENCE SYSTEM IDENTIFIER

VALUE 4326

* CODESPACE EPSG

* VERSION 6.14(3.0.1)

[Hide Spatial Reference ▲](#)

Spatial Data Properties ►

GEORECTIFIED GRID ►

* NUMBER OF DIMENSIONS 2

AXIS DIMENSIONS PROPERTIES

DIMENSION TYPE row (y-axis)

* DIMENSION SIZE 49159

* RESOLUTION 0.000278 deg (degree)

AXIS DIMENSIONS PROPERTIES

DIMENSION TYPE column (x-axis)

* DIMENSION SIZE 28311

* RESOLUTION 0.000278 deg (degree)

* CELL GEOMETRY area

* POINT IN PIXEL center

* TRANSFORMATION PARAMETERS ARE AVAILABLE Yes

* CHECK POINTS ARE AVAILABLE No

CORNER POINTS

* POINT 42.895741 -25.606012

GML PROPERTIES

UNIQUE IDENTIFIER ID0EOGAC

* POINT 42.895741 -11.950734

GML PROPERTIES

UNIQUE IDENTIFIER ID0EAHAC

* POINT 50.759908 -11.950734

GML PROPERTIES

UNIQUE IDENTIFIER ID0EUGAC

* POINT 50.759908 -25.606012

GML PROPERTIES

UNIQUE IDENTIFIER ID0E1GAC

* CENTER POINT 46.827825 -18.778373

GML PROPERTIES

UNIQUE IDENTIFIER ID0EGHAC

[Hide Georectified Grid ▲](#)

ARCGIS RASTER PROPERTIES



GENERAL INFORMATION

* PIXEL DEPTH 64
* COMPRESSION TYPE LZW
* NUMBER OF BANDS 3
* RASTER FORMAT TIFF
* SOURCE TYPE continuous
* PIXEL TYPE double precision
* NO DATA VALUE -1.797693e+308
* HAS COLORMAP No
* HAS PYRAMIDS Yes

[Hide ArcGIS Raster Properties ▲](#)

[Hide Spatial Data Properties ▲](#)

Spatial Data Content ►

IMAGE DESCRIPTION

* TYPE OF INFORMATION image
ATTRIBUTE DESCRIBED BY CELL VALUES Band_1: Persons (count); Band_2 Settlement Extent (Boolean); Band_3 Cloud (Boolean)

BAND INFORMATION

* DESCRIPTION Band_1
SEQUENCE IDENTIFIER
NAME 1
TYPE modeled

* MAXIMUM VALUE 2102.159593
* MINIMUM VALUE 0.309490

UNITS

SYMBOL [arb'U]
CODESPACE <http://aurora.regenstrief.org/UCUM>

GML PROPERTIES

UNIQUE IDENTIFIER ID0AAABCCAAA
IDENTIFIER Unified Code of Units of Measure
CODESPACE GML_UomSymbol

* NUMBER OF BITS PER VALUE 64

BAND INFORMATION

* DESCRIPTION Band_2
SEQUENCE IDENTIFIER
NAME 2
TYPE modeled

* MAXIMUM VALUE 1.000000
* MINIMUM VALUE 1.000000

UNITS

SYMBOL [arb'U]

* NUMBER OF BITS PER VALUE 64

BAND INFORMATION

* DESCRIPTION Band_3
SEQUENCE IDENTIFIER
NAME 3
TYPE observed

* MAXIMUM VALUE 1.000000
* MINIMUM VALUE 1.000000

UNITS

SYMBOL [arb'U]

* NUMBER OF BITS PER VALUE 64

IMAGING CONDITION

cloud
PERCENT CLOUD COVER 0.265

TRIANGULATION HAS BEEN PERFORMED No

RADIOMETRIC CALIBRATION IS AVAILABLE No

CAMERA CALIBRATION IS AVAILABLE No

FILM DISTORTION INFORMATION IS AVAILABLE No

LENS DISTORTION INFORMATION IS AVAILABLE No

[Hide Spatial Data Content ▲](#)

Data Quality ►

SCOPE OF QUALITY INFORMATION ►

RESOURCE LEVEL dataset

[Hide Scope of quality information ▲](#)

DATA QUALITY REPORT - COMPLETENESS OMISSION ►

MEASURE NAME Landmass covered

MEASURE DESCRIPTION

Proportion of the country included in the analysis

QUANTITATIVE TEST RESULTS

VALUE 1.0

UNITS

SYMBOL [arb'U]

CODESPACE <http://aurora.regenstrief.org/UCUM>

GML PROPERTIES

UNIQUE IDENTIFIER ID0ABACABADA

IDENTIFIER Unified Code of Units of Measure

CODESPACE GML_UomSymbol

VALUE TYPE Completeness

ERROR STATISTIC Proportion

EVALUATION TYPE direct internal

[Hide Data quality report - Completeness omission ▲](#)

DATA QUALITY REPORT - THEMATIC CLASSIFICATION CORRECTNESS ►

MEASURE NAME Recall

MEASURE DESCRIPTION

Recall of computer vision classification used to identify settlements in the imagery. Recall or sensitivity, is the fraction of relevant instances that are retrieved.

$Recall = TP / (TP + FN)$

Where TP = true positive, FP = false positive, FN = false negative

QUANTITATIVE TEST RESULTS

VALUE 0.862

UNITS

SYMBOL [arb'U]

CODESPACE <http://aurora.regenstrief.org/UCUM>

GML PROPERTIES

UNIQUE IDENTIFIER ID0ABACABBDA

IDENTIFIER Unified Code of Units of Measure

CODESPACE GML_UomSymbol

VALUE TYPE Classifier performance metric

ERROR STATISTIC Fraction

EVALUATION TYPE direct internal

[Hide Data quality report - Thematic classification correctness ▲](#)

DATA QUALITY REPORT - THEMATIC CLASSIFICATION CORRECTNESS ►

MEASURE NAME Precision

MEASURE DESCRIPTION

Precision of computer vision classification used to identify settlements in the imagery. Precision, or positive predictive value, is the fraction of retrieved instances that are relevant in the classification.

$Precision = TP / (TP + FP)$

Where TP = true positive, FP = false positive, FN = false negative

QUANTITATIVE TEST RESULTS

VALUE 0.926

UNITS

SYMBOL [arb'U]

CODESPACE <http://aurora.regenstrief.org/UCUM>

GML PROPERTIES

UNIQUE IDENTIFIER ID0ABACABCD A

IDENTIFIER Unified Code of Units of Measure

CODESPACE GML_UomSymbol

VALUE TYPE Classifier performance metric

ERROR STATISTIC Fraction

[Hide Data quality report - Thematic classification correctness ▲](#)

[Hide Data Quality ▲](#)

Lineage ▶

SOURCE DATA



DESCRIPTION

DigitalGlobe Basemap +Vivid <http://explore.digitalglobe.com/Basemap-Vivid.html>

[Hide Source data ▲](#)

SOURCE DATA



DESCRIPTION

Gridded Population of the World, version 4 (GPWv4) input census data. <http://sedac.ciesin.columbia.edu/gpw>

[Hide Source data ▲](#)

[Hide Lineage ▲](#)

Distribution ▶

DISTRIBUTION FORMAT

* NAME Raster Dataset

VERSION 6.0

SPECIFICATION GeoTIFF

FILE DECOMPRESSION TECHNIQUE LZW

[Hide Distribution ▲](#)

Metadata Details ▶

METADATA LANGUAGE English (UNITED STATES)

METADATA CHARACTER SET utf8 - 8 bit UCS Transfer Format

METADATA IDENTIFIER 616251C4-AE3F-4082-A7C3-9298E5CC48B9

SCOPE OF THE DATA DESCRIBED BY THE METADATA dataset

SCOPE NAME *dataset

* LAST UPDATE 2017-03-13

ARCGIS METADATA PROPERTIES

METADATA FORMAT ArcGIS 1.0

STANDARD OR PROFILE USED TO EDIT METADATA ISO19139

CREATED IN ARCGIS FOR THE ITEM 2017-02-21 09:45:40

LAST MODIFIED IN ARCGIS FOR THE ITEM 2017-03-13 13:27:35

AUTOMATIC UPDATES

HAVE BEEN PERFORMED Yes

LAST UPDATE 2017-03-13 13:26:53

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Metadata Contacts ▶

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MAINTENANCE
UPDATE FREQUENCY as needed

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Thumbnail and Enclosures ►

THUMBNAIL

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