Angola, United Arab Emirates, Argentina, Benin, Bahamas, The, Brazil, Chile, China, Cameroon, Colomb - Intensification of Storm Surges 2008

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Overview

Identification

ID NUMBER
WLD_2008_ISS_v01_M

Version

VERSION DESCRIPTION

PRODUCTION DATE

NOTES

Overview

ABSTRACT
This research was carried out by the World Bank in 2008. Financial support for this research was provided by the Research Department of the World Bank, and the Economics of Adaptation to Climate Change study administered by the Environment Department of the World Bank. Funding for the Economics of Adaptation to Climate Change study has been provided by the governments of the United Kingdom, the Netherlands and Switzerland.

An increase in sea surface temperature is strongly evident at all latitudes and in all oceans. The scientific evidence to date indicates that increased sea surface temperature will intensify cyclone activity and heighten storm surges. These surges will, in turn, create more damaging flood conditions in coastal zones and adjoining low-lying areas. The destructive impact will generally be greater when storm surges are accompanied by strong winds and large onshore waves.

In this research, we have considered the potential impact of a large (1-in-100-year) storm surge by contemporary standards, and then compared it with its 10% intensification which is expected to occur in this century.

In modeling the future climate, we took account of changes in sea level rise, geological uplift and subsidence along the world's coastlines. Geographic Information System (GIS) software has been used to overlay the best available, spatially-disaggregated global data on critical impact elements (Area, population, economic activity (GDP), agricultural land, urban areas, and wetlands), with the inundation zones projected for 84 coastal developing countries.

KIND OF DATA
Aggregate data [agg]

UNITS OF ANALYSIS

Scope

NOTES
The datasets include area, population, economic activity (GDP), agricultural land, urban areas, and wetlands.

Producers and Sponsors

PRIMARY INVESTIGATOR(S)

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OTHER PRODUCER(S)

Name	Affiliation	Role

DATE OF METADATA PRODUCTION
2011-02-10

DDI DOCUMENT VERSION
Version 01 (February 2011)

DDI DOCUMENT ID
DDI_WLD_2008_ISS_v01_M

Sampling

Sampling Procedure

Deviations from Sample Design

Response Rate

Weighting

Questionnaires

Overview

Data Collection

Data Collection Dates

Start	End	Cycle
2008	2008	N/A

Data Collection Mode

Other [oth]

Data Collection Notes

Questionnaires

Supervision

Data Processing

Data Editing

Other Processing

Data Appraisal

Estimates of Sampling Error

Other forms of Data Appraisal

Limitations of the research:

1. The relative likelihoods of alternative storm surge scenarios have not been assessed in this research. Following Nicholls et al (2007), a homogeneous future increase of 10% in extreme water levels during tropical storms is assumed. In all likelihood, regions of the world may experience a smaller increase and others a larger increase. Better local modeling of the impact of climate change on storm intensities (with the support of hurricane generator models) is needed to better forecast changes in storm surges.

2. Among the 84 developing countries included in this analysis, our estimation is restricted to coastal segments where historical storm surges have been documented.

3. The absence of a global database on shoreline protection has prevented us from incorporating the effect of existing protection measures (e.g., sea dikes) on exposure estimates.

4. Lack of spatially disaggregated secondary information on indicators prevented us from including small islands in this analysis.

5. The impacts of intensification of storm surges and SLR have been assessed using existing population, socio-economic conditions and patterns of land use, rather than attempting to predict their future states. Human activity is generally increasing more rapidly in coastal areas and thus the impacts of storm surges will be more pronounced in these areas. This effect is countered by adaptation measures (e.g., sea dikes), which we also do not attempt to estimate in this exercise. Adaptation measures from the purely technological (e.g., coastal embankments), to coastal-zone management (e.g., land-use planning, regulations, relocation) are often context, location and community-specific. Thus in our analysis, we refrain from generalizing any adaptive measures across our sub-set of developing countries.

File Description

Variable List

Content	
Cases	90
Variable(s)	10
Structure	Type: Keys: ()
Version	
Producer	
Missing Data	

Variables

ID	NAME	LABEL	TYPE	FORMAT	QUESTION
V1	Countryname	Country name	discrete		
V2	DIVA_Coasline	Km of coastline	contin		length of coastline from DIVA database (km)
V3	AG1TOT	Total area of cropland (km2)	contin		total area of cropland from globcov (2005)
V4	AG1COAST	Coastal area of cropland (km2)	contin		area of croplands in coastal zone (km²)
V5	AG1Z2	Current surge zone (km2)	contin		area of croplands in z2 (km²)
V6	AG1Z1	Cropland in current of cropland with climate change	contin		area of croplands in z1 (km²)
V7	AG1Z1Z2	Cropland in surge zone with climate change	contin		
V8	V8	AG1Z2 over AREACOAST	contin		
V9	V9	AG1Z1+Z2 over AREACOAST	contin		
V10	increasein	% increase in surge zone with CC	contin		

Content	
Cases	90
Variable(s)	10
Structure	Type: Keys: ()
Version	
Producer	
Missing Data	

Variables

ID	NAME	LABEL	TYPE	FORMAT	QUESTION
V11	Countryname	Country name	discrete		
V12	DIVA_Coasline	Km of coastline	contin		length of coastline from DIVA database (km)
V13	AREATOT	Total country area (km2)	contin		total area (km²)
V14	AREACOAST	Area of coastal zone (km2)	contin		area of coastal zone (km²)
V15	AREAZ2	Current surge zone (km2)	contin		area of z2 (km²)
V16	AREAZ1	Increment with climate change	contin		area of z1 (km²)
V17	AREAZ1Z2	Surge zone with climate change	contin		
V18	V8	AREAZ2 over AREACOAST	contin		
V19	V9	AREAZ1+Z2 over AREACOAST	contin		
V20	increasein	% increase in surge zone with CC	contin		

Content	
Cases	90
Variable(s)	10
Structure	Type: Keys: ()
Version	
Producer	
Missing Data	

Variables

ID	NAME	LABEL	TYPE	FORMAT	QUESTION
V21	Countryname	Country name	discrete		
V22	DIVA_Coasline	Km of coastline	contin		length of coastline from DIVA database (km)
V23	GDPTOT	GDP of the country	contin		total 2005 estimated GDP
V24	GDPCOAST	GDP coastal area	contin		GDP in z1 using gridded 2005 GDP
V25	GDPZ2	GDP in current storm surge zone	contin		GDP in z2 using gridded 2005 GDP
V26	GDPZ1	Increment in GDP exposure with climate change	contin		GDP in z1 using gridded 2005 GDP
V27	GDPZ1Z2	GDP in Surge zone with climate change	contin		
V28	V8	GDPZ2 over GDPCOAST	contin		
V29	V9	GDPZ1+Z2 over GDPCOAST	contin		
V30	increasein	% increase in surge zone with CC	contin		

Content	
Cases	90
Variable(s)	10
Structure	Type: Keys: ()
Version	
Producer	
Missing Data	

Variables

ID	NAME	LABEL	TYPE	FORMAT	QUESTION
V31	Countryname	Country name	discrete		
V32	DIVA_Coasline	Km of coastline	contin		length of coastline from DIVA database (km)
V33	GRTOT	Total country population	contin		total population from GRUMP 2005
V34	GRCOAST	Total coastal population	contin		population in coastal zone from GRUMP 2005
V35	GRZ2	Population exposed to current storm surges	contin		population in z2 from GRUMP 2005
V36	GRZ1	Increment in exposed population	contin		population in z1 from GRUMP 2005
V37	GRZ1Z2	Population exposed to storm surges with climate change	contin		
V38	V8	GRZ2 OVER GRCOAST	contin		
V39	V9	GRZ1+Z2 OVER GRCOAST	contin		
V40	increasein	% increase in population exposed with CC	contin		

Content	
Cases	90
Variable(s)	10
Structure	Type: Keys: ()
Version	
Producer	
Missing Data	

Variables

ID	NAME	LABEL	TYPE	FORMAT	QUESTION
V41	Countryname	Country name	discrete		
V42	DIVA_Coasline	Km of coastline	contin		length of coastline from DIVA database (km)
V43	URBTOT	Total country urban area (km2)	contin		urban area as defined by GRUMP
V44	URBCOAST	Coastal urban area (km2)	contin		area of coastal zone that is defined as urban in GRUMP
V45	URBZ2	Urban Area in Current Surge Zone	contin		area of z2 that is defined as urban in GRUMP
V46	URBZ1	Increment in exposure of Urban Area with climate change	contin		area of z1 that is defined as urban in GRUMP
V47	URBZ1Z2	Urban Area in Surge zone with climate change	contin		
V48	V8	URBZ2 over URBCOAST	contin		
V49	V9	URBZ1+Z2 over URBCOAST	contin		
V50	increasein	% increase in surge zone with CC	contin		

Content	
Cases	90
Variable(s)	10
Structure	Type: Keys: ()
Version	
Producer	
Missing Data	

Variables

ID	NAME	LABEL	TYPE	FORMAT	QUESTION
V51	Countryname	Country name	discrete		
V52	DIVA_Coasline	Km of coastline	contin		length of coastline from DIVA database (km)
V53	GLWD1TOT	Total wetland area (km2)	contin		total wetland area from Global Lakes and Wetlands database (excluding lakes and rivers) (km²)
V54	GLWD1COAST	Area of coastal wetland (km2)	contin		area of wetlands in coastal zone (km²)
V55	GLWD1Z2	Wetlands in current storm surge zone	contin		area of wetlands in z2 (km²)
V56	GLWD1Z1	Increment in exposure of wetlands with climate change	contin		area of wetlands in z1 (km²)
V57	GLWD1Z1Z2	Wetlands in surge zone with climate change	contin		
V58	GLWDZ2	GLWDZ2 over GLWD1COAST	contin		
V59	GLWDZ1Z2	GLWDZ1+Z2 over GLWD1COAST	contin		
V60	increasein	% increase in surge zone with CC	contin		

Country name(Countryname)
File: Ag Area

Overview

Type: Discrete
Width: 31
Valid cases: 90
Invalid: NaN

Source of information

Country name

Km of coastline(DIVA_Coasline)
File: Ag Area

Overview

Type: Continuous
Width: 9
Decimals: 2
Valid cases: 90
Invalid: NaN
Minimum: 44.2
Maximum: 269596
Mean: 8986.5
Standard deviation: 32040.6

Source of information

Km of coastline

Literal question

length of coastline from DIVA database (km)

Total area of cropland (km2)(AG1TOT)
File: Ag Area

Overview

Type: Continuous
Width: 7
Valid cases: 90
Invalid: NaN
Minimum: NaN
Maximum: 6474010
Mean: 215800.3
Standard deviation: 815382.2

Source of information

Total area of cropland (km2)

Literal question

total area of cropland from globcov (2005)

Coastal area of cropland (km2)(AG1COAST)
File: Ag Area

Overview

Type: Continuous
Width: 9
Decimals: 2
Valid cases: 90
Invalid: NaN
Minimum: NaN
Maximum: 505265
Mean: 16842.2
Standard deviation: 67181.8

Source of information

Coastal area of cropland (km2)

Literal question

area of croplands in coastal zone (km²)

Current surge zone (km2)(AG1Z2)
File: Ag Area

Overview

Type: Continuous
Width: 8
Decimals: 2

Valid cases: 90
Invalid: NaN
Minimum: NaN
Maximum: 59336
Mean: 1977.9
Standard deviation: 7919.3

Source of information

Current surge zone (km2)

Literal question

area of croplands in z2 (km²)

Cropland in current of cropland with climate change(AG1Z1)
File: Ag Area

Overview

Type: Continuous
Width: 8
Decimals: 2

Valid cases: 90
Invalid: NaN
Minimum: NaN
Maximum: 29164
Mean: 972.1
Standard deviation: 3855.1

Source of information

Cropland in current of cropland with climate change

Literal question

area of croplands in z1 (km²)

Cropland in surge zone with climate change(AG1Z1Z2)
File: Ag Area

Overview

Type: Continuous
Width: 8
Decimals: 2

Valid cases: 90
Invalid: NaN
Minimum: NaN
Maximum: 88500
Mean: 2950
Standard deviation: 11769.4

Source of information

Cropland in surge zone with climate change

AG1Z2 over AREACOAST(V8)
File: Ag Area

Overview

Type: Continuous
Width: 6
Decimals: 2

Valid cases: 83
Invalid: 7
Minimum: NaN
Maximum: 100
Mean: 18.1
Standard deviation: 22.6

Source of information

AG1Z2 over AREACOAST

AG1Z1+Z2 over AREACOAST(V9)
File: Ag Area

Overview

Type: Continuous
Width: 6
Decimals: 2

Valid cases: 83
Invalid: 7
Minimum: NaN
Maximum: 100
Mean: 22.5
Standard deviation: 23.5

Source of information

AG1Z1+Z2 over AREACOAST

% increase in surge zone with CC(increasein)
File: Ag Area

Overview

Type: Continuous
Width: 6
Decimals: 2

Valid cases: 59
Invalid: 31
Minimum: 14.3
Maximum: 328.6
Mean: 68
Standard deviation: 60.9

Source of information

% increase in surge zone with CC

Country name(Countryname)
File: Area

Overview

Type: Discrete
Width: 31

Valid cases: 90
Invalid: NaN

Source of information

Country name

Km of coastline(DIVA_Coasline)
File: Area

Overview

Type: Continuous
Width: 9
Decimals: 2

Valid cases: 90
Invalid: NaN
Minimum: 44.2
Maximum: 269596
Mean: 8986.5
Standard deviation: 32040.6

Source of information

Km of coastline

Literal question

length of coastline from DIVA database (km)

Total country area (km2)(AREATOT)
File: Area

Overview

Type: Continuous
Width: 8

Valid cases: 90
Invalid: NaN
Minimum: 1047
Maximum: 63838523
Mean: 2127950.8
Standard deviation: 7376456.3

Source of information

Total country area (km2)

Literal question

total area (km²)

Area of coastal zone (km2)(AREACOAST)
File: Area

Overview

Type: Continuous
Width: 7

Valid cases: 90
Invalid: NaN
Minimum: 45
Maximum: 2012753
Mean: 67091.8
Standard deviation: 237371.3

Source of information

Area of coastal zone (km2)

Literal question

area of coastal zone (km²)

Current surge zone (km2)(AREAZ2)
File: Area

Overview

Type: Continuous
Width: 9
Decimals: 2

Valid cases: 90
Invalid: NaN
Minimum: 18
Maximum: 391812
Mean: 13060.4
Standard deviation: 45676.7

Source of information

Current surge zone (km2)

Literal question

area of z2 (km²)

Increment with climate change(AREAZ1)
File: Area

Overview

Type: Continuous
Width: 9
Decimals: 2

Valid cases: 90
Invalid: NaN
Minimum: 2
Maximum: 125443
Mean: 4181.4
Standard deviation: 14602.7

Source of information

Increment with climate change

Literal question

area of z1 (km²)

Surge zone with climate change(AREAZ1Z2)
File: Area

Overview

Type: Continuous
Width: 9
Decimals: 2

Valid cases: 90
Invalid: NaN
Minimum: 20
Maximum: 517255
Mean: 17241.8
Standard deviation: 60266.8

Source of information

Surge zone with climate change

AREAZ2 over AREACOAST(V8)
File: Area

Overview

Type: Continuous
Width: 5
Decimals: 2

Valid cases: 90
Invalid: NaN
Minimum: 2.5
Maximum: 76.5
Mean: 25
Standard deviation: 12.4

Source of information

AREAZ2 over AREACOAST

AREAZ1+Z2 over AREACOAST(V9)
File: Area

Overview

Type: Continuous
Width: 5
Decimals: 2

Valid cases: 90
Invalid: NaN
Minimum: 3.3
Maximum: 81.1
Mean: 32.5
Standard deviation: 13.8

Source of information

AREAZ1+Z2 over AREACOAST

% increase in surge zone with CC(increasein)
File: Area

Overview

Type: Continuous
Width: 6
Decimals: 2

Valid cases: 90
Invalid: NaN
Minimum: 6
Maximum: 102.3
Mean: 34.5
Standard deviation: 15.5

Source of information

% increase in surge zone with CC

Country name(Countryname)
File: GDP

Overview

Type: Discrete
Width: 31
Valid cases: 90
Invalid: NaN

Source of information

Country name

Km of coastline(DIVA_Coasline)
File: GDP

Overview

Type: Continuous
Decimals: 2
Valid cases: 90
Invalid: NaN
Minimum: 44.2
Maximum: 269596
Mean: 8986.5
Standard deviation: 32040.6

Source of information

Km of coastline

Literal question

length of coastline from DIVA database (km)

GDP of the country(GDPTOT)
File: GDP

Overview

Type: Continuous
Decimals: 2
Valid cases: 90
Invalid: NaN
Minimum: 55771384
Maximum: 7974584973544
Mean: 265819499118.1
Standard deviation: 965172071016.4

Source of information

GDP of the country

Literal question

total 2005 estimated GDP

GDP coastal area(GDPCOAST)
File: GDP

Overview

Type: Continuous
Decimals: 2
Valid cases: 90
Invalid: NaN
Minimum: 5823194
Maximum: 1375029637604
Mean: 45834321253.5
Standard deviation: 178617245711.9

Source of information

GDP coastal area

Literal question

GDP in z1 using gridded 2005 GDP

GDP in current storm surge zone(GDPZ2)
File: GDP

Overview

Type: Continuous
Decimals: 2

Valid cases: 90
Invalid: NaN
Minimum: 524367
Maximum: 268684843006
Mean: 8956161433.5
Standard deviation: 33731199548.9

Source of information

GDP in current storm surge zone

Literal question

GDP in z2 using gridded 2005 GDP

Increment in GDP exposure with climate change(GDPZ1)
File: GDP

Overview

Type: Continuous
Decimals: 2

Valid cases: 90
Invalid: NaN
Minimum: 170052
Maximum: 122109546336
Mean: 4070318211.2
Standard deviation: 15956957795.7

Source of information

Increment in GDP exposure with climate change

Literal question

GDP in z1 using gridded 2005 GDP

GDP in Surge zone with climate change(GDPZ1Z2)
File: GDP

Overview

Type: Continuous
Decimals: 2

Valid cases: 90
Invalid: NaN
Minimum: 694419
Maximum: 390794389342
Mean: 13026479644.7
Standard deviation: 49633464059.7

Source of information

GDP in Surge zone with climate change

GDPZ2 over GDPCOAST(V8)
File: GDP

Overview

Type: Continuous
Decimals: 2

Valid cases: 90
Invalid: NaN
Minimum: 2
Maximum: 60.5
Mean: 26.1
Standard deviation: 11.2

Source of information

GDPZ2 over GDPCOAST

GDPZ1+Z2 over GDPCOAST(V9)
File: GDP

Overview

Type: Continuous
Decimals: 2

Valid cases: 90
Invalid: NaN
Minimum: 2.7
Maximum: 65.7
Mean: 35
Standard deviation: 13

Source of information

GDPZ1+Z2 over GDPCOAST

% increase in surge zone with CC(increasein)
File: GDP

Overview

Type: Continuous
Decimals: 2

Valid cases: 90
Invalid: NaN
Minimum: 7.8
Maximum: 122.1
Mean: 38.5
Standard deviation: 19.2

Source of information

% increase in surge zone with CC

Country name(Countryname)
File: Population

Overview

Type: Discrete
Width: 31

Valid cases: 90
Invalid: NaN

Source of information

Country name

Km of coastline(DIVA_Coasline)
File: Population

Overview

Type: Continuous
Width: 9
Decimals: 2

Valid cases: 90
Invalid: NaN
Minimum: 44.2
Maximum: 269596
Mean: 8986.5
Standard deviation: 32040.6

Source of information

Km of coastline

Literal question

length of coastline from DIVA database (km)

Total country population(GRTOT)
File: Population

Overview

Type: Continuous
Width: 13
Decimals: 2

Valid cases: 90
Invalid: NaN
Minimum: 152622
Maximum: 4761957402
Mean: 158731913.4
Standard deviation: 581872519.5

Source of information

Total country population

Literal question

total population from GRUMP 2005

Total coastal population(GRCOAST)
File: Population

Overview

Type: Continuous
Width: 9

Valid cases: 90
Invalid: NaN
Minimum: 9361
Maximum: 707891627
Mean: 23596387.6
Standard deviation: 89026118.2

Source of information

Total coastal population

Literal question

population in coastal zone from GRUMP 2005

Population exposed to current storm surges(GRZ2)
File: Population

Overview

Type: Continuous
Width: 9

Valid cases: 90
Invalid: NaN
Minimum: 2997
Maximum: 122066082
Mean: 4068869.4
Standard deviation: 15060664.7

Source of information

Population exposed to current storm surges

Literal question

population in z2 from GRUMP 2005

Increment in exposed population(GRZ1)
File: Population

Overview

Type: Continuous
Width: 8

Valid cases: 90
Invalid: NaN
Minimum: 892
Maximum: 52007481
Mean: 1733582.7
Standard deviation: 6487786.3

Source of information

Increment in exposed population

Literal question

population in z1 from GRUMP 2005

Population exposed to storm surges with climate change(GRZ1Z2)
File: Population

Overview

Type: Continuous
Width: 9

Valid cases: 90
Invalid: NaN
Minimum: 3954
Maximum: 174073563
Mean: 5802452.1
Standard deviation: 21538910.9

Source of information

Population exposed to storm surges with climate change

GRZ2 OVER GRCOAST(V8)
File: Population

Overview

Type: Continuous
Width: 5
Decimals: 2

Valid cases: 90
Invalid: NaN
Minimum: 1.8
Maximum: 64.1
Mean: 26.7
Standard deviation: 11.8

Source of information

GRZ2 OVER GRCOAST

GRZ1+Z2 OVER GRCOAST(V9)
File: Population

Overview

Type: Continuous
Width: 5
Decimals: 2

Valid cases: 90
Invalid: NaN
Minimum: 2.4
Maximum: 73
Mean: 35.3
Standard deviation: 13.4

Source of information

GRZ1+Z2 OVER GRCOAST

% increase in population exposed with CC(increasein)
File: Population

Overview

Type: Continuous
Width: 6
Decimals: 2

Valid cases: 90
Invalid: NaN
Minimum: 9
Maximum: 111.1
Mean: 36.6
Standard deviation: 18

Source of information

% increase in population exposed with CC

Country name(Countryname)
File: Urban area

Overview

Type: Discrete
Width: 31

Valid cases: 90
Invalid: NaN

Source of information

Country name

Km of coastline(DIVA_Coasline)
File: Urban area

Overview

Type: Continuous
Width: 9
Decimals: 2

Valid cases: 90
Invalid: NaN
Minimum: 44.2
Maximum: 269596
Mean: 8986.5
Standard deviation: 32040.6

Source of information

Km of coastline

Literal question

length of coastline from DIVA database (km)

Total country urban area (km2)(URBTOT)
File: Urban area

Overview

Type: Continuous
Width: 7

Valid cases: 90
Invalid: NaN
Minimum: 83
Maximum: 1646992
Mean: 54899.7
Standard deviation: 194254.5

Source of information

Total country urban area (km2)

Literal question

urban area as defined by GRUMP

Coastal urban area (km2)(URBCOAST)
File: Urban area

Overview

Type: Continuous
Width: 9
Decimals: 2

Valid cases: 90
Invalid: NaN
Minimum: 10
Maximum: 206254
Mean: 6875.1
Standard deviation: 25263.8

Source of information

Coastal urban area (km2)

Literal question

area of coastal zone that is defined as urban in GRUMP

Urban Area in Current Surge Zone(URBZ2)
File: Urban area

Overview

Type: Continuous
Width: 8
Decimals: 2

Valid cases: 90
Invalid: NaN
Minimum: 2
Maximum: 40189
Mean: 1339.6
Standard deviation: 4758.1

Source of information

Urban Area in Current Surge Zone

Literal question

area of z2 that is defined as urban in GRUMP

Increment in exposure of Urban Area with climate change(URBZ1)
File: Urban area

Overview

Type: Continuous
Width: 8
Decimals: 2

Valid cases: 90
Invalid: NaN
Minimum: 1
Maximum: 14991
Mean: 499.7
Standard deviation: 1796.7

Source of information

Increment in exposure of Urban Area with climate change

Literal question

area of z1 that is defined as urban in GRUMP

Urban Area in Surge zone with climate change(URBZ1Z2)
File: Urban area

Overview

Type: Continuous
Width: 8
Decimals: 2

Valid cases: 90
Invalid: NaN
Minimum: 3
Maximum: 55180
Mean: 1839.3
Standard deviation: 6551.9

Source of information

Urban Area in Surge zone with climate change

URBZ2 over URBCOAST(V8)
File: Urban area

Overview

Type: Continuous
Width: 5
Decimals: 2

Valid cases: 90
Invalid: NaN
Minimum: 4.2
Maximum: 88.2
Mean: 28.2
Standard deviation: 12.8

Source of information

URBZ2 over URBCOAST

URBZ1+Z2 over URBCOAST(V9)
File: Urban area

Overview

Type: Continuous
Width: 5
Decimals: 2

Valid cases: 90
Invalid: NaN
Minimum: 8.3
Maximum: 94.1
Mean: 36.9
Standard deviation: 14.4

Source of information

URBZ1+Z2 over URBCOAST

% increase in surge zone with CC(increasein)
File: Urban area

Overview

Type: Continuous
Width: 6
Decimals: 2

Valid cases: 90
Invalid: NaN
Minimum: 5.6
Maximum: 130.1
Mean: 35.2
Standard deviation: 19.5

Source of information

% increase in surge zone with CC

Country name(Countryname)
File: Wetlands

Overview

Type: Discrete
Width: 31
Valid cases: 90
Invalid: NaN

Source of information

Country name

Km of coastline(DIVA_Coasline)
File: Wetlands

Overview

Type: Continuous
Width: 9
Decimals: 2
Valid cases: 90
Invalid: NaN
Minimum: 44.2
Maximum: 269596
Mean: 8986.5
Standard deviation: 32040.6

Source of information

Km of coastline

Literal question

length of coastline from DIVA database (km)

Total wetland area (km2)(GLWD1TOT)
File: Wetlands

Overview

Type: Continuous
Width: 7
Valid cases: 90
Invalid: NaN
Minimum: NaN
Maximum: 4388959
Mean: 146298.6
Standard deviation: 517582.2

Source of information

Total wetland area (km2)

Literal question

total wetland area from Global Lakes and Wetlands database (excluding lakes and rivers) (km²)

Area of coastal wetland (km2)(GLWD1COAST)
File: Wetlands

Overview

Type: Continuous
Width: 9
Decimals: 2
Valid cases: 90
Invalid: NaN
Minimum: NaN
Maximum: 663930
Mean: 22131
Standard deviation: 77354.9

Source of information

Area of coastal wetland (km2)

Literal question

area of wetlands in coastal zone (km²)

Wetlands in current storm surge zone(GLWD1Z2)
File: Wetlands

Overview

Type: Continuous
Width: 9
Decimals: 2

Valid cases: 90
Invalid: NaN
Minimum: NaN
Maximum: 152767
Mean: 5092.2
Standard deviation: 17606.1

Source of information

Wetlands in current storm surge zone

Literal question

area of wetlands in z2 (km²)

Increment in exposure of wetlands with climate change(GLWD1Z1)
File: Wetlands

Overview

Type: Continuous
Width: 8
Decimals: 2

Valid cases: 90
Invalid: NaN
Minimum: NaN
Maximum: 45741
Mean: 1524.7
Standard deviation: 5285

Source of information

Increment in exposure of wetlands with climate change

Literal question

area of wetlands in z1 (km²)

Wetlands in surge zone with climate change(GLWD1Z1Z2)
File: Wetlands

Overview

Type: Continuous
Width: 9
Decimals: 2

Valid cases: 90
Invalid: NaN
Minimum: NaN
Maximum: 198508
Mean: 6616.9
Standard deviation: 22880.7

Source of information

Wetlands in surge zone with climate change

GLWDZ2 over GLWD1COAST(GLWDZ2)
File: Wetlands

Overview

Type: Continuous
Width: 6
Decimals: 2

Valid cases: 89
Invalid: 1
Minimum: NaN
Maximum: 100
Mean: 30.8
Standard deviation: 21.1

Source of information

GLWDZ2 over GLWD1COAST

GLWDZ1+Z2 over GLWD1COAST(GLWDZ1Z2)
File: Wetlands

Overview

Type: Continuous
Width: 6
Decimals: 2

Valid cases: 89
Invalid: 1
Minimum: NaN
Maximum: 100
Mean: 37.8
Standard deviation: 21.4

Source of information

GLWDZ1+Z2 over GLWD1COAST

% increase in surge zone with CC(increasein)
File: Wetlands

Overview

Type: Continuous
Width: 6
Decimals: 2

Valid cases: 85
Invalid: 5
Minimum: 2.1
Maximum: 339.1
Mean: 40.7
Standard deviation: 49.4

Source of information

% increase in surge zone with CC

Documentation

Reports

Sea-level rise and storm surges : a comparative analysis of impacts in developing countries

Title	Sea-level rise and storm surges : a comparative analysis of impacts in developing countries
Author(s)	Susmita Dasgupta Benoit Laplante Siobhan Murray David Wheeler
Date	2009-04-01
Language	English
Description	An increase in sea surface temperature is evident at all latitudes and in all oceans. The current understanding is that ocean warming plays a major role in intensified cyclone activity and heightened storm surges. The vulnerability of coastlines to intensified storm surges can be ascertained by overlaying Geographic Information System information with data on land, population density, agriculture, urban extent, major cities, wetlands, and gross domestic product for inundation zones likely to experience more intense storms and a 1 meter sea-level rise. The results show severe impacts are likely to be limited to a relatively small number of countries and a cluster of large cities at the low end of the international income distribution.
Filename	http://go.worldbank.org/5PSZTUXO40

Technical documents

Read Me

Title	Read Me
Language	English
Filename	ReadMe_StormSurges&SLR_data.pdf