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Please note that this presentation was given during the United Nations Climate Change Conference (COP-15) in Copenhagen, December 7-18, 2009 for more information please visit http://www.cop15.state.gov/ .

UNITED STATES 09
COPENHAGEN

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Tools and Methods for Adaptation

COP 15

December 14th 2009

John Furlow, USAID

Climate Change Impacts

Select Impacts:

- Changes in water availability
- Changes in pollutant loading
- Infrastructure damage
- Change in forest cover
- Amplified hazards
- Sea level rise
- Increased hunger
- Spread of disease
- Loss of biodiversity

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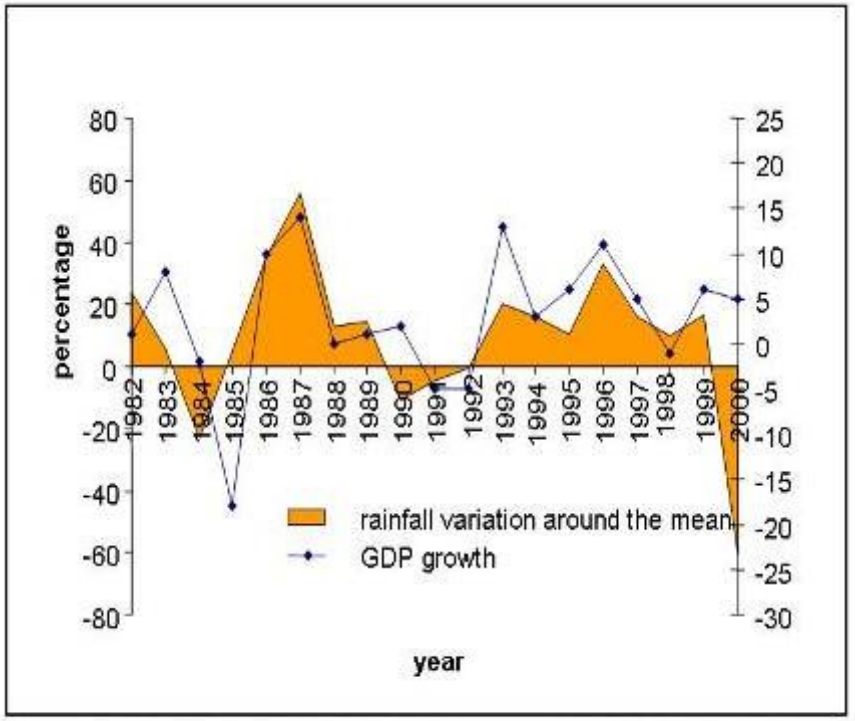
Why Adapt to Climate Change?

- Developing country economies concentrated in climate sensitive sectors
- ~70% of developing country populations derive income from agriculture

Ethiopia: Rainfall, GDP, and Ag GDP



Source: The World Bank. "Managing Water Resources to Maximize Sustainable Growth: A Country Water Resources Assistance Strategy for Ethiopia." 2005.

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What Is Adaptation?

- IPCC: adaptation is “Adjustment in systems in response to actual or expected climatic stimuli or their effects. . .”
  - Process of examining and understanding vulnerabilities
  - Responding in some way to reduce vulnerability, build resilience

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What Is Vulnerability?

- **Vulnerability: f(exposure, sensitivity, adaptive capacity)**
- **Exposure:** Is an asset out in the elements?
  - Flooding, drought, erosion, sedimentation
  - Agriculture is exposed, highly dependent on weather/climate
- **Sensitivity:** Does exposure matter?
  - Are crops suitable to a range of temperatures and precipitation profiles?

- **Adaptive Capacity:** Can you respond to the impact to reduce the vulnerability
  - –Ag sensitivity can be reduced with irrigation, drainage, crop selection
  - –Crop and economic diversification can reduce damages
  - –Insurance spreads risk

(Exposure + Sensitivity) – Adaptive Capacity = Vulnerability

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Some Challenges to Adaptation

Technical

- Poor historical records
- Poor current weather data
- Low local capacity
- GCM uncertainty
- Poorly adapted to current conditions

Social

- Competing Interests
- Too many challenges
- “More pressing needs”
- Poor understanding of climate change
- Intimidating topic
- Limited experience

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USAID's Challenges

- Remain true to Development Mission
- Cope with data limitations
- Build support, capacity, confidence to address climate change
- Simplify, streamline the adaptation process for non-climate experts
- Build resilience while pursuing development gains

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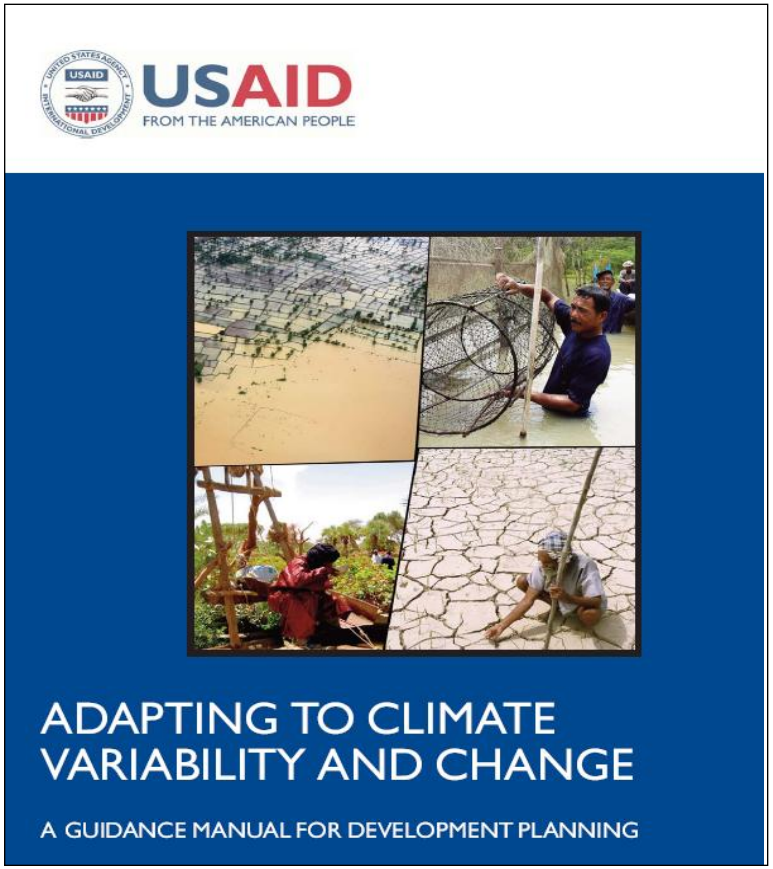
Adapting to Climate Change and Variability

USAID Adaptation Goals:

- Educate project planners:
  - –Provide climate change information for non-experts
- Increase resilience of projects
  - –Identify opportunities for adaptation
- Improve planning processes
  - –Incorporate adaptation into project planning
- Approach
  - –Tools
  - –Guidance
  - –Stakeholder engagement



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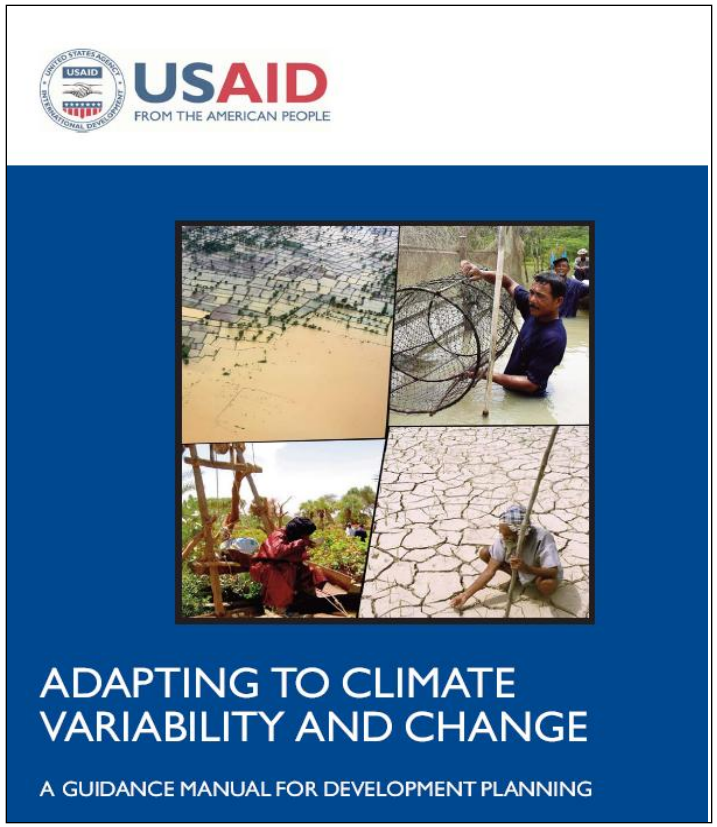
Adaptation Guidance Manual



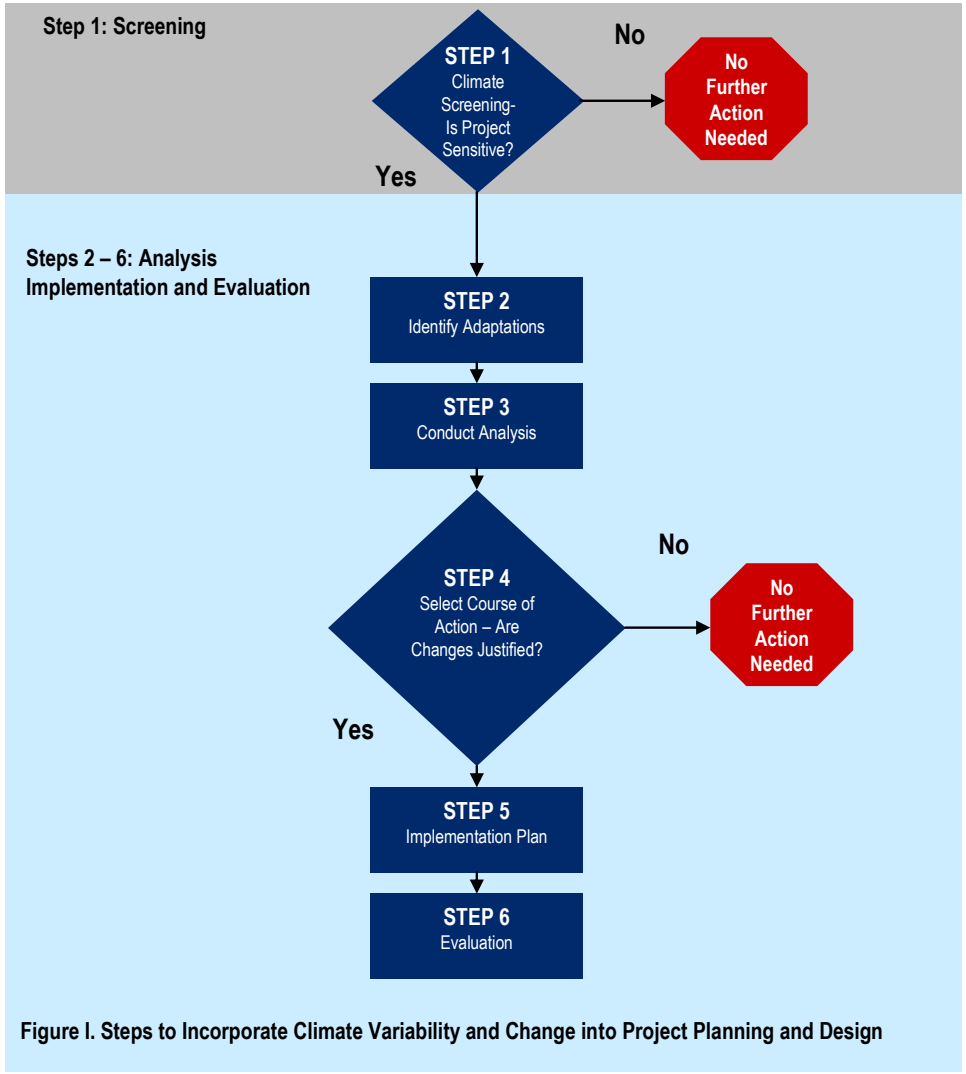


Figure I. Steps to Incorporate Climate Variability and Change into Project Planning and Design

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USAID's Adaptation case studies

- **Honduras:** coastal zone development
- **Mali:** rice and potato production
- **South Africa:** municipal water sources
- **Thailand:** fisheries, rice production
- **Madagascar**: protected areas management and livelihoods
- **Coastal Hazards:** building resilience to multiple hazards
- **Andes/Himalaya:** adapting to a world without glaciers
- **Ghana**: urban water quality

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La Ceiba, Honduras: Coastal Issues

- Coastal city at mouth of two rivers
- Tourism destination and staging site for tourism in islands, on Cangrejal River
- Climate-related concerns include flooding and storm surge
- Coordinated with the USAID-funded MIRA (Integrated Management of Environmental Resources) Project implemented by IRG

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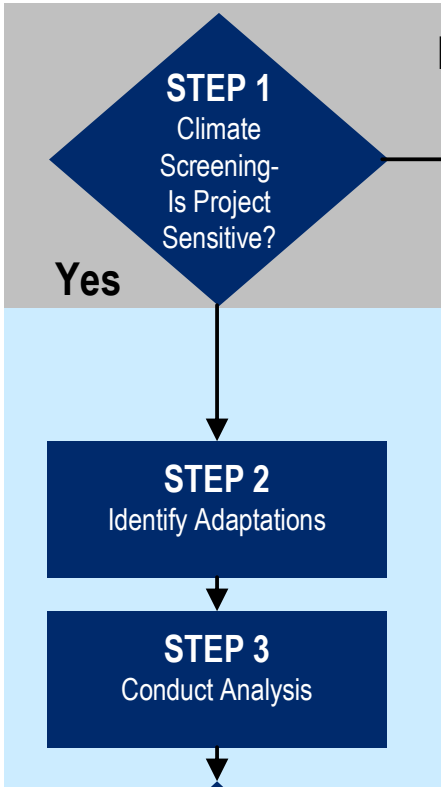
La Ceiba: Development Project Objectives



- Develop Coastal Tourism
- Develop river-based tourism (rafting, hiking)
- Watershed Protection, restoration
- Construction of beachfront boardwalk
- Reduce flooding

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Asset: Coastal tourist infrastucture

- Vulnerabilities:
  - Exposure (Clim): flooding from storm surge, urban rains, river flooding
  - Sensitivity (NC): Buildings right on beach, no set back, poor building design
  - Adapt. Cap (NC): Low – codes not enforced, drainage not understood

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La Ceiba: Uncertainties

Uncertainties:

- Change in Temp
  - +~1.5 ºC
- Change in Rainfall
  - +~11% heavy events, less total rain annually
- Change in Sea Level
  - +~20cm
- Change in Storm frequency/intensity

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La Ceiba Adaptation Options

- ***Risk management*** – (1) Determine acceptable risks; (2*) Environmental education*
- ***Coastal zone (developed areas)*** – (1) Build groins to protect against erosion; (2) Sand pumping; (3) Build breakwaters
- ***Coastal Zone (less developed areas)*** – (1) Set-backs; (2) Zoning and building codes; (3) Construction of houses on stilts
- ***Rio Cangrejal flooding*** – (1) Improved design and higher levees in most vulnerable locations; (2) *Limit deforestation and promote reforestation*; (3) Construct a flood control dam; (4) Dredging of river; (5) *Flood warning system*
- ***Urban drainage*** – (1) Accommodate/adapt to flooding; (2) Install drainage systems

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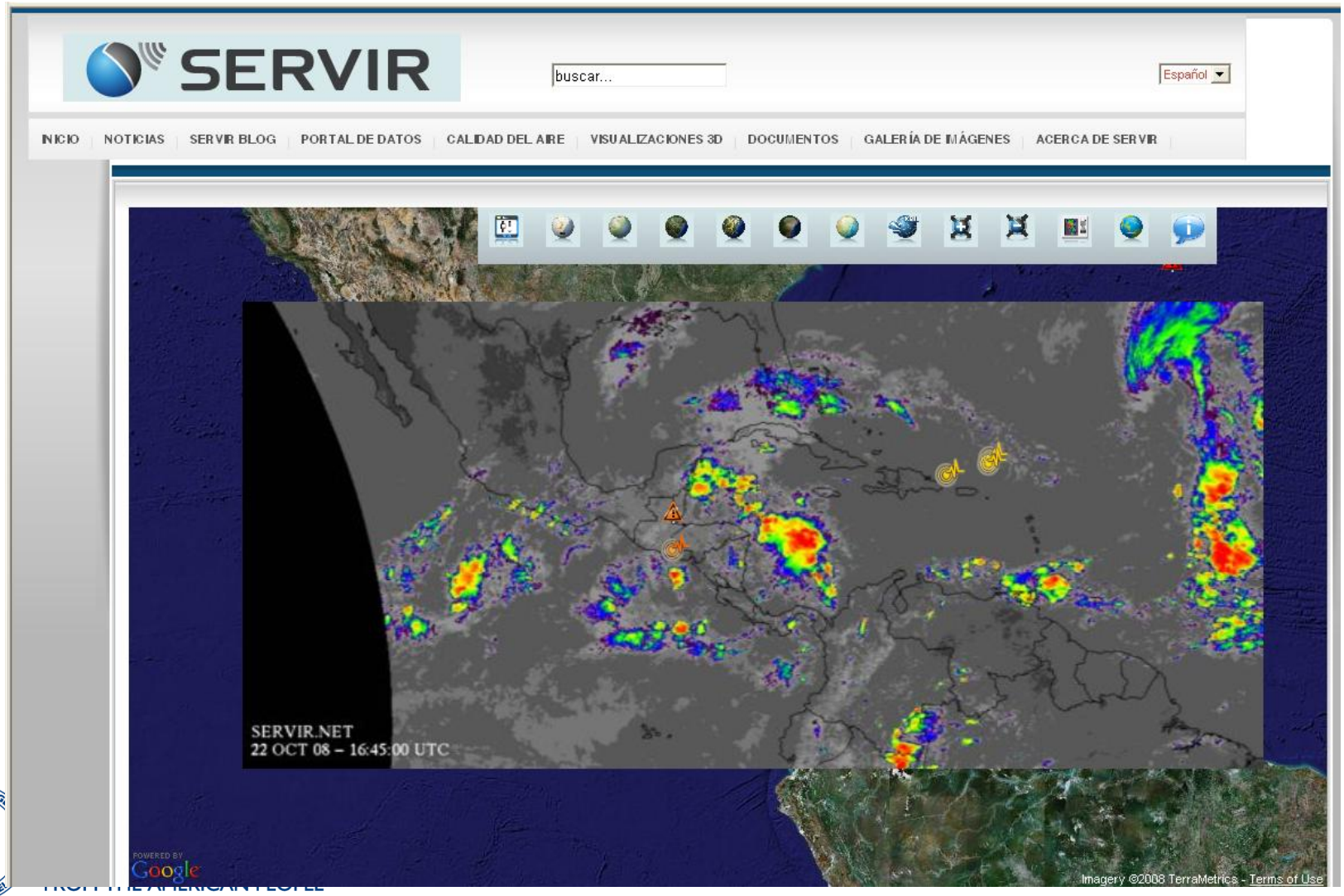
SERVIR: Tools to Assist Development



SERVIR: Climate Mapper

SERVIR Viz!

File Edit View Tools Plug-Ins Help

Climate Mapper

File Help

*Users of this tool have read and understand the Disclaimer

Select a Theme:

Temperature

Observed Modeled Projection What do these mean?

Observed

Monthly Temperature Values from 1961 to 1990

Modeled Forecast

GCM Model			Time Period
For Map	For Graph		
Dry (GFDL_CM21)	Dry (GFDL_CM21)		2031 - 2040
Mid (ECHAM5)	Mid (ECHAM5)		2051 - 2060
Wet (NCAR_CCSM)	Wet (NCAR_CCSM)		

Choose an Action:

Close Map

Opacity:

- - - OR - - -

Graph by X,Y Location --->

Cancel

Show Spatial Average Grid

Show Country Boundaries

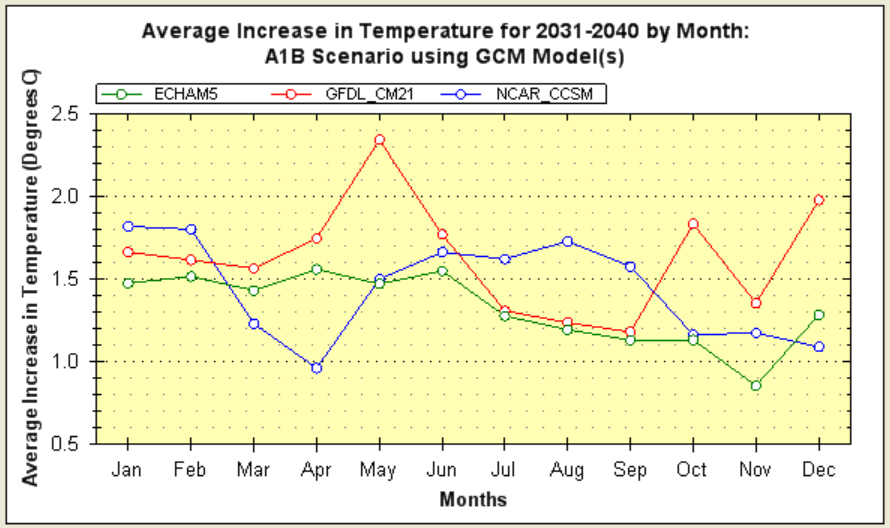
Export Graph Data

Average Annual Increase in Temperature (deg C)(Dry) = +1.6

Average Annual Increase in Temperature (deg C)(Mid) = +1.3

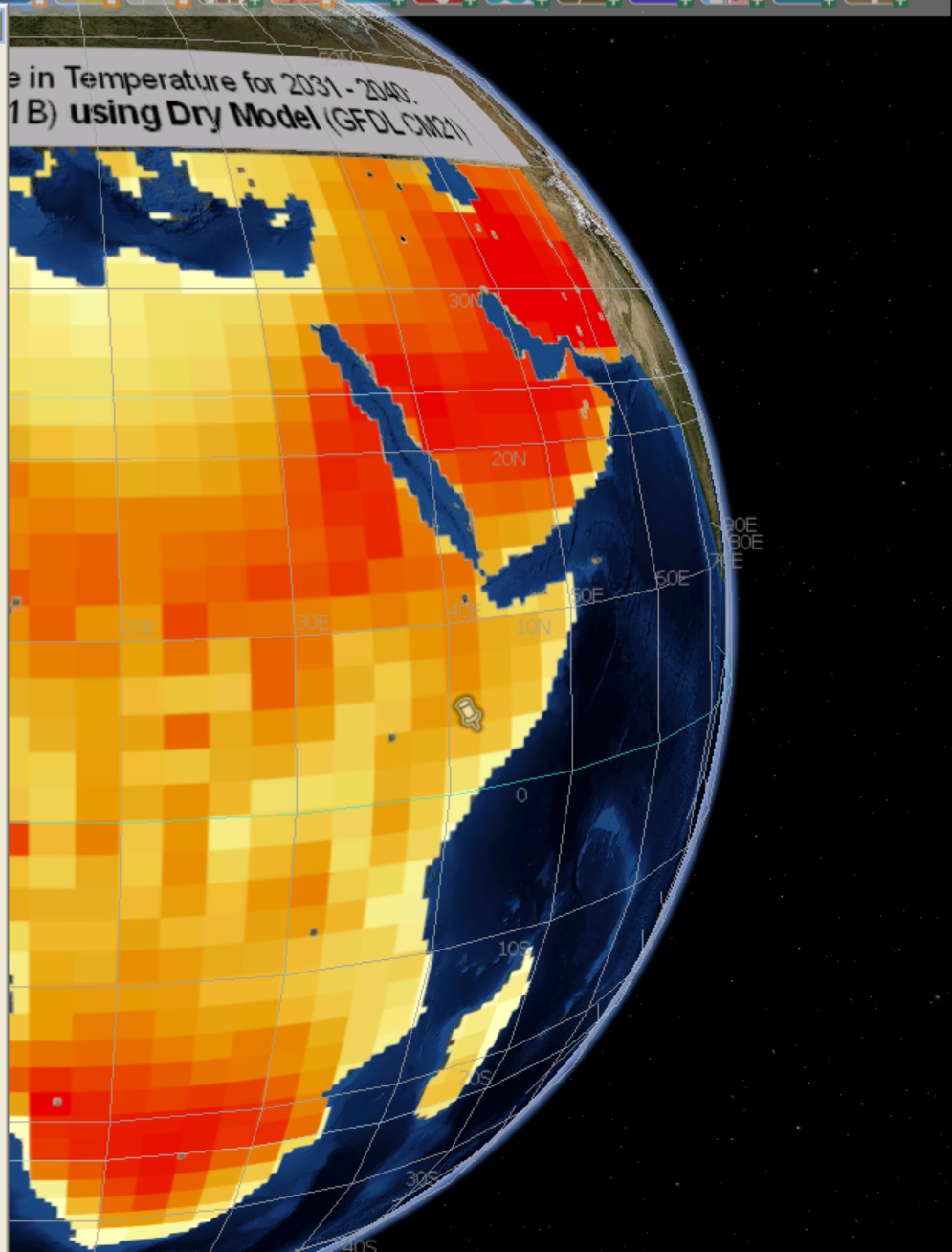
Average Annual Increase in Temperature (deg C)(Wet) = +1.4

Graph by Location: Lat: 3.519 Lon: 42.4093

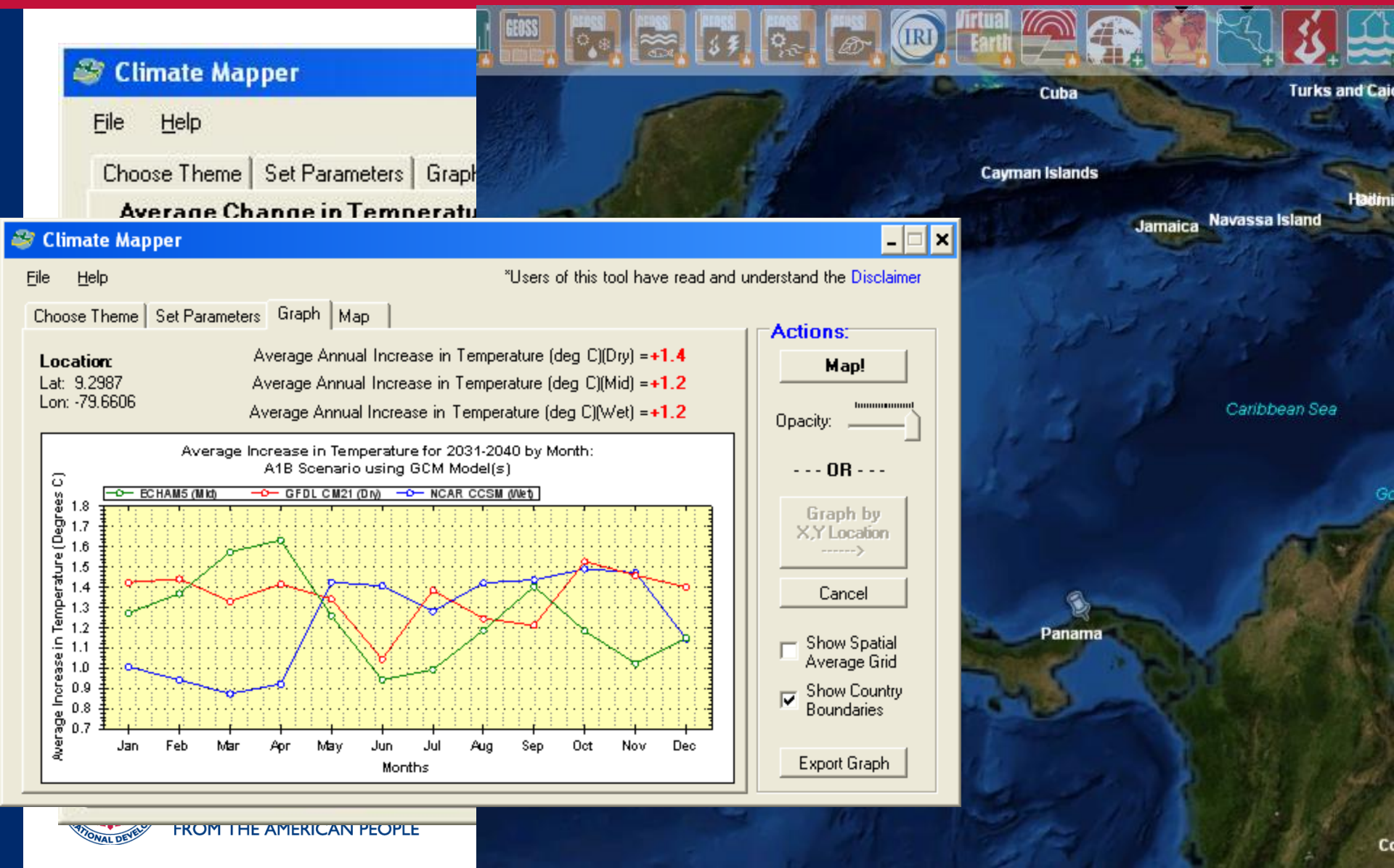


Data Description:

Observed Data: The observed data are for temperature for the base period (1961-1990). The data are taken from the University of East Anglia's Climate Research Unit(CRU) database of monthly climate observations from meteorological stations and interpolated onto a 0.5 degree grid covering the global land surface.



Tools and Information: SERVIR



Thank you

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