



THE UNIVERSITY OF THE WEST INDIES
AT MONA, JAMAICA

CLIMATE CHANGE & YOU



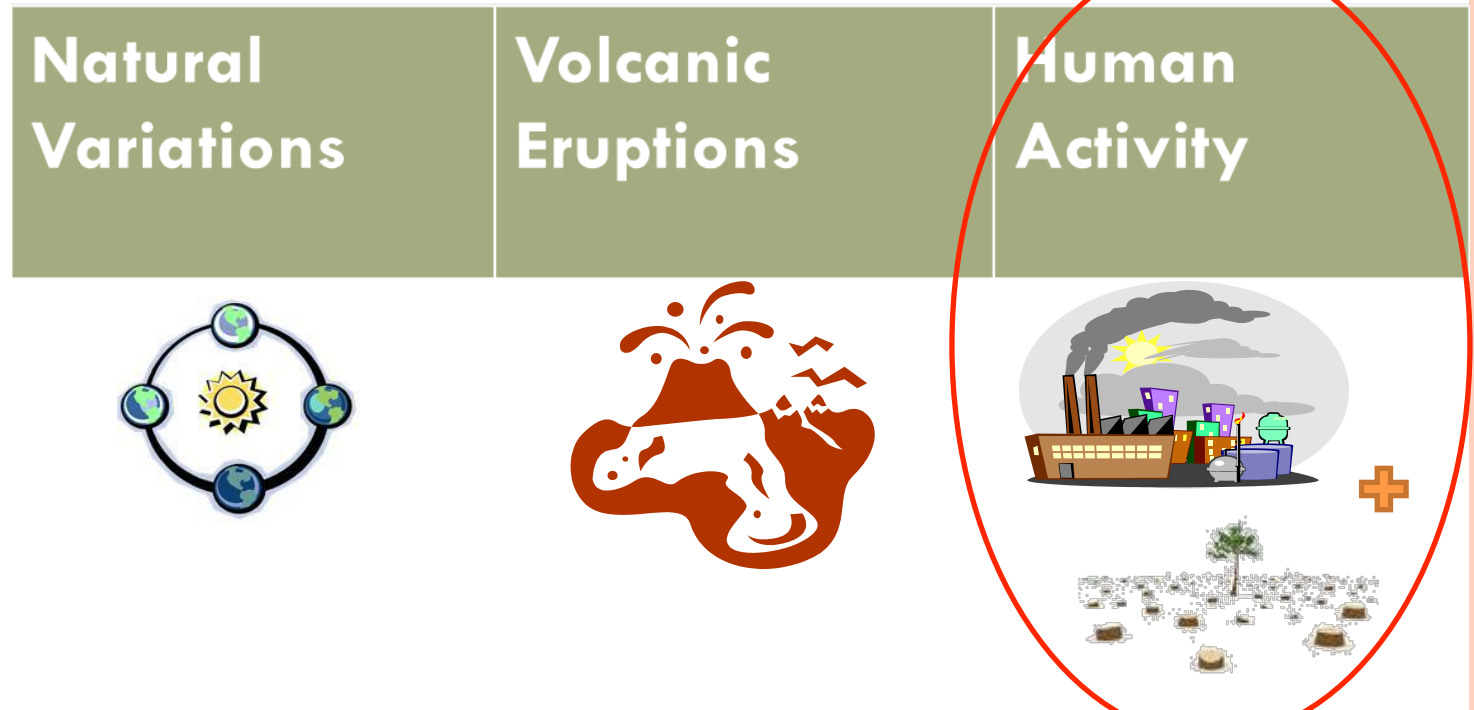
WHY YOU MUST CONSIDER CLIMATE CHANGE

3 REASONS
BUT FIRST SOME CONTEXT...



Climate Change...

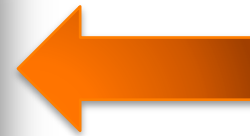
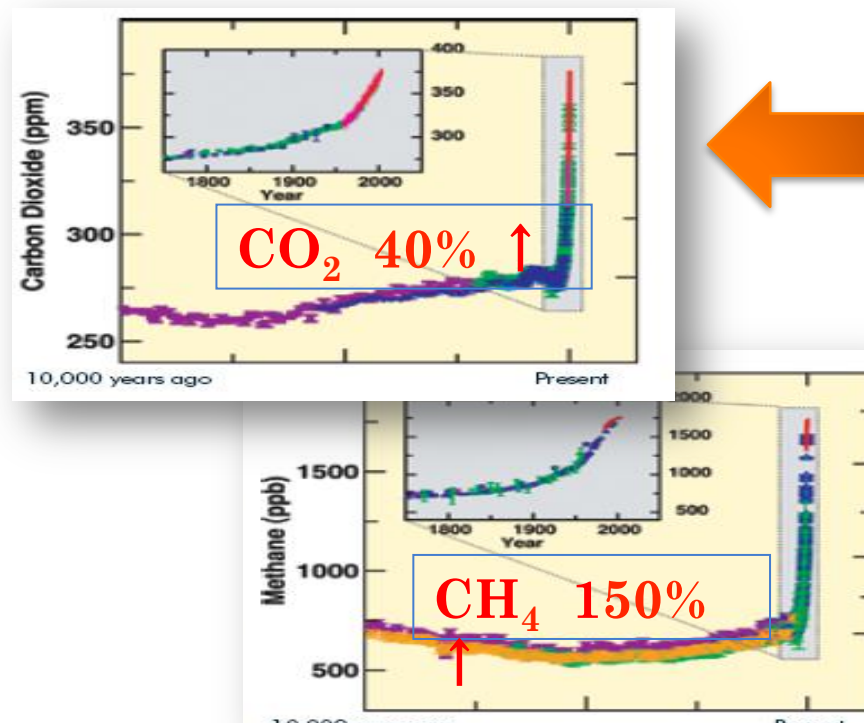
Distinct changes in measures of climate (rainfall, temperature, wind speed, etc.) lasting for a long period of time due to human actions.



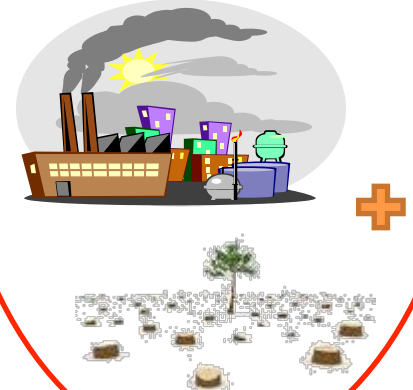


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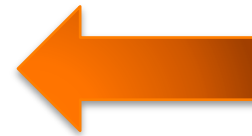
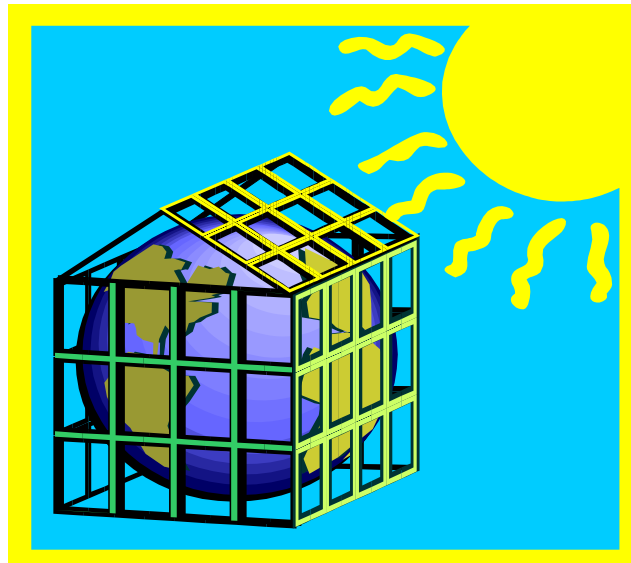
Human
Activity



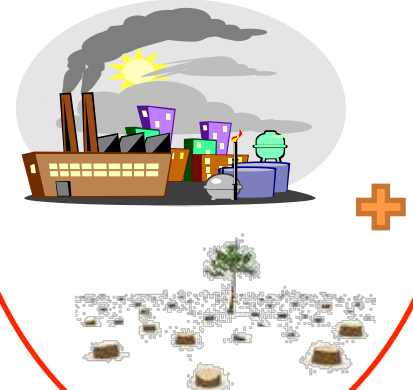


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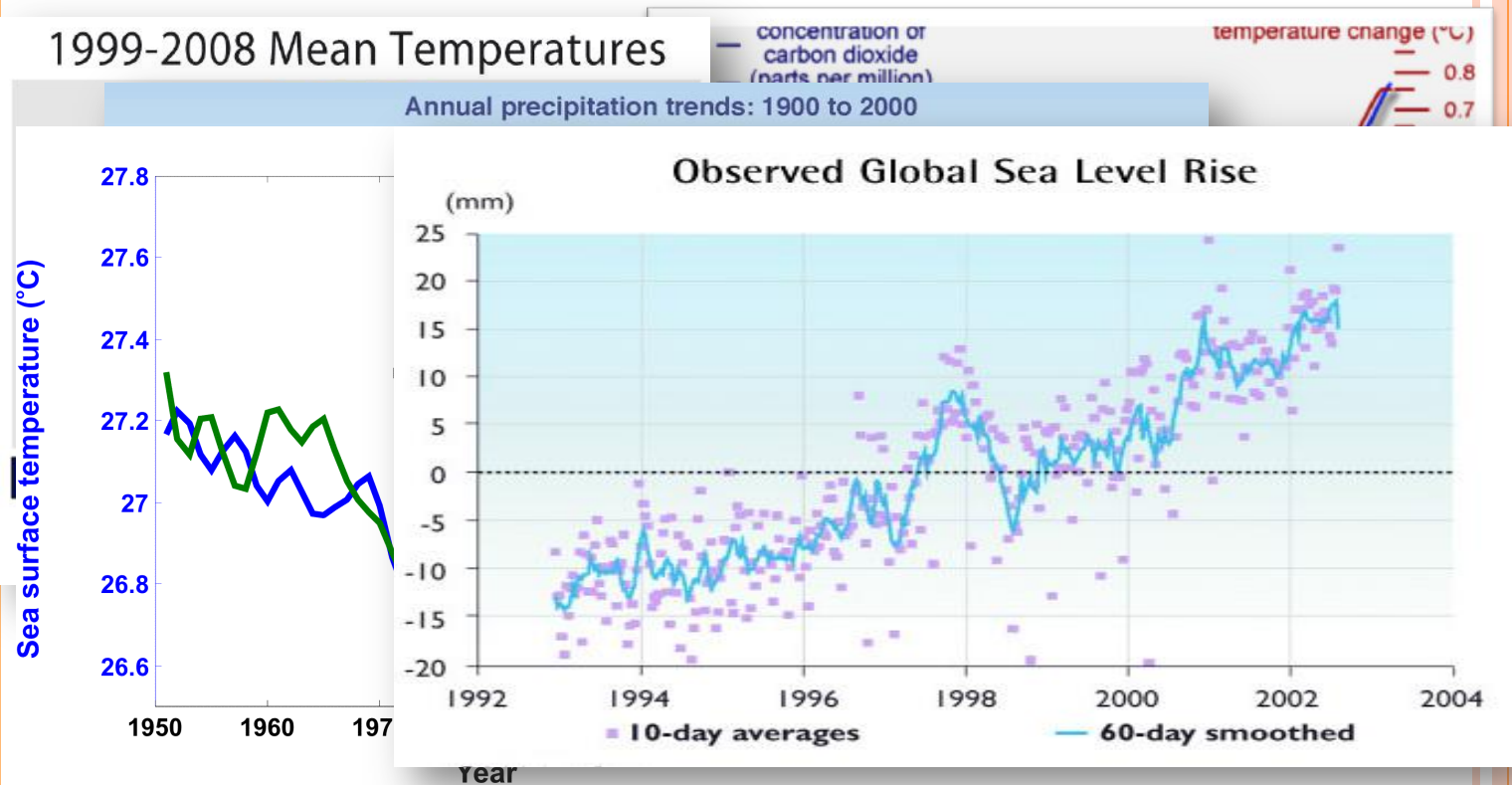
Human
Activity





Climate Change...

Distinct changes in measures of climate (rainfall, temperature, wind speed, etc.) lasting for a long period of time due to human actions.





Climate Change...

Distinct changes in measures of climate (rainfall, temperature, wind speed, etc.) lasting for a long period of time due to human actions.

**3 reasons why you must
consider climate change!**





Our Context Commands It!

Jamaica is very **climate sensitive**

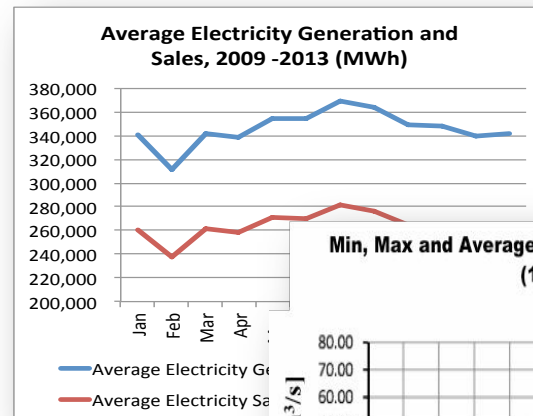
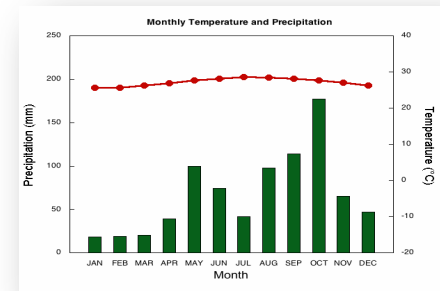
Reason 1
Context
Commands
It

Embedded Climate Patterns

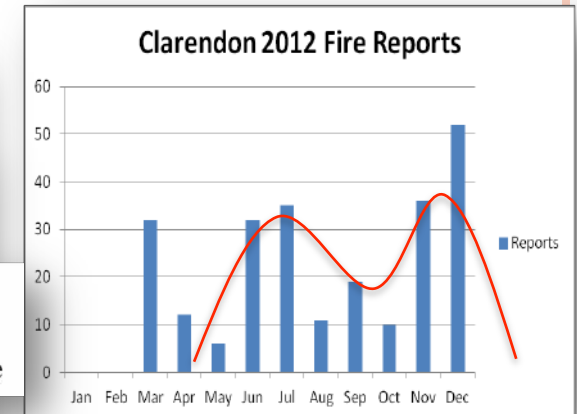
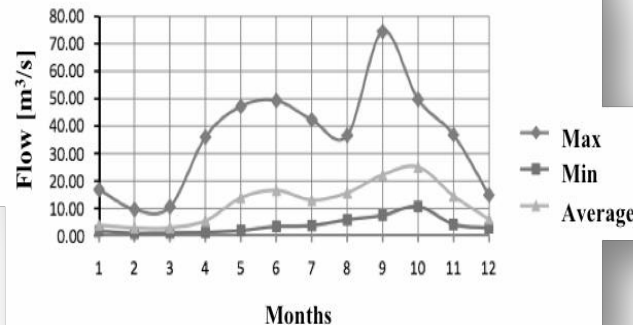
We pattern our lives around climate.

Reason 2

Reason 3



Min, Max and Average flow for Great River, Portland, (1955-2008)





Our Context Commands It!

Jamaica is very **climate sensitive**

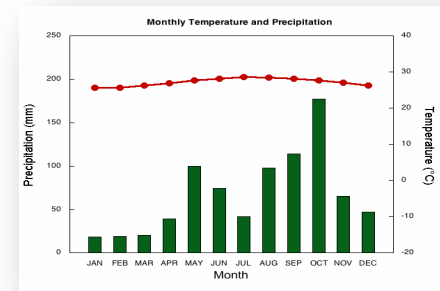
Reason 1 Context Commands It

Embedded Climate Patterns

We pattern our lives around climate.

Topography and size

We live on **steep slopes** or on limited **coastal plains**.



Reason 2

Reason 3



Jamaica
National and Parish Capitals





Our Context Commands It!

Jamaica is very **climate sensitive**

Reason 1
Context
Commands
It

Embedded Climate Patterns

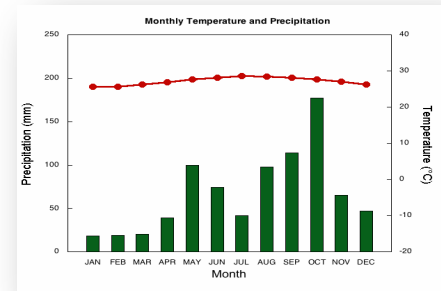
We pattern our lives around climate.

Topography and size

We live on **steep slopes** or on limited **coastal plains**.

Livelihood, Wellbeing and Water

Economy (Agriculture, Tourism, Fisheries, Mining), **Health and Wellbeing** (diseases and recreation) and **Critical livelihood sectors** (Water) bound up with climate



Reason 2

Reason 3



Our Context Commands It!

Jamaica is very **climate sensitive**

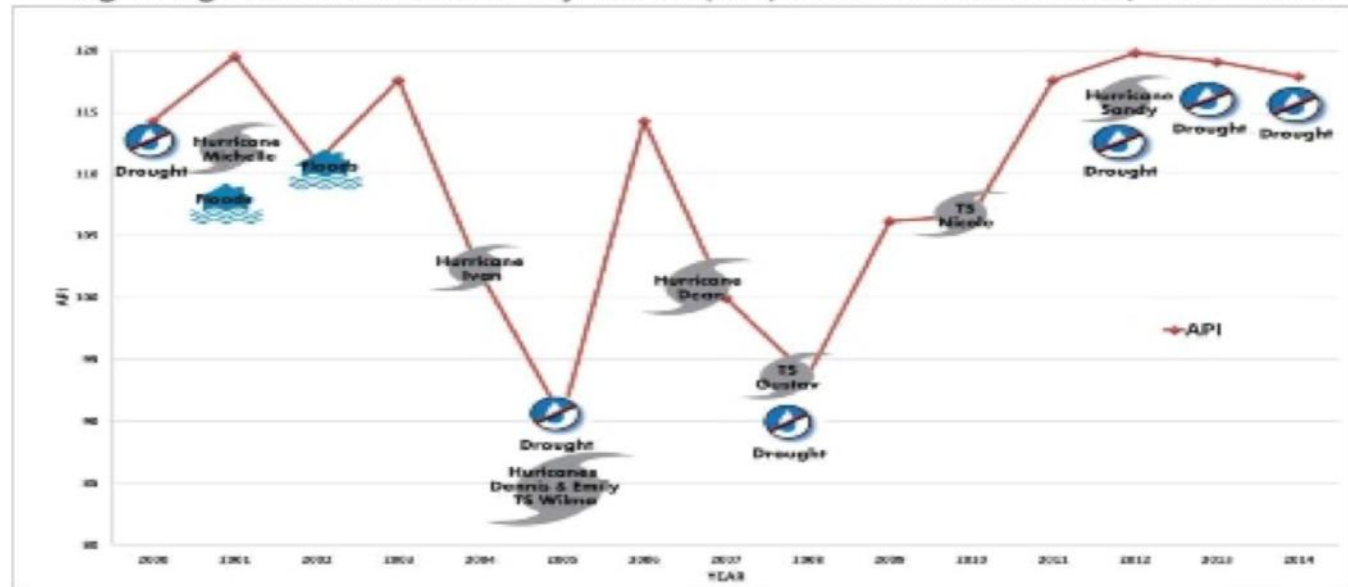
Reason 1
Context
Commands
It

Impact of Recent Climate Events on
the Jamaican Agricultural Sector

Reason 2

Reason 3

Fig 1: Agriculture Productivity Index (API) and Disaster Events, 2000-2014



PIOJ. 2015

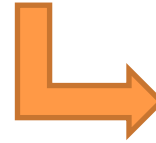


Why Consider Climate?

Reason 1
Context
Commands
It



Our context commands it!!!



Lives 'Linked to' Climate

Reason 2

Reason 3



Our Science Suggests It!

We are in a regime of **unfamiliar climate variability** – our climate is not behaving as it used to

Its gotten hotter

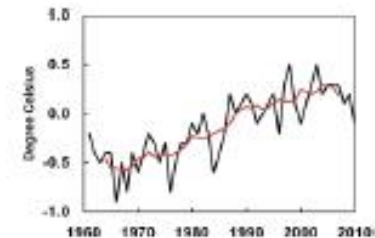
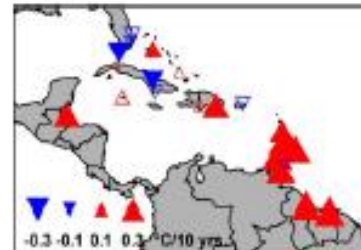
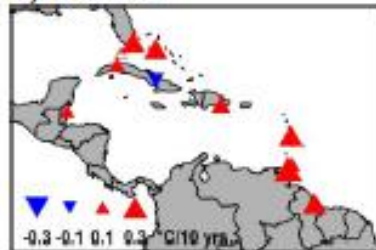
Reason 1
Context
Commands
It

Reason 2
Science
Suggests It

Reason 3

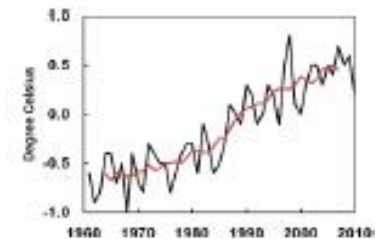
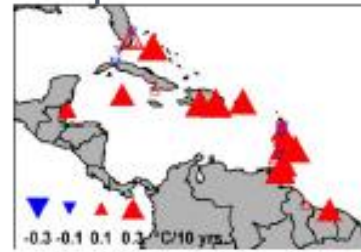
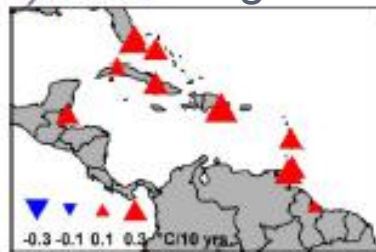
Day time temperatures

a) TXmean



Night time temperatures

b) TNmean



Stephenson et al
(2014)

~ 1 degree rise since pre-industrialized
times.



Our Science Suggests It!

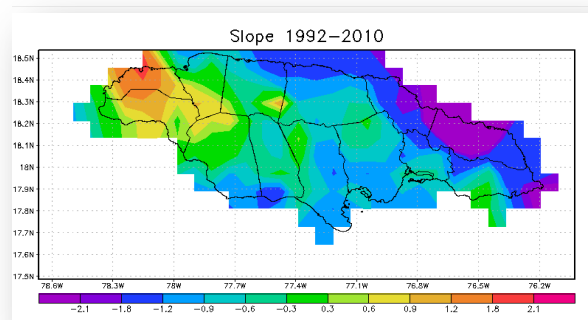
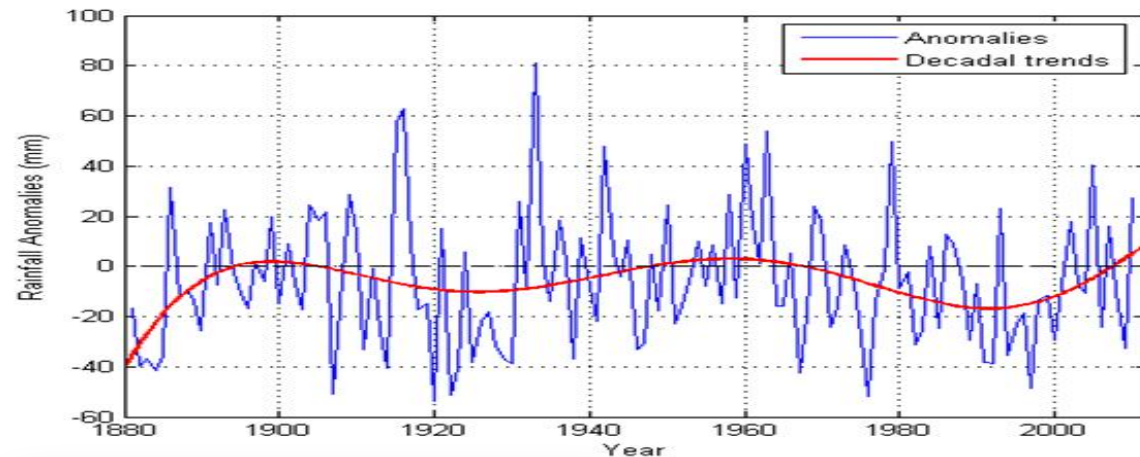
We are in a regime of **unfamiliar climate variability** – our climate is not behaving as it used to

Rain is more variable

Reason 1
Context
Commands
It

Reason 2
Science
Suggests It

Reason 3



(1) Very variable rainfall pattern + some places getting wetter, some getting drier + (3) 'nature' of rain is changing



Our Science Suggests It!

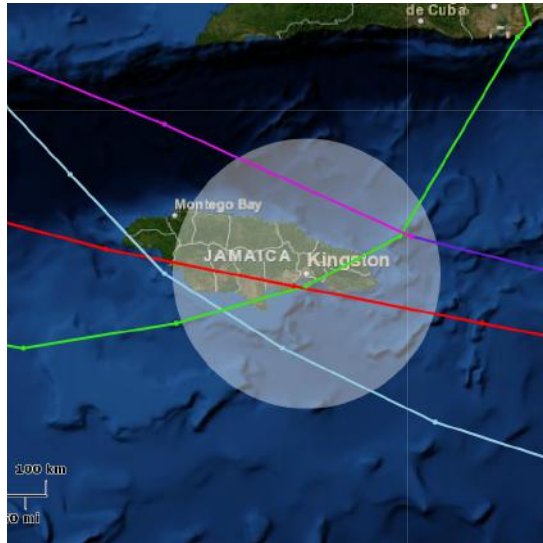
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Reason 1
Context
Commands
It

Reason 2
Science
Suggests It

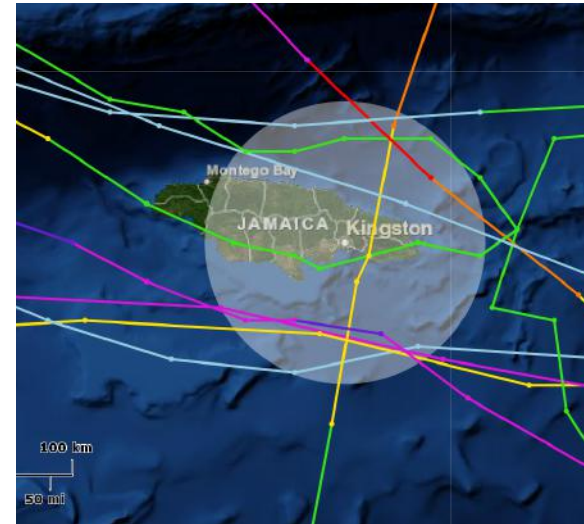
Reason 3

More storms



1980-1999

2000 - present



Changing climate leads to changing weather and extreme events.





Our Science Suggests It!

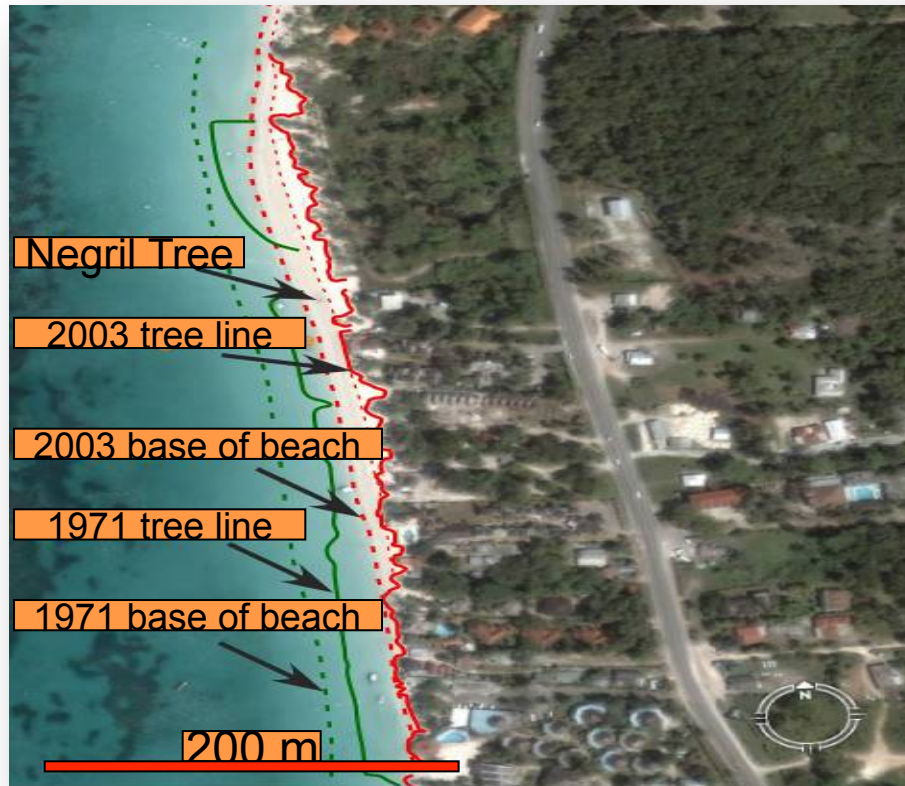
We are in a regime of **unfamiliar climate variability** – our climate is not behaving as it used to

Reason 1
Context
Commands
It

Reason 2
Science
Suggests It

Reason 3

Higher Sea Levels



Sea levels
are rising at
about a rate
of 3.5 mm/yr
(post 1993)





Our Science Suggests It!

Hotter temperatures + Variable Rain + More extremes + Higher sea levels



Reason 1
Context
Commands
It

We are in a regime of **unfamiliar climate variability** – our climate is not behaving as it used to



Reason 2
Science
Suggests It

Unfamiliarity in **magnitude** (e.g. much hotter on land or ocean) or **timing** (e.g. dry when we expect wet or wet when we expect dry) or **frequency** (e.g. more storm events) or **duration** (e.g. longer droughts). Onset of an unfamiliar new climate regime.



Reason 3

Having patterned life around climate, when it behaves in unfamiliar ways, **life... and all aspects of life... altered.**





Our Science Suggests It!

Lives altered by climate

2014 Drought

Reason 1
Context
Commands
It

Reason 2
Science
Suggests It

Reason 3

Food

Fires

Education

Energy

Livelihoods

Economy



Climate
impacts total
life!!!

Jamaica's Drought Conditions Upgraded To 'Severe'

Published: Thursday August 21, 2014 | 12:56 pm

Jamaica Drought Causes Nearly US\$1 Billion in Losses

Drought Induced Food Shortage Confirmed In Jamaica

Published: Wednesday July 23, 2014 | 9:43 am

0 Comments

Fire brigade says 75 per cent of calls relate to bush fires

Parishes urged not to burn lands during drought

Thursday, July 10, 2014 | 4:2 Comments

J\$5Mil Allocated To Truck Water To St. Elizabeth

Posted by: LiveJamaica | In: Headlines, Local News

Water lock-off forces closure of 25 Corporate Area schools

Thursday, April 10, 2014 | 4:35 PM | 1 comment

JPS: Drought Conditions Contributed To Power Outages In Portmore Over The Weekend

10 people recommend this. Sign Up to see what your friends recommend.

Drought cuts hydro energy output 15%

Wednesday, August 13, 2014 | 2 Comments

Drought hits business owners

BY KARENA BENNETT Business reporter bennettk@jamaicaobserver.com

Jamaica Nation's forests affected by ongoing drought conditions and recent increase in bush fires

Written By: Mello FM

8-8-2014

Categorized by: Mello FM

OBSERVER ONLINE SPECIAL REPORT: Car wash business cutting staff to stay afloat in drought

Friday, July 25, 2014 | 11:04 AM | 4 Comments

Drought slows economic growth

Sunday, August 24, 2014



Our Science Suggests It!

Lives altered by climate

Reason 1
Context
Commands
It

Reason 2
Science
Suggests It

Reason 3

EVENT Jamaica	Year	Category	Impact (% GDP)
Hurricane Michelle	2001	4	0.8
May/June Flood Rains	2002		0.7
Hurricane Charley	2004	4	0.02
Hurricane Ivan	2004	3	8.0
Hurricanes Dennis & Emily	2005	4	1.2
Hurricane Wilma	2005	5	0.7
Hurricane Dean	2007	4	3.4
Tropical Storm Gustav	2008		2.0
Tropical Storm Nicole	2010		1.9
Hurricane Sandy	2012	1	0.9

The **capacity** of Jamaica **to cope** with climate impacts **is being challenged**.

Planning Institute of Jamaica





Why Consider Climate?

Reason 1
Context
Commands
It



Our context commands it!!!



Lives 'Linked to' Climate

Reason 2
Science
Suggests It



Our science suggests it!!!



Lives 'Altered by' Climate

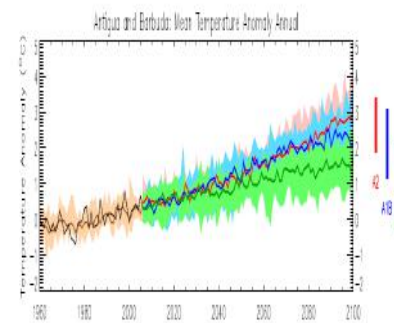
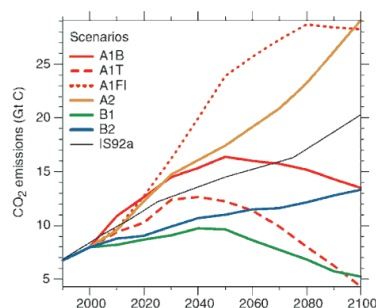
Reason 3



Our Future Depends on It!

Our future will see **unprecedented climate change**.

Reason 1
Context
Commands
It



Models

Scenarios or
Storylines of
future global
development

Future Climate

Temperature
Rainfall
Extremes
Sea Level Rise

Reason 3
Future
Depends on
It



Our Future Depends on It!

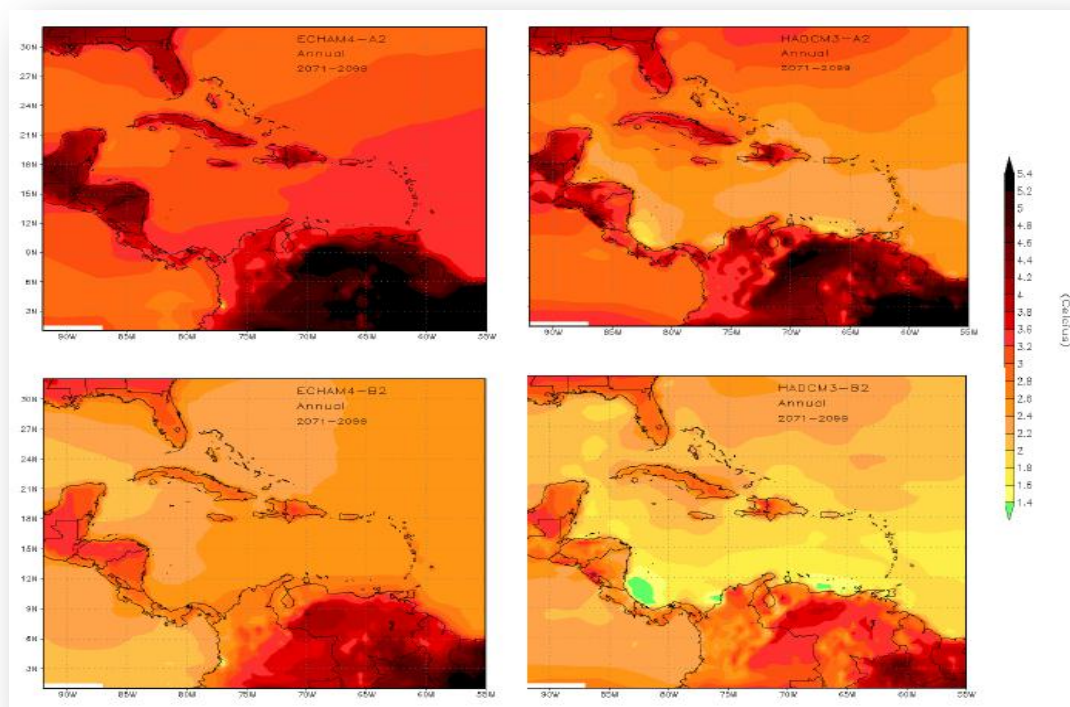
Our future will see **unprecedented climate change**.

Reason 1
Context
Commands
It

Reason 2
Science
Suggests It

Reason 3
Future
Depends on
It

Jamaica will be much hotter...



- 30-98% of days annually will be 'hot' by the 2090s
- Only 2% 'cool' by the 2080s

A warming of 1-4 degrees by century's end



Our Future Depends on It!

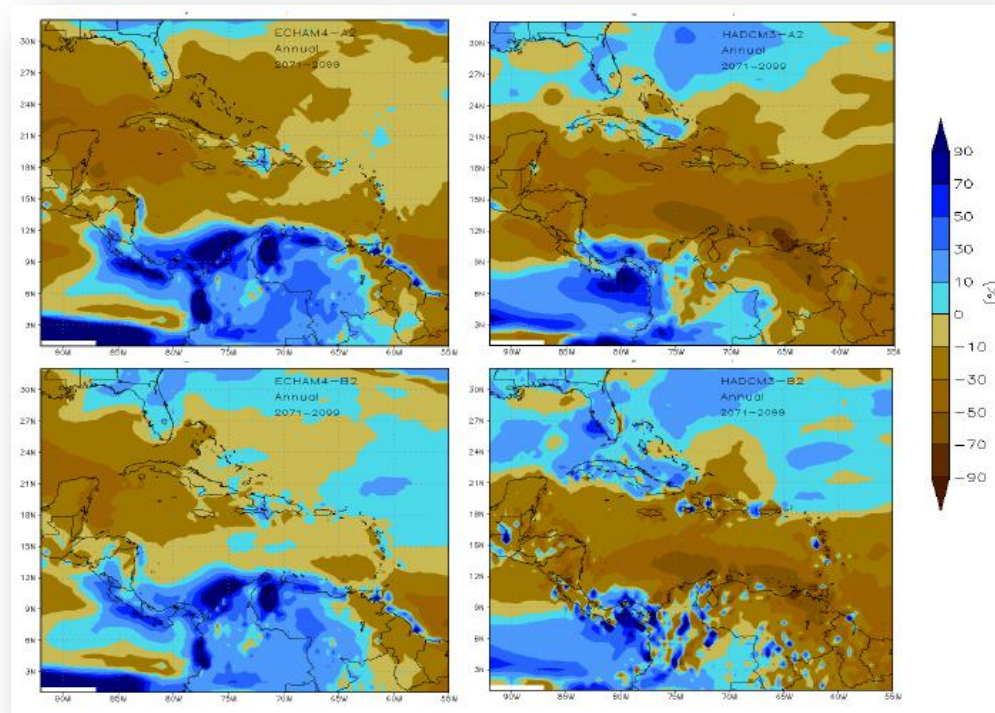
Our future will see **unprecedented climate change**.

Reason 1
Context
Commands
It

Reason 2
Science
Suggests It

Reason 3
Future
Depends on
It

Jamaica will be much drier...



More
severe
droughts
in the
future
which
last
longer.

Rainfall still variable but much less ~30% drier.



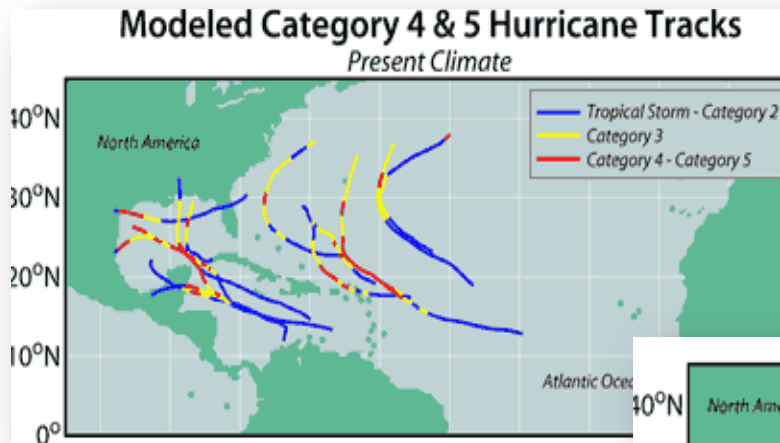
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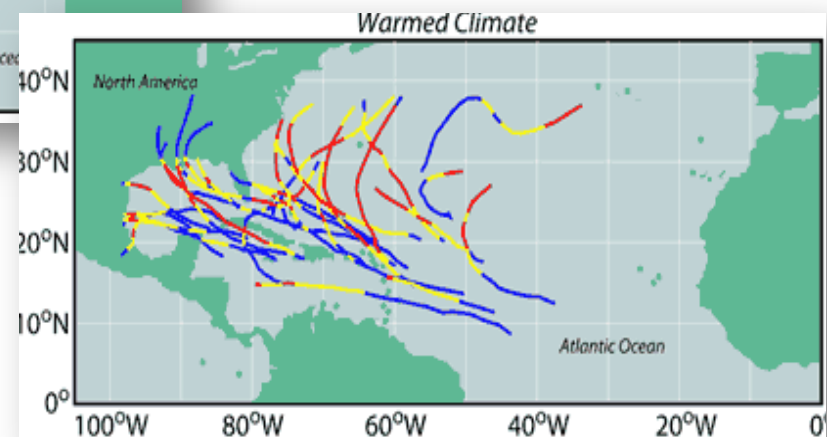
Reason 1
Context
Commands
It

Jamaica will experience more intense storms...

Reason 2
Science
Suggests It



Storms, with higher
rainfall rates and
stronger winds.



Reason 3
Future
Depends on
It



Reason 1

Context

Commands

It

Reason 2 Science Suggests It

Reason 3 Future Depends on It



- ## Impacts from a 2m SLR on Jamaica
1. Land area lost (1%).
 2. People displaced (1%).
 3. Damage or loss to power plants (20%)
 4. Tourism resorts damaged or lost (18%).
 5. Loss or damage of airports (60%).
 6. Loss of roads (2%).
 7. Loss or damage to port structures (100%)



Our Future Depends on It!

**1-4 degrees
hotter**

30% drier

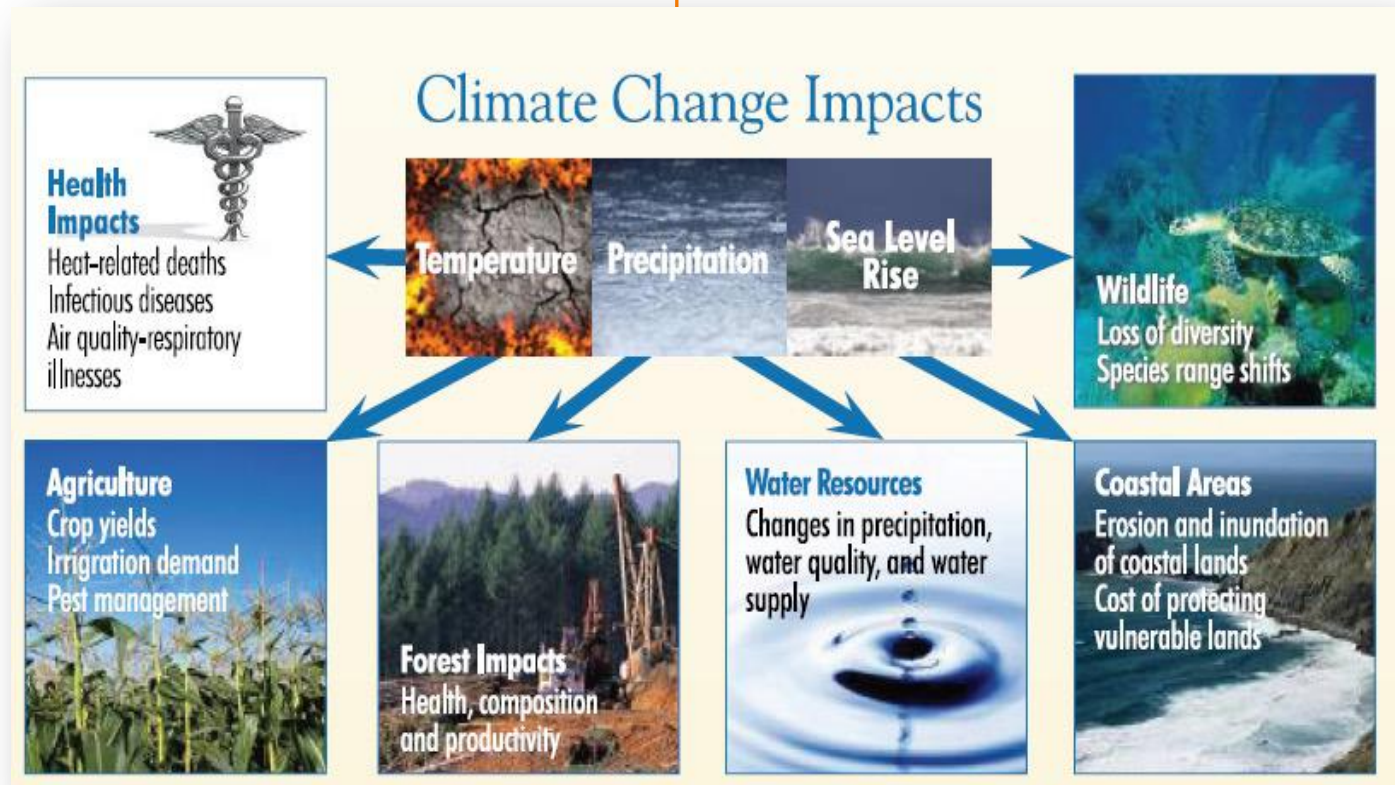
**Stronger
hurricanes**

**1-2 m sea
level rise**

Reason 1
Context
Commands
It

Reason 2
Science
Suggests It

Reason 3
Future
Depends on
It





Our Future Depends on It!

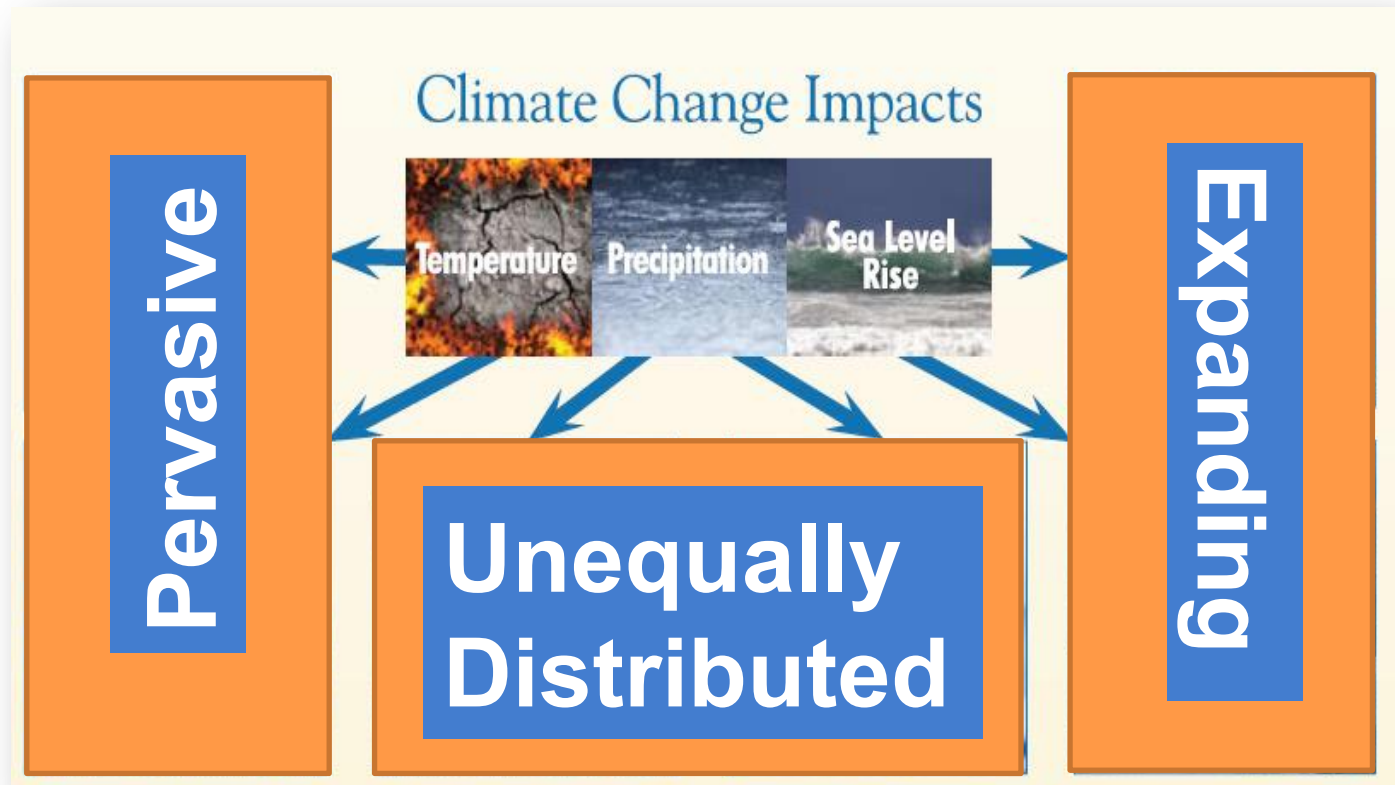
Life as we know it is under serious threat...



Reason 1
Context
Commands
It

Reason 2
Science
Suggests It

Reason 3
Future
Depends on
It





Our Future Depends on It!

Life as we know it is under serious threat...



Reason 1
Context
Commands
It

Water



Reason 2
Science
Suggests It

Reason 3
Future
Depends on
It

We are heading towards a water deficit. **Challenge to deliver safe & adequate water to all.**

Agriculture

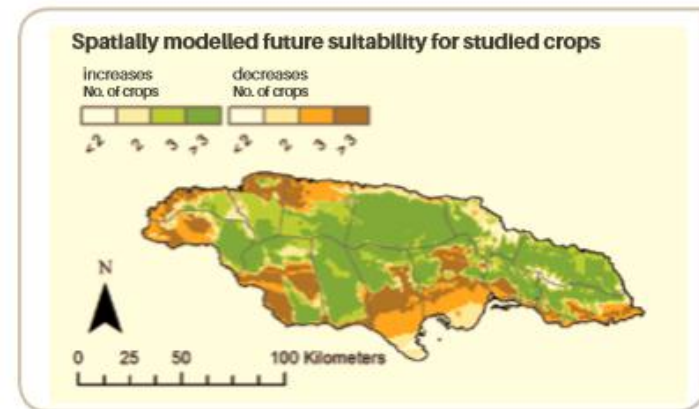


Figure 4 Spatially modelled future suitability of alternative crops in Jamaica, showing areas where most crops have increasing (green colour gradients) or decreasing (orange colour gradients) climate suitability by 2050.

Some areas are becoming less suitable for agriculture, while the interior is becoming better suited for crops. **Challenge of food security & nutrition.**



Our Future Depends on It!

Life as we know it is under serious threat...



Reason 1
Context
Commands
It

**Coastal infrastructure
& livelihoods**



Reason 2
Science
Suggests It



Reason 3
Future
Depends on
It

Health



**Increasing challenge to deliver
adequate health care in an already
over-burdened system.**



Why Consider Climate?

Reason 1
Context
Commands
It



Our context commands it!!!



Lives 'Linked to' Climate

Reason 2
Science
Suggests It



Our science suggests it!!!



Lives 'Altered by' Climate

Reason 3
Future
Depends on
It



Our future depends on it!!!



Lives 'Threatened by' Climate



Reason 1
Context
Commands
It

Reason 2
Science
Suggests It

Reason 3
Future
Depends on
It

Climate & You



Lives 'Linked to' Climate



Lives 'Altered by' Climate



Lives 'Threatened by' Climate



Challenge: Act

Reason 1
Context
Commands
It

Reason 2
Science
Suggests It

Reason 3
Future
Depends on
It





Challenge: Act

Mitigation

Reason 1
Context
Commands
It

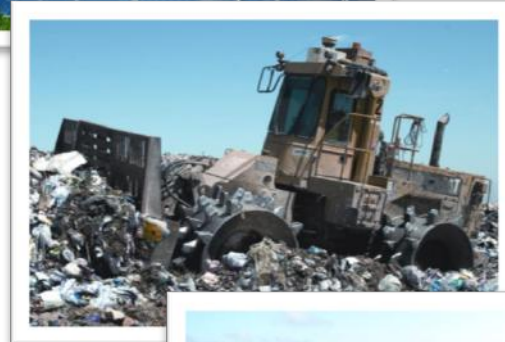
Reason 2
Science
Suggests It

Reason 3
Future
Depends on
It

‘...changing so we reduce the amount of greenhouse gases we put in the atmosphere’



Energy



Waste



Forests





Challenge: Act

Adaptation

Reason 1
Context
Commands
It

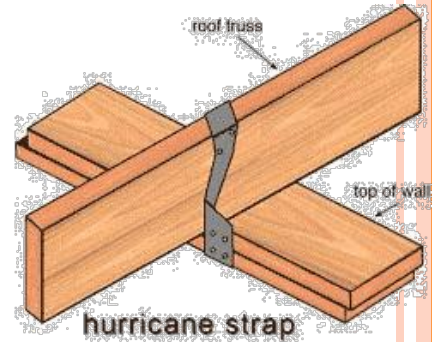
‘...changing in order to live with the changed climate’

Reason 2
Science
Suggests It

Reason 3
Future
Depends on
It



Greenhouse farming



Building smart

Water harvesting



Sea walls



Policies





Challenge: Act

Reason 1
Context
Commands
It

Mitigation



Adaptation



Reason 2
Science
Suggests It

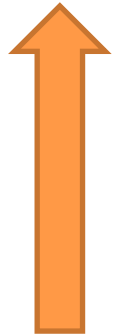
**Requires
people to
change
their
behaviour**

Reason 3
Future
Depends on
It

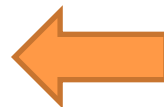
**Convicted about
the issue**

**Convinced about
the issue**

**Conscious about
the issue**



Education





Why Consider Climate & YOU

Reason 1
Context
Commands
It



Our context commands it!!!



Lives 'Linked to' Climate



Reason 2
Science
Suggests It



Our science suggests it!!!



Lives 'Altered by' Climate



Reason 3
Future
Depends on
It



Our future depends on it!!!



Lives 'Threatened by' Climate



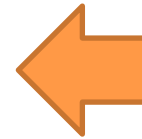


Reason 1
Context
Commands
It

Reason 2
Science
Suggests It

Reason 3
Future
Depends on
It

Challenge: Act



Climate & YOU



Everybody



Mitigation
Adaptation
Education



Lives 'Resilient to' Climate



Lives 'Linked to' Climate



Lives 'Altered by' Climate



Lives 'Threatened by' Climate



Climate Matters to Me & YOU

Thank you