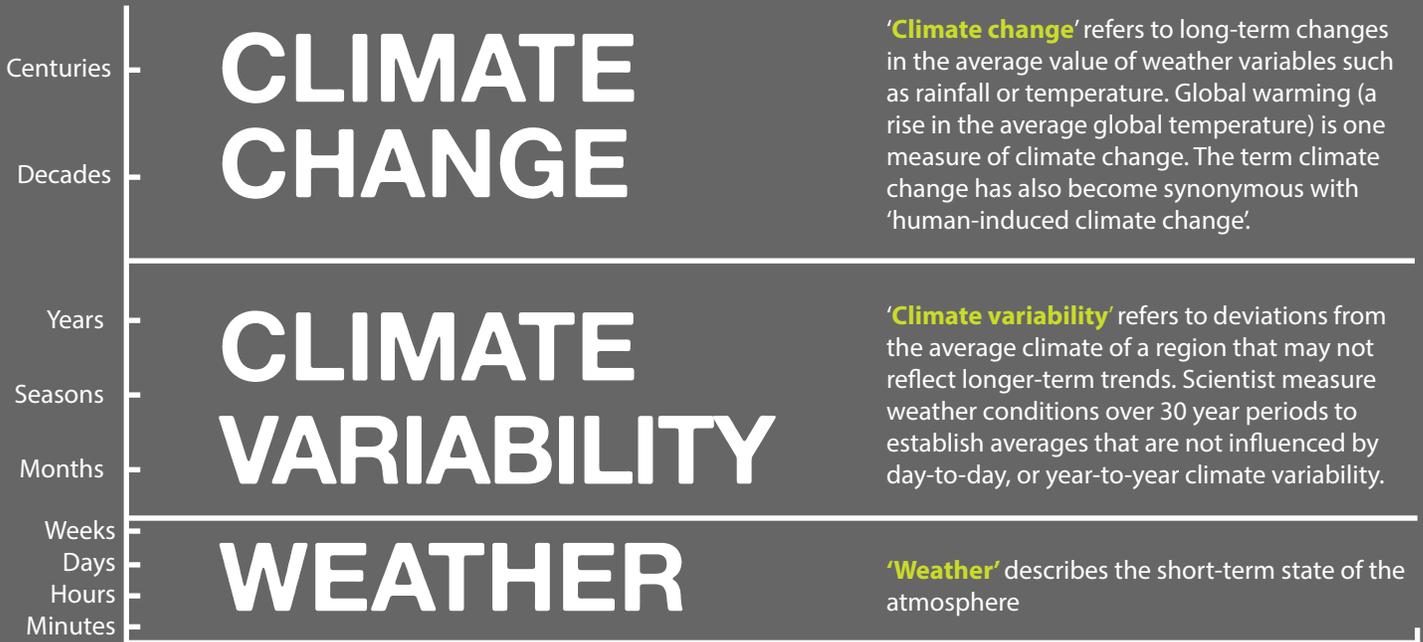


## THE BASICS:

# CLIMATE CHANGE

### What is "CLIMATE"?

The term 'climate' refers to the larger long-term systems in which weather takes place. Describing the climate of a place includes things like temperature, precipitation and wind averaged out over a long period of time - usually 30 years.



**19 - 29%** of greenhouse gas emissions are generated by food systems.

2014 was the warmest year on record, since 1880 according to NASA and NOAA. So far, first half of 2015 is the warmest period on record across the world's land and ocean surfaces, at 0.85°C (1.53°F) above the 20th century average.

### Expected effects in the Caribbean

Climate scientists have developed complex models predicting that the Caribbean will continue to experience increasing temperatures, rising sea levels, shifting rainfall patterns, and more intense tropical storms and hurricanes as a result of global climate change.

## CLIMATE CHANGE INDICATORS

↓ Glaciers & Ice sheets

↓ Arctic sea ice

↑ Sea surface temperatures

↑ Ocean heat Content

↑ Ocean acidification

↑ Number of hot days per year

↑ Air temperatures

↻ Changing Southern Ocean currents

↑ Sea levels

↓ Number of cold days per year

↻ Changing rainfall pattern

↑ Intensity and frequency of extreme weather events (e.g. fires, floods)

# HOW DOES CLIMATE CHANGE AFFECT **AGRICULTURE** in the **CARIBBEAN?**



## CLIMATE CHANGE FACTS:

Agricultural productivity is expected to increase slightly at mid- to high latitudes, and to decrease in tropical regions (Easterling et al. 2007).

## Factors contributing to high climate change vulnerability among Caribbean Producers:

Climate change represents potential new vulnerabilities to pests and introduced species that affect humans, livestock, wildlife and plants (Barker 2012).

Populations and prime agricultural lands are located in coastal areas, vulnerable to sea level rise.

Population densities in Puerto Rico and the US Virgin Islands are among the highest in the US.

Unemployment and poverty levels are among the highest in the US and climate change represents an additional threat to rural economies.

Only 16% of farms have crop insurance coverage and 68% of farms have a net household income of less than \$20,000 (2007 Puerto Rico Inventory) making the social vulnerability to climate change among Puerto Rico's farmers very high.

## Expected climate changes in Puerto Rico

- "Puerto Rico is expected to warm faster than the global average, with increases in both mean and extreme temperatures, including days per year over 95°F and nights warmer than 85°F.
- Rainfall is projected to decrease, particularly in the wet season, with more frequent dry days.

- The frequency of 'moderate extreme' precipitation (more than 1 inch of rain) will decrease, while more extreme precipitation (more than 3 inches of rain in a day) will become more common.

Source: Hayhoe, K. Quantifying Key Drivers of Climate Variability and Change for Puerto Rico and the Caribbean. Final Report 1 Oct 2011-30 Sep 2012. 2013. 241 p. Agreement No.: G10AC00582.

- Projected temperature changes are large enough to affect temperature sensitive crops, species, and ecosystems, while the combined effects of changes in temperature and precipitation are likely to increase the demand for energy, the risk of water stress and drought, and the risk of impacts from heavy rainfall events".

## What can I do?

In order to address and prepare for the challenges climate change poses to agriculture, the USDA is encouraging farmers to become part of their local Climate Hub network. The Hubs are working to connect farmers and agricultural advisors with the right people, tools, science, and information that they need to adapt to a changing world. Here in the Caribbean, we are working with local extension services, the Department of Agriculture, the NRCS, and others to help develop and deliver tools that will

help improve yields and bolster resilience in the face of our common challenges. We can't do this without you! Please contact us by e-mail and let us know:

- 1) Who you are and what types of crops you are cultivating?
- 2) What are the most serious challenges you are facing?
- 3) What sources do you rely on for information and advice?
- 4) How can we best help you prepare for a changing climate?

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