Module 1a: Frequently asked questions

March 2019

Introduction

There are a lot of questions around climate change, climate change adaptation, and how to incorporate these concepts into Red Cross Red Crescent work.

Below we provide answers to some of the most frequently asked questions related to *science;* each of the other modules in the training kit have 'FAQs' relevant to the topics covered there.

If you have comments or your questions are not addressed in this document (or other FAQs), please e-mail them to: climatecentre@climatecentre.org (referencing FAQ Module1a).

Frequently Asked Questions

1. What is the difference between climate and weather?

The difference is in the *timescale*. Weather refers to conditions like rain, temperature and wind over *hours to days*. Climate refers to those weather conditions *averaged over many years*.

2. Is it possible to attribute a single weather event to climate change?

The science on extreme event attribution has rapidly advanced in the last 5 years, making it possible to determine the contribution of climate change to the likelihood and intensity of some types of extreme weather events. A summary of this advancement was published by the National Academy of Sciences in their Special Report on Attribution released in 2016. Scientists have higher confidence in attributing events such as extreme cold, heat, and precipitation, while events such as thunderstorms, cyclones and wildfires are more difficult to attribute. However, scientists are rapidly developing new methodologies to improve our capability to analyze and understand the role of climate change in these events.

3. How to understand El Niño and La Niña events (ENSO)?

El Niño and La Niña events are a natural part of climate variability, taking place approximately every two to seven years. These events refer to warm (El Niño) and cold (La Niña) phases in the equatorial Pacific Ocean. Sometimes, these events can go unnoticed or even have beneficial impacts in many parts of the world. However, they can also be extremely disruptive. It's hard to imagine, but abnormally warm or cold ocean waters in the Pacific can be part of a mechanism that triggers shifts in rainfall patterns around the globe, particularly in the tropics. As a result, problems can develop when some areas receive too much rainfall and others receive too little. Peak impacts from these events are usually felt during a given location's rainy season, because that is when a disruption of the rains, or too much rainfall, can have the greatest impact on society, affecting agriculture, livelihoods, food security, health and safety, and others. Positively, these events improve our ability to predict changes to rainfall, making it easier to anticipate and avoid the potential negative impacts.

4. How can we anticipate impacts from El Niño and La Niña?

Over time, scientists have observed patterns about how rainfall is typically affected by El Niño/La Niña events around the globe. However, no two events are exactly the same. Thus the best way to anticipate if a particular event is likely to bring too much or too little rainfall to your area is to monitor seasonal forecasts which take into account influences from the current El Niño/La Niña as well as other elements in the climate system. Seasonal forecasts can be found in IRI's IFRC Map Room at: http://iridl.ldeo.columbia.edu/maproom/IFRC/FIC/prcp_fcst.html

There still isn't a scientific consensus regarding how El Niño and La Niña events will play out on a warmer planet. Some studies suggest these events will become increasingly frequent and severe. Other studies disagree. Some climate models show a tendency towards more El Niño events, while others show a possibility for more La Niña events. For now, the best thing to do is to stay apprised of whether an El Niño or La Niña is developing and monitor seasonal forecasts for advance notice of any impacts that can be expected.

5. Is the increase in disasters due to climate change?

Population is increasing in cities, more and more people are concentrated on vulnerable coastlines, and we have built homes and other infrastructure that is exposed to the path of storms. These vulnerability and exposure factors are in part driving the increasing damages we observe from disasters. At the same time, there is also scientific evidence that the frequency and/or intensity of several hazards (such as heatwaves, floods, droughts, and storms) are increasing in certain regions, and it is likely that these increases will continue. This clearly has an additional impact on the risk of natural disasters.

6. Is it certain than human activities have caused the observed and projected changes in climate?

Yes, it is extremely likely that human activities are the dominant cause climate change.

Some further explanation:

According to the Intergovernmental Panel on Climate Change (IPCC, 2014[1]) – the United Nations body for assessing the science related to climate change:

- "*Human influence on the climate system is clear, and recent anthropogenic [human made] emissions of greenhouse gases are the highest in history. Recent climate changes have had widespread impacts on human and natural systems*".
- "*Warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia.*"
- "*Anthropogenic greenhouse gas emissions have increased since the pre-industrial era, driven largely by economic and population growth, and are now higher than ever. This has led to atmospheric concentrations of [greenhouse gases] that are unprecedented in at least the last 800,000 years. Their effects, together with those of other anthropogenic drivers, have been detected throughout the climate system and are* ***extremely likely*** *to have been the dominant cause of the observed warming since the mid-20th century.*" In IPCC definitions *"extremely likely*" means the probability is 95-100%.

7. Why does global warming need to be limited to 1.5°C or 2°C?

The world has already warmed about 1°C above pre-industrial levels, and 2°C or 1.5°C, have long been used as long-term temperature 'goalposts' for climate change mitigation. Global warming of 1.5°C is not safe for most countries; it presents serious risks to human and natural systems, with a high probability of irreversible changes. We need to act now to avoid serious consequences. The

[1] IPCC, 2014: Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, 151 pp. https://www.ipcc.ch/report/ar5/syr/

lower estimate for when we will start to see the impacts of 1.5°C is by 2030. Every single year matters in terms of emissions reductions; the faster we act and make changes, the better off we will be in terms of reaching emissions targets and avoiding the worst impacts.

More Q & A

See the 'Recommended reading' (and this link) for a more exhaustive FAQ from National Climate Assessment – for instance on questions like *How can we predict what climate will be like in 100 years if we can't even predict the weather next week? – What is ocean acidification? – What are the key uncertainties about climate change? – Are there benefits to warming?*