



The El Niño Event in the Americas and the Caribbean 2023

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LATIN AMERICA
AND THE CARIBBEAN





PRESENTATION

This regional brief was prepared by the Latin American and Caribbean (LAC) Issue-Based Coalition (IBC) on Climate Change and Resilience. This IBC is part of the Regional Collaboration Platform for LAC (LAC RCP), which was established to guide the restructuring of the United Nations Development System at the regional level.

This Coalition emerged in 2020 to enable UN support for the coherent and aligned implementation of the 2030 Agenda for Sustainable Development, the Paris Agreement of the United Nations Framework Convention on Climate Change and the Sendai Framework for Disaster Risk Reduction 2015 – 2030. The IBC seeks to strengthen and streamline inter-agency coordination and accountability at regional and sub-regional levels. It is co-chaired by UNDRR and UNEP, and has the participation of 19 other UN entities.

This document was developed based on the presentations of the [Webinar “Preparing for the impact of the El Niño event in Latin America”](#) that took place on June 30, 2023.

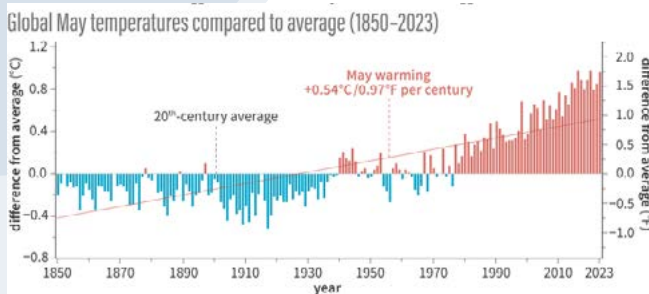
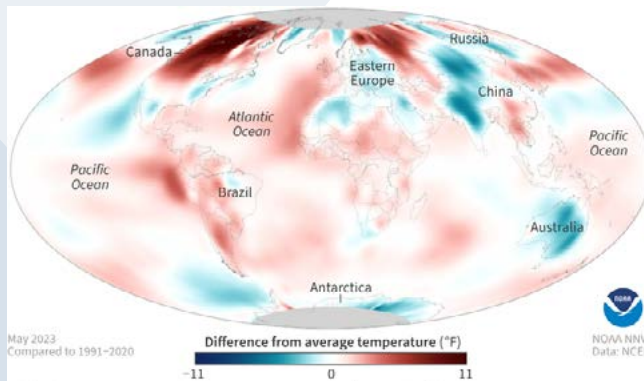
THE EL NIÑO EVENT IN THE AMERICAS AND THE CARIBBEAN

The climate event called El Niño is a natural pattern that has important implications for the ecosystems and biodiversity of the Americas and the Caribbean region, given its frequency, intensity and negative impacts. The prolonged droughts resulting from El Niño are its main manifestation, causing alterations in the dynamics and physiological cycles of ecosystems and species, as well as water deficit and desertification. However, in some regions of the Americas, El Niño manifests itself with increased rainfall, generating floods, landslides and disasters.

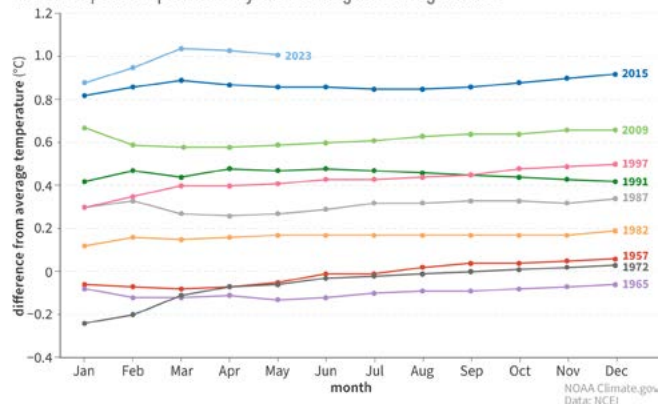
Despite having a natural origin, it is crucial to recognize that El Niño occurs in the context of a triple planetary crisis. Climate change exacerbates extreme events, such as droughts and floods, which become more frequent and severe. Biodiversity loss is accelerating due to changes in natural habitats and increased forest fires. In addition, pollution of the atmosphere and water bodies is aggravated under the influence of El Niño, affecting their chemical composition and circulation patterns. Unfortunately, the situation is further complicated by limited financial resources in the region.

El Niño is characterized by rising ocean surface temperatures in the central and eastern parts of the tropical Pacific. Their average cycles occur every 2 to 7 years, with episodes typically lasting between 9 and 12 months, with events between June and August.

Surface air temperature anomalies: current and early years of previous El Niño events



Global temperature patterns for years entering into strong El Niños



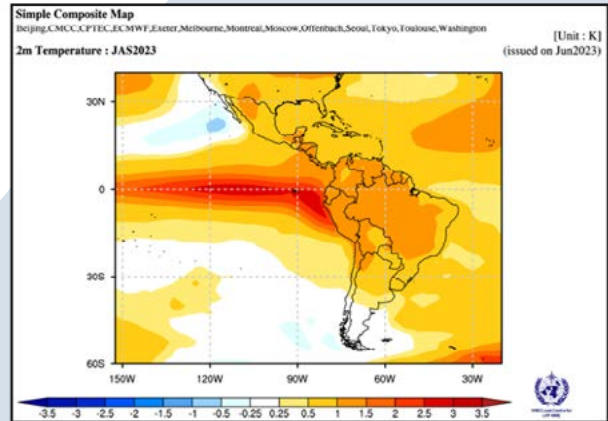
* Forecast as of June 2023

An essential point to highlight is that El Niño is taking place against the backdrop of the warmest climate the planet has ever experienced on record, as evidenced by data collected by the National Oceanic and Atmospheric Administration (NOAA) from 1965 to 2023. The Eastern-Pacific region, particularly the coasts of Colombia, Ecuador and Peru, has experienced substantial warming. This persistent warming for three months, after a cold tropical Pacific, has become a critical factor shaping the development of El Niño in 2023.

Currently, observations of the tropical Pacific, at a depth of 300 meters, reveal a substantial accumulation of heat content extending for thousands of kilometres. This indicates the emergence of a new phase of El Niño conditions, possessing enough energy to sustain these irregularities in the coming months. Multiple models further confirm the trend of increasing warming in the Pacific, aligning with the El Niño pattern.

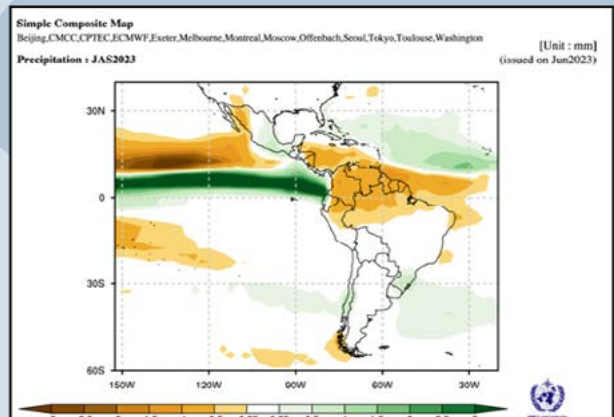
Therefore, an increase in heat levels is expected, with a high probability in much of the continent. A rainfall deficit is projected in July, August and September, particularly affecting Central America, the Caribbean region and northern South America. It should be noted that, during El Niño events, the Caribbean region has experienced less active hurricane seasons in the years 1982 - 1983, 1997 and 2014 - 2015, and in some years, there have been no records of hurricanes during these events. However, on this occasion, the high temperatures of the Atlantic Ocean could maintain the activity of the hurricane season despite El Niño conditions.

Seasonal air temperature forecast for the Americas and the Caribbean (3-month scenario, June - August 2023)*



* Forecast as of June 2023

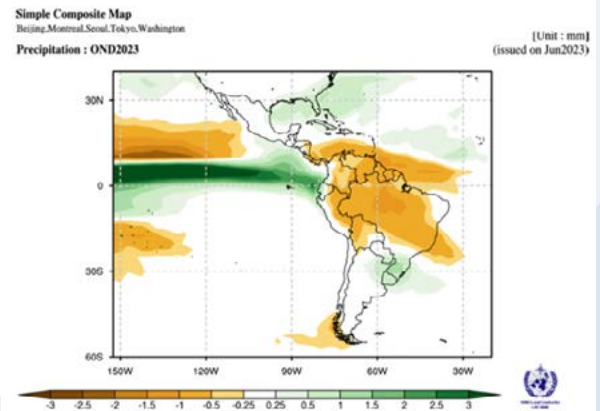
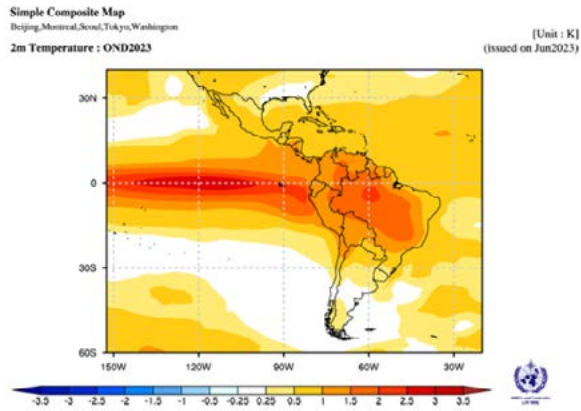
Seasonal precipitation forecast for the Americas and the Caribbean (3-month scenario, June - August 2023)*



* Forecast as of June 2023

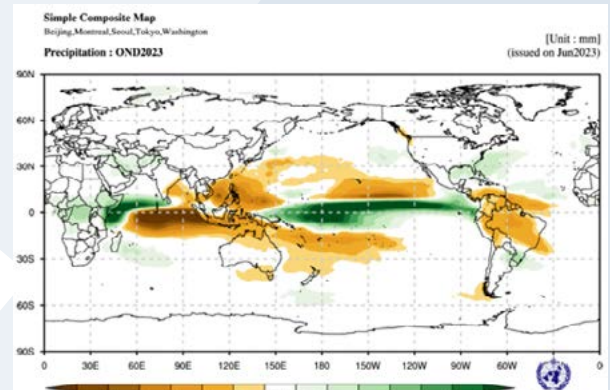
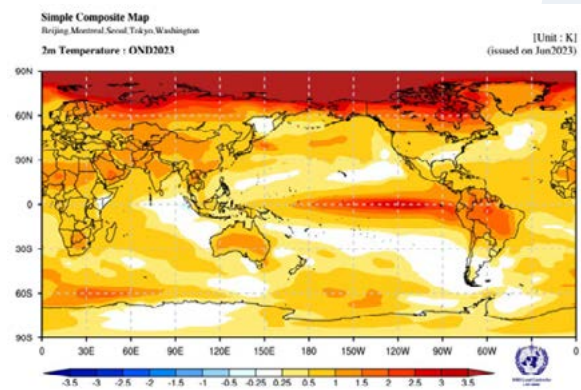
Towards the end of 2023 and according to the predictions of the models, possible increase in rainfall is expected especially on the Colombian Pacific coast and coast of Ecuador, Chile (central region), southern Brazil, Uruguay, where El Niño can carry higher levels of precipitation, which increases the risk of flooding and landslides.

Forecast of air temperature and precipitation anomalies for Latin America and the Caribbean (6-month scenario, June – December 2023)



* Forecast as of June 2023

Global Air Temperature and Precipitation Forecast (6-month scenario, June – December 2023)



* Forecast as of June 2023



EXPECTED IMPACTS

When analysing the current state of vulnerability on the continent, it is evident that many challenges remain unchanged since 1997. While there has been significant focus on immediate recovery efforts, only a handful of countries in the region have made progress in terms of legal frameworks, policies and proactive risk management plans. In addition, the political and inherent social volatility in the region presents a significant challenge for response teams.

The El Niño event has major negative impacts on the global economy. According to a recent article by Callahan and Mankin (2023), "...El Niño persistently reduces country-level economic growth, attributing \$4.1T and \$5.7T in global income losses to the 1982-83 and 1997-98 events, respectively. Increased ENSO amplitude and teleconnections from warming cause \$84T in 21st-century economic losses in an emissions scenario consistent with current mitigation pledges, but these effects are shaped by stochastic variation in the sequence of El Niño and La Niña events".¹

In South America, particularly in Chile, Colombia, Ecuador and Peru, the 1982-1983 El Niño event resulted in 1,656 deaths, affecting more than 1,690,000 people and caused losses of \$3.6 billion. It is important to note that according to the EM-DAT database, only 14% of El Niño-associated disasters reported damages during this period. The subsequent El Niño event of 1997-1998 accounted for 1,240 deaths, affected 855,000 people and caused \$853 million in damages. Similar to the previous event, only 27% of El Niño-associated disasters reported damages. In comparison, the 2014-2016 El Niño event showed a significant reduction in deaths with 460, affecting or 579,000 people and damages amounting to \$2 billion.²

The implementation of early warning systems is significantly related to the decrease in the number of deaths during El Niño events. Despite these advances, infrastructure, production and social sectors continue to be highly vulnerable during these events. Within the productive sector, agriculture and the entire agri-food chain experience the most significant negative impacts during El Niño events (it is estimated that around 85% of losses are concentrated in the agricultural sector).

The Global Information and Early Warning System (GIEWS) of the Food and Agriculture Organization of the United Nations (FAO) highlights countries where the El Niño phenomenon could cause impacts on agricultural production. Below-average rainfall in northern South America, Central America and parts of the Caribbean is consistent with El Niño impacts. El Niño affects the availability of forage and water, weakening the health of livestock and affecting crop productivity and harvesting. Central America's vulnerability, characterized by high rural poverty and numerous small producers, faces a reduction in the harvest and an increase in prices. In Colombia and Venezuela, El Niño has been correlated with a decline in maize and rice crops from June to March, affecting food production and prices. Ecuador, Peru and Bolivia are also monitored by FAO, as El Niño affects agricultural activities, transport and storage, and heavy rainfall and high temperatures contribute to the growth of fungi and waterborne diseases in crops and animals. On the other hand, fishing can also be affected, where the phenomenon can reduce or cause the total death of the biomass of some species and, in general, changes in the behaviour of these can be expected. Therefore, the impact of El Niño on food security in the region has significant repercussions, affecting approximately 40 million people within the humanitarian coverage area of the World Food Programme (WFP).

1 Callahan, C. W., & Mankin, J. S. (2023). Persistent effect of El Niño on global economic growth. *Science*, 380(6649), 1064-1069.

2 EM-DAT, C. (2020). Em-dat: The OFDA/CRED international disaster database. *Centre for Research on the Epidemiology of Disasters, Universidad Católica de Lovaina, Bruselas.*

However, in preparation for and response to the impacts of El Niño, measures taken in Central America for access to data, strengthening of climate information systems (such as the Copernicus regional center), early warning systems and financial risk analysis are highlighted. At the national level, the design of a comprehensive plan by Ecuador and the planning and management of disaster response in Chile for the prevention, mitigation, preparation, response and reconstruction against the impacts of the El Niño event stand out. Responding to the possibility of threats to food security from El Niño, WFP has allocated resources for populations in the Central American region, as well as in Colombia, Peru, Bolivia, Ecuador and Venezuela, covering a total of 13 countries under a comprehensive preparedness package. Similarly, FAO, since June 2023, is implementing various anticipatory actions in vulnerable territories in Honduras, El Salvador, Guatemala and Nicaragua, countries at risk of food crisis, to protect food security and rural livelihoods in the face of drought and hurricanes. For example, systems of collection, water storage and irrigation, seeds, fertilizers and inputs, animal health and transfers and has developed a program to support 100,000 families through anticipatory actions and response to extreme events by El Niño in these countries, as well as in Colombia, Venezuela, Ecuador and Peru.

RECOMMENDATIONS

1. Data and monitoring for effective climate action:

- Promote an active exchange of data and democratization of scientific information to foster collaborative learning and knowledge construction in adaptation and climate resilience. Understanding specific impacts will allow for advance planning and contingent actions.

- Assessing vulnerability and potential damage is essential for informed decision-making. Reduce disaster risk and develop sustainable solutions based on learning from previous events to strengthen climate resilience and food security.
- Governments should use information from national and international meteorological services to plan and act. Forecasting and predictive analytics help address weather events, including variation in rainfall amounts, temperature increases, and sea level changes due to El Niño.

2. Prevention measures and anticipatory action to address El Niño challenges:

- Key aspects of risk management include identifying hazards and vulnerabilities, implementing mitigation measures, focusing on resilient infrastructure, structural and social engineering, and promoting community preparedness, where the implementation of adaptation measures and climate risk management is supported. This will not only mitigate the impacts of El Niño, but also improve overall resilience.
- Agricultural protection and water supply and sanitation play a key role in reducing humanitarian needs and ensuring food security, so the focus should be on safeguarding agricultural production, rural areas and natural areas producing water for consumption and irrigation.
- Measures should be established for the adaptation of the means of production of essential goods and services so that they optimize the use of water resources, as well as the planning of the impact and adaptation of supply chains (especially those that depend on water).

3. Community empowerment and coordination mechanisms for collaborative planning with a cross-sectoral approach.

- For effective action, responsible parties must be identified and clear deadlines established in the action plan. In addition, it is crucial to develop capacities and early warning systems, coordinate at community, local, national and sectoral levels, collaborate with governments to address critical areas and vulnerable populations, and provide assistance to urban and rural communities.
- Participation and dialogue should extend to the community level. Building solutions together that are tailored to the specific needs and capacities of communities becomes crucial for effective adaptation and support.
- Harmonization of agendas and integrated responses are key to addressing the challenges of El Niño and climate change, through an integrated approach and proactive preparedness.

4. Financing and investment

- Investment projects for disaster risk reduction and climate change should be prioritized, seeking greater ambition and scale, and diversifying sources of financing, highlighting the economic and social benefits of investing in adaptation and prevention to achieve support and participation in climate action.
- It is necessary to mobilize financial resources that support countries in structuring operations aligned with national and international goals and commitments, such as the 2030 Agenda, the Paris Agreement and the Sendai framework for Disaster Risk Reduction.
- There is a need to increase accessibility to green resource funds, such as the Adaptation Fund and the Green Climate Fund, to invest in climate and disaster resilience projects.

- The flexible allocation of resources and contingent financing lines allow a rapid response to emergencies and disasters, for changes in development programs and rapid assistance to countries when necessary.
- Integrating short-term assistance systems and multi-hazard approaches supports farming communities and strengthens resilience to future disruptions by including them in national investment systems.

ANNEX: RESOURCES

Below are some publications and links of interest for monitoring El Niño and for responding to its impacts:

No.	Author/ Name	Link
1	International Centre for Research on the El Niño Phenomenon - CIIFEN	https://ciifen.org/
2	Regional Climate Center for Western South America	https://crc-osa.ciifen.org/
3	World Meteorological Organization (WMO). Bulletins on the El Niño-Southern Oscillation (ENSO) phenomenon	https://public.wmo.int/es/el-ni%C3%B1o-la-ni%C3%B1a-hoy
4	FAO. New "canícula" index to study the impact on agriculture in the Central American Dry Corridor and its relationship with El Niño	https://www.fao.org/documents/card/en/c/cb1818es
5	FAO. El Niño to return in 2023 following a three-year La Niña phase	https://www.fao.org/3/cc5749en/cc5749en.pdf
6	UNDRR (2021), Regional Disaster Risk Assessment Report in Latin America and the Caribbean, United Nations Office for Disaster Risk Reduction (UNDRR).	www.undrr.org/
7	CAF. (2000). The lessons of El Niño. Bolivia. CAF.	https://scioteca.caf.com/handle/123456789/673
8	UNDRR (2021) Special Report on Drought 2021. GAR.	https://www.undrr.org/media/72528/download?startDownload=true





WORLD
METEOROLOGICAL
ORGANIZATION



United Nations
Environment Programme



UNDRR

UN Office for Disaster Risk Reduction