

Important Guidance and Resources for Forecast-Based Decision Making

Produced by the Red Cross/Red Crescent Climate Centre and the International Research Institute for Climate and Society

This document accompanies the monthly seasonal forecast updates, and offers further background information on La Niña, seasonal forecast interpretation, connecting forecasts with appropriate actions, and resources for forecast monitoring and decision-making support.

Background-What is La Niña and why does it matter?

La Niña is a natural part of climate variability, and refers to a colder than average period in the equatorial Pacific (the opposite of warm El Niño events). In the last 20 years, we have experienced 4 moderate to strong La Niña events (1995-96, 1998-2000, 2007-08, 2010-2011). While La Niña can go unnoticed or even have beneficial impacts in many parts of the world, it can also be disruptive or cause extensive problems when some areas receive too much or too little rainfall.

For example, unusually heavy rainfall in Southern Africa that often accompanies La Niña events, caused devastating floods and mudslides during the 1998-2000 La Niña that resulted in deaths, injuries and left thousands homeless. In Bangladesh, 4 out of the 6 most catastrophic flood years since 1954 have occurred during La Niña events. On many Pacific Islands, La Niña is frequently accompanied by drought, putting major stress on the limited availability of fresh water resources. Recent flooding in Pakistan and West Africa can in part be attributed to La Niña conditions that began to develop this June. La Niña is also associated with increased hurricane activity in the Atlantic, and can cause the path of typhoons in the western Pacific to shift more towards mainland Asia.

Once developed, La Niña events typically persist for about a year (occasionally longer), peaking during the October - January period. However, the largest impacts for a location may not coincide with the peak of the La Niña itself. Peak impacts from La Niña 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, etc).

It is important to remember that the strength of a La Niña event only provides a rough indication of how widespread and severe associated impacts are likely to be on a *global scale*. The strength of a La Niña event does not provide certainty regarding the severity of impacts *in specific locations*. The best way to anticipate if this La Niña event is likely to bring too much or too little rainfall to your area is to monitor seasonal forecasts, which take influential factors from this La Niña and other elements in the climate system into account.

Guidance on seasonal forecast interpretation

The benefit that seasonal forecasts offer, which weather forecasts do not, is long-lead time or early warning information. Having an early indication that a rainy season might be wetter or drier than normal for instance can be a helpful guide to anticipate any potential impacts. However, monitoring seasonal forecasts should be supplemented with monitoring forecasts on shorter-term timescales (like 10-day, weekly and daily weather forecasts), to obtain more certainty and detail regarding where and when extreme events might

occur. Seasonal rainfall forecasts are similar to seasonal cyclone forecasts in the sense that knowing if the cyclone season is likely to be more active than normal might prompt you to be more prepared, but you would have to monitor shorter-term weather and cyclone forecasts to anticipate where and when individual cyclones make landfall.

Limitations

Important! **Seasonal Forecasts Do Not Provide Any Detailed Spatial Information.** Weather forecasts are like a high-definition picture, giving you detailed information on exactly where rainfall is likely to occur. Seasonal forecasts however, are more big-picture (coarse resolution). Thus, it is not possible to make inferences about precisely *where* there are risks of increased or decreased rainfall. A forecast for increased risk of above-normal rainfall over West Africa, for example, should be taken as just that, and not as a forecast for above-normal rainfall in specific countries or parts of countries in West Africa.

Important! **Seasonal Forecasts Only Give a General Sense of the Character of the Season by Providing a Forecast of Seasonal Rainfall Totals.** The seasonal forecasts are for whether cumulative rainfall totals over 3 months time are likely to be normal, above-normal or below-normal. This gives you a general overview of the season, but does not elaborate on possible day-to-day weather fluctuations. Although it does not happen very often, it is possible for an area to receive a month's worth of rainfall in 1 day and thus suffer from floods, but end up having a seasonal total of below-normal rainfall consistent with the seasonal forecast.

Important! **Seasonal forecasts are probabilistic.** If you had no forecast, you would have no idea of whether rainfall would be normal, above-normal, or below-normal, and so each of these three possible outcomes would have a probability of 33%. Seasonal forecasts can tell you if one of those three categories is more likely than the others. However, probabilities for the less likely events should not be ignored, to avoid being over-confident in the forecasts. For example, a 45% chance of above normal-rainfall means that there is an enhanced chance of getting rainfall totals that are above-normal for the season, but there is still a 55% chance of getting normal or below-normal rainfall. Seasonal forecasts therefore leave a large amount of uncertainty, but when combined with monitoring of weather forecasts on shorter timescales and a no-regrets early action strategy, can still be very beneficial by providing enhanced lead-time for preparedness.

One helpful guide may be to think of probabilities of 35 or 40% as being only slightly enhanced, 45 or 50% as enhanced, and greater than 50% as highly enhanced.

Recommendations for connecting forecasts to actions for enhanced preparedness and response

If, for example, over the coming months seasonal precipitation (rainfall) forecasts for your region indicate a higher risk of abnormal rainfall, it is important to start considering the implications:

- What would too much or too little rainfall mean in terms of food security, health, disaster management, displacement and livelihoods?
- Who is vulnerable?
- What can be done to prepare? What kind of 'no-regrets' actions could be taken early on, that would help to manage these impacts?
- Are your contingency plans adequate and up to date?
- Are your relief stocks sufficient for probable demands?
- When was the last time that staff and volunteers received training on disaster management?

- Should you meet with staff to discuss the situation and collectively brainstorm possible courses of action?

Thinking through these types of questions with your colleagues is always a good idea. That way you can monitor conditions and forecasts for the months, weeks, days and hours ahead, to see if and when it becomes necessary to activate the plans and resources you've put in place. For more resources on developing an Early Warning, Early Action strategy, visit: <http://www.climatecentre.org/site/early-warning-early-action>

Monitoring Resources

For short-term weather forecasts, the best place to check is with your national meteorological services. Some national meteorological services also provide seasonal forecast information. To find your national meteorological service: http://www.wmo.int/pages/members/members_en.html

The resources provided below include global and regional sources for monitoring seasonal forecasts. In some cases, short-term weather forecasts are also provided by these institutions.

Global Source:

International Research Institute for Climate and Society (IRI)

- Seasonal forecasts: <http://iri.columbia.edu/ifrc/forecast/3munusualprecip>
- Updates on the current La Niña/El Niño status: <http://iri.columbia.edu/climate/ENSO/currentinfo/QuickLook.html>
- For global forecasts on the likelihood of above average rainfall in the coming 6 days: <http://ingrid.ldeo.columbia.edu/maproom/.IFRC/.Forecasts/>

Regional Sources:

Africa

African Centre for Meteorological Applications for Development (ACMAD)

- Seasonal forecasts: http://www.acmad.ne/en/climat/previ_saison.htm
- Monthly, 10-day, and 24-hour forecasts also available

East Africa

IGAD Climate Prediction and Applications Centre (ICPAC)

- Seasonal, monthly and 10-day forecasts: <http://www.icpac.net/>

Southern Africa

SADC Drought Monitoring Centre (DMC)

- Seasonal and 10-day forecasts: <http://www.sadc.ini/dmc/>

South African Weather Service

- Weather forecasts 11-30 days in advance, 7-day forecasts: <http://www.weathersa.co.za/>

Asia

Regional Climate Centre for RA II (Asia)

- Seasonal forecasts and monitoring products: <http://www.rccra2.org/detail/index.htm>

ASEAN Specialised Meteorological Centre (ASMC)

- Seasonal forecast:
http://www.weather.gov.sg/wip/web/ASMC/Regional_Weather/Monthly_Weather_and_Haze_Outlook4
- La Niña/El Niño monitoring
http://www.weather.gov.sg/wip/web/ASMC/Regional_Weather/Status_of_El_Niño

Pacific Islands

Island Climate Update (ICU)

- Seasonal forecasts: <http://www.niwa.co.nz/news-and-publications/publications/all/icu>

Americas

Caribbean

Caribbean Institute for Meteorology and Hydrology (CIMH)

- Seasonal forecast and drought monitoring resources: <http://www.cimh.edu.bb/>

Central America

Climate Outlook Forum for Central America

- Seasonal forecast: <http://www.aguayclima.com/clima/inicio.htm>

South America

Centro Internacional para la Investigacion del Fenomeno de El Niño (CIIFEN)

- Seasonal forecast: <http://www.ciifen-int.org/>

The IFRC Helpdesk at IRI, Support for Decision Makers

If you have questions about La Niña or forecasts etc. the International Research Institute for Climate and Society (IRI) has a helpdesk to provide the RC/RC with assistance in interpreting climate information relevant to the RC/RC's work. To seek assistance from this source please e-mail your question to ifrc@iri.columbia.edu.