Monthly Climate Statement — January 2014

Key messages

- Most atmospheric and oceanic indicators of ENSO remain neutral and ENSO-neutral conditions are likely to persist into early autumn.
- DSITIA considers that there is a higher than normal probability of 'near-average' to 'above-average' rainfall for much of Queensland for the remainder of summer (January to March).
- Near-average tropical cyclone activity is likely in Queensland this cyclone season (November to April).
- So far this summer one tropical cyclone has tracked into the Gulf of Carpentaria causing extremely high rainfall in northern Queensland during the last week of November.
- While patchy rainfall was received over eastern and northern Queensland in November, December rainfall was extremely low over most of the state.

Findings for January 2014

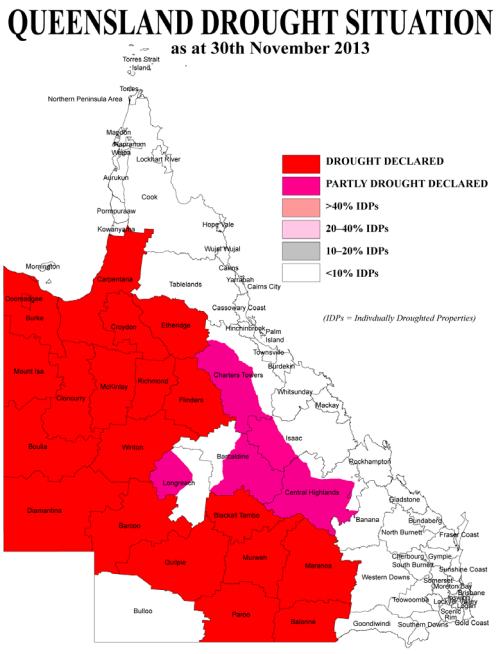
The Science Delivery Division of the Department of Science, Information Technology, Innovation and the Arts (DSITIA) considers that **there is a higher than normal probability of 'near-average' to 'above-average' rainfall for much of Queensland for the next three-month period (January to March). This view is based on DSITIA's analysis of the historical relationship between Queensland rainfall and both the Southern Oscillation Index (SOI) and Pacific Ocean sea-surface temperatures.**

Furthermore, the Bureau of Meteorology (BoM) has indicated, in its 'Tropical Cyclone Seasonal Outlook for the Coral Sea', that a 'typical' tropical cyclone season (November to April) is expected for Queensland. The BoM note that an average of four cyclones form in the Coral Sea each season (November to April), and Queenslanders can expect that at least one of these may cross the coast.

DSITIA's rainfall outlooks for Queensland are based on the current and projected state of the El Niño-Southern Oscillation (ENSO) phenomenon and on factors which alter the impact of ENSO on Queensland rainfall (e.g. the Pacific Decadal Oscillation (PDO)). Currently:

- The three-month mean SOI value from October to December 2013 was +2.4, remaining in the ENSO-neutral range.
- The observed sea-surface temperature (SST) anomaly (0.0 ºC) in the key Niño 3.4 region of the central equatorial Pacific remained in the ENSO-neutral range in December.
- Most international global climate models indicate that central equatorial Pacific SSTs should remain within the 'ENSO-neutral' range for the rest of summer and into early autumn.
- Some global climate models indicate an increased potential for warmer than normal central Pacific SSTs in mid-2014.

More than 60 per cent of Queensland was drought declared under state government processes as at 30 November. While patchy rainfall was received over eastern and northern Queensland in November, December rainfall was extremely-low over most of the state.



Rainfall Outlook

There are various approaches used to provide rainfall outlooks. These approaches tend to differ in terms of methodology and, for this reason each approach may convey a different outlook, particularly for specific locations.

Rainfall outlooks provided in this Climate Statement are based on:

- DSITIA's experimental long-lead Seasonal Pacific Ocean Temperature Analysis version 1 scheme (SPOTA-1 scheme), which integrates SST information, including indices of ENSO and the PDO.
- DSITIA's SOI Phase scheme, which relies solely on the SOI, an atmospheric measure of ENSO.

The experimental SPOTA-1 scheme provides long-lead probabilities of summer (November to March) rainfall for Queensland from mid-April through to mid-November each year. This outlook takes into account a monthly ENSO index, as well as an index of March SST anomalies which reflect the current 'cool' phase of the PDO.

As at 1 November 2013, the final SPOTA-1 assessment for this summer (November to March) indicated a higher than normal probability of 'near-average' to 'above-average' rainfall for much of Queensland. Furthermore the SPOTA-1 analysis for the remainder of summer (January to March) indicates a higher than normal probability of 'near-average' to 'above-average' rainfall for much of Queensland.

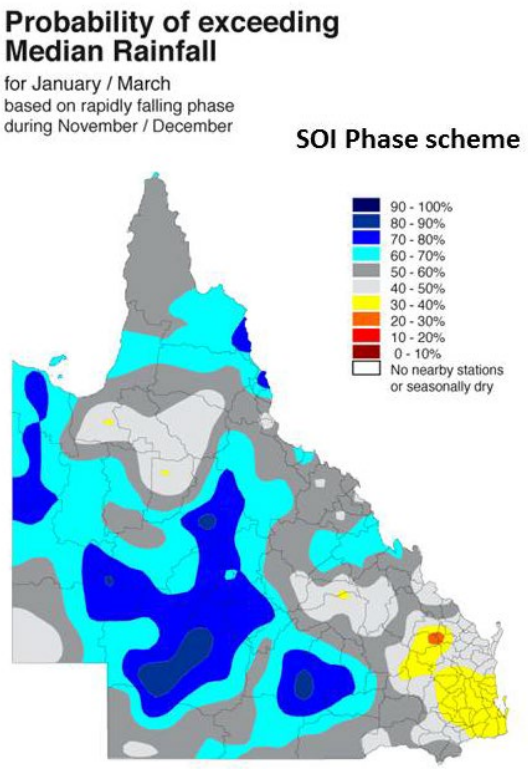
DSITIA's SOI Phase scheme provides probabilities of rainfall for the coming three-month season based on SOI values over the previous two months. The SOI Phase scheme currently indicates that the probability of above-median rainfall for the next three-month period (January to March) is 50 to 70 per cent for most of Queensland, with lower probabilities for parts of South East Queensland. This analysis is based on the SOI being in a 'Rapidly Falling' phase at the end of December, as discussed further in the Commentary on Rainfall Based on 'Phases' of the SOI.

The SPOTA-1 and SOI Phase schemes indicate probabilities based on historical relationships. It is important to understand the probabilistic nature of seasonal outlooks and to ensure that long-term risk management is undertaken. For example, if an outlook indicates a 70 per cent probability of above-median rainfall, this also means there is a 30 per cent probability of below-median rainfall. An increased risk of above- or below-median rainfall in Queensland will not necessarily result in above- or below-median rainfall occurring throughout all of the state (see Australia's Variable Rainfall poster, or the department's archive of historical rainfall maps).

Each climate outlook scheme may have its own particular following. Although such schemes cannot provide outlooks with absolute certainty, users of the information who follow a skilful scheme should benefit from doing so in the long-term. Users should consider the historical track record of any scheme, and such information is becoming increasingly available. DSITIA's Long Paddock website provides an archive of SPOTA-1 reports and past commentaries on the SOI Phase scheme.

While DSITIA places emphasis on the SPOTA-1 and SOI-Phase analyses, a much wider range of information from national and international agencies is also considered. DSITIA pays particular attention to the BoM's 'ENSO Wrap-Up' which is updated fortnightly on the BoM website.

ENSO influences other climate variables apart from rainfall (e.g. temperature, pan evaporation and vapour pressure). This means that the impact of ENSO on crop or pasture growth can be stronger than on rainfall alone. The impact of ENSO on pasture growth, for example, is also dependent upon current pasture condition and soil water status. DSITIA's AussieGRASS model takes these factors into account in producing seasonal pasture growth probabilities.



For more information, please visit **www.longpaddock.qld.gov.au/seasonalclimateoutlook** or contact **stuart.burgess@science.dsitia.qld.gov.au**.