Monthly Climate Statement — May 2013

Key messages

- Approximately one-third of Queensland is currently drought declared under State Government processes.
- For most of Queensland, there is currently no strong signal for rainfall being either above or below the long-term median over the next three-month period (May to July).
- DSITIA's initial long-lead outlook for the 2013/14 summer (November to March) indicates, for much of Queensland, a slightly higher than normal probability of above-median summer rainfall.

Findings for May 2013

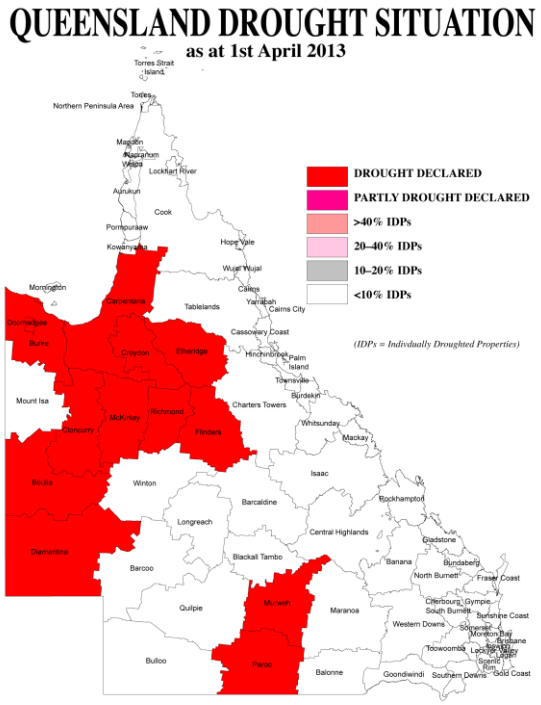
The Science Delivery Division of the Department of Science, Information Technology, Innovation and the Arts (DSITIA) notes that **there is currently no strong signal for rainfall being either above or below the long-term median over the next three-month period (May to July). DSITIA's initial long-lead outlook for the 2013/14 summer (November to March) indicates, for much of Queensland, a slightly higher than normal probability of above-median summer rainfall.**

Seasonal forecasts are based on the current and projected state of the ENSO phenomenon and on factors which alter the impact of ENSO on Queensland rainfall (e.g. the Pacific Decadal Oscillation (PDO)).

Historically, by the end of May, ENSO conditions tend to 'lock in' and become a more reliable indicator of rainfall for the season ahead. DSITIA will closely monitor ENSO indices including the Southern Oscillation Index (SOI) and sea-surface temperatures in the coming months.

Extensive areas of inland Queensland, and some northern regions, have now experienced well-below average to extremely-low rainfall over the past three- six- and twelve-month periods. As at 1 April,13 of 73 Queensland regional council areas, comprising approximately one-third of the State, were drought declared. These regional councils include Boulia, Burke, Carpentaria, Croydon, Cloncurry, Diamantina, Doomadgee, Etheridge, Flinders, McKinlay, Murweh, Paroo and Richmond.

Conversely, water storages remain near capacity in much of central and south-eastern Queensland, which received very high summer rainfall.



Currently:

- The SOI, a key atmospheric measure of ENSO, averaged +1.5 over the February to April period, remaining within the 'ENSO-neutral' range as anticipated.
- Observed sea-surface temperature anomalies in the key Niño 3.4 region of the central equatorial Pacific currently remain near-average (-0.1 ºC in April).
- The majority of international global climate models and those surveyed by the Bureau of Meteorology ('ENSO Wrap-Up' 7 May) suggest that sea-surface temperatures in the tropical Pacific Ocean will most likely remain within the 'ENSO-neutral' range leading into, and throughout, winter (May to August).

Rainfall outlook

There are various approaches used to provide rainfall outlooks. These approaches tend to differ in terms of the components of the climate system that are considered. For this reason, each approach may convey a different outlook, particularly for specific locations.

DSITIA uses two statistical schemes to develop its forecasts of seasonal rainfall:

- the experimental long-lead SPOTA-1 scheme, which integrates sea-surface temperature information, including indices of ENSO and the PDO; and
- the 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. An initial outlook for summer 2013/14 based on the experimental SPOTA-1 scheme is now available. The SPOTA-1 scheme currently indicates, for much of Queensland, a slightly higher than normal probability of above-median summer rainfall. This assessment is based on an index of March sea-surface temperature anomalies which reflect the current 'cool' phase of the PDO. This assessment will be modified when the SPOTA-1 scheme takes into account a monthly ENSO index from June through to November this year.

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 across most of Queensland is 40 to 60 per cent for the next three-month period (May to July). This analysis is based on the SOI being in a 'Consistently Positive' phase at the end of April, as discussed further in the Commentary on Rainfall Based on 'Phases' of the SOI.

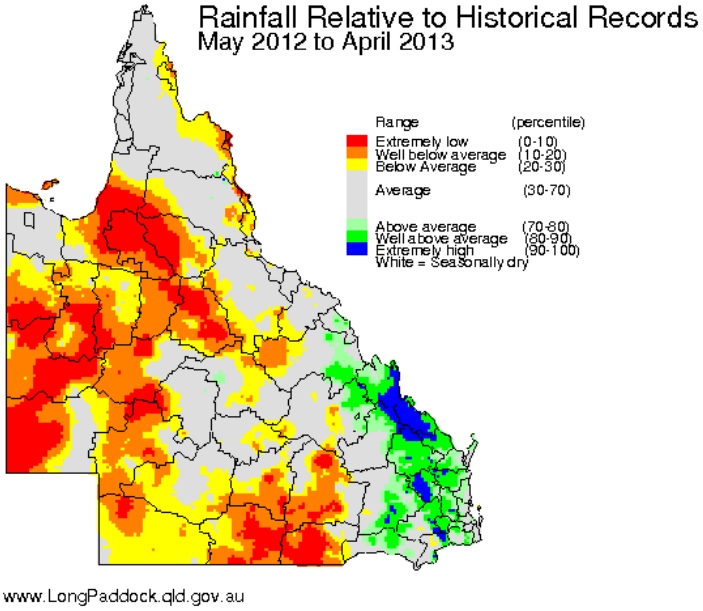
The SPOTA-1 and SOI Phase schemes indicate probabilities based on historical relationships. It is important that the probabilistic nature of seasonal outlooks is understood and long-term risk management is undertaken. For example, if an outlook indicates a 70 per cent probability of above-median rainfall, 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 of the above schemes may have their 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.

Whilst 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 Bureau of Meteorology's 'ENSO Wrap-Up' which is updated fortnightly on the Bureau's 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 **ken.a.day@science.dsitia.qld.gov.au**.