



2015-03-10

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Summary

Circulation patterns during the past week have been such that maximum temperatures over the summer rainfall region remained near normal while above-normal temperatures were recorded over the southwestern parts of the country, related especially to hot conditions by the 3rd. Coupled with strong easterlies to southeasterlies, conditions over the southwestern parts were favorable for the development and spread of wild fires.

Initially during the monitoring period (1 – 8 March), scattered thunderstorms occurred over the extreme eastern and northeastern areas as a trough the resulted in scattered thundershowers by the end of February moved out to the east. Some significant falls occurred over parts of southern KwaZulu-Natal. Activity moved to the western parts by the 3rd, but progressed eastwards during the monitoring period. Upper air instability over the central to northeastern parts and moisture from the Indian Ocean resulted in scattered showers and thundershowers over the central to northeastern interior especially by the 6th and 7th. Reports were received of fairly widespread rain over parts of the Free State, even though totals didn't exceed 25 mm.

With upper air perturbations moving through, isolated to scattered thundershowers will once again develop over the central to eastern parts during the coming 7-day period.

The Southern Annular Mode (SAM) is now in neutral territory. It is expected to increase in a few days, indicating medium-term potential for increased rainfall over the interior.

Previous summers such as the current were associated with relatively wet conditions during November and December followed by dry conditions during January over the central to northeastern parts. Dry conditions during January were mostly followed by slightly wetter conditions during February even though below-normal rainfall still occurred during 50% of years. Wet conditions usually followed by March. While widespread light falls have been recorded over the central to northeastern parts since the 6th, more favorable conditions may return by the middle of the month.

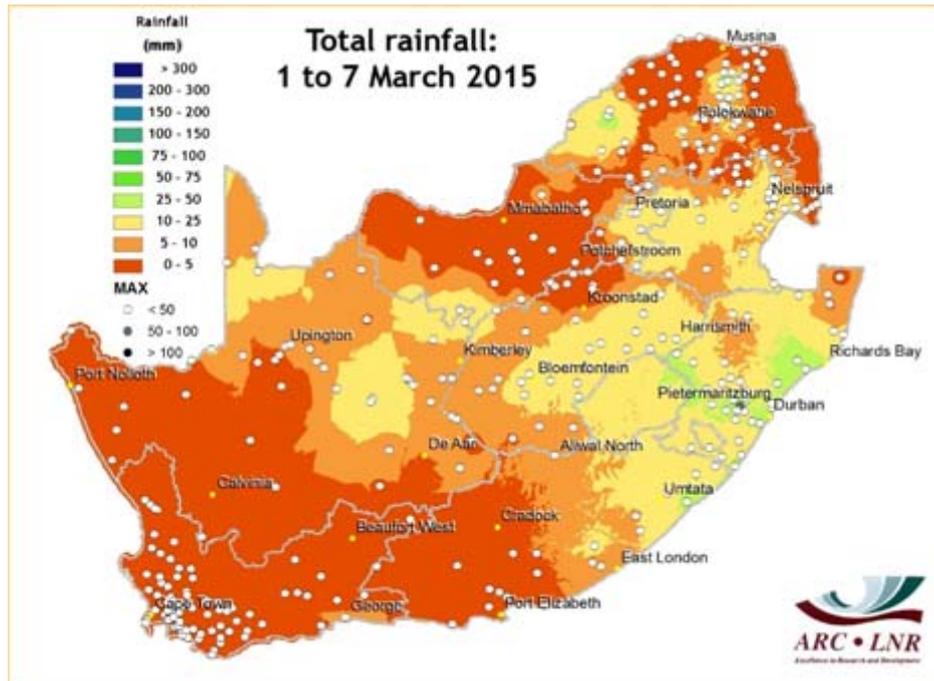
At seasonal time scale, Coupled Global Climate Models are still dominated by weak ENSO Warm conditions. Therefore, current seasonal projections favor dry conditions by mid- to late summer.

Current Sea Surface Temperature (SST) anomalies towards the Mid and High Southern Latitudes are associated with positive values of the SAM and have in the past been associated with wetter conditions during mid-to late summer, while decadal variability may have a positive impact on rainfall towards late summer over the summer rainfall region despite the projected negative impact of ENSO. The SAM has remained relatively positive so far compared to previous seasons with ENSO Warm conditions, also indicating a possibility of wetter conditions to what may be expected during El Niño summers.

Together with a positive influence on late-summer rainfall relative to conditions usually experienced during El Niño years, the chances for the influence of tropical systems (including depressions and cyclones) over the extreme northeastern parts are elevated during years in the current position relative to the decadal cycle. So far, these systems have been confined to the coastal areas of Mozambique and have also influenced Malawi during the current summer.



Overview of conditions during the previous weeks over South Africa: Rainfall



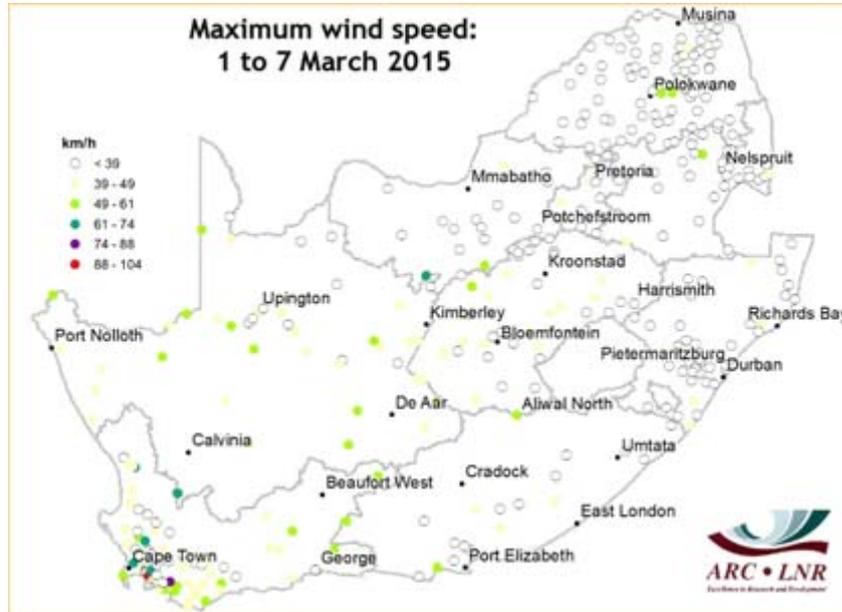
Large parts of the interior received some rain (showers or thundershowers) during the monitoring period, even though totals remained below 25 mm. Exceptions are parts of western Limpopo, southern KwaZulu-Natal and extreme eastern Eastern Cape where totals approached 50 mm. Very little to no precipitation was recorded over North West Province and the southwestern parts of the country.

Cumulus

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Wind

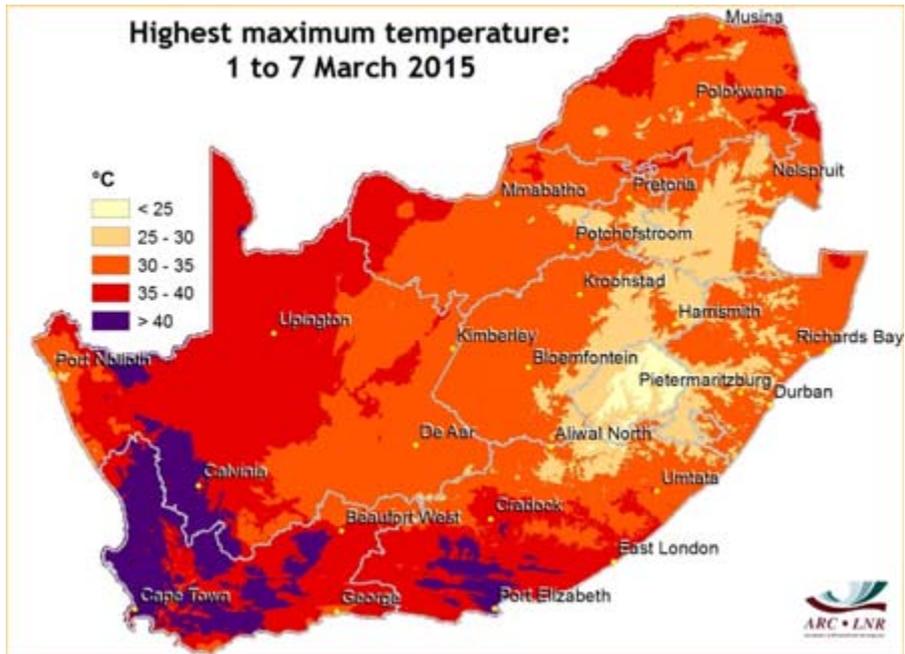


Gales over the southwestern winter rainfall region occurred mainly on the 2nd and 3rd while high winds over the interior were associated with thunderstorms by the 6th or 7th (see table below for the colour code and Beaufort Wind Scale).

6	Strong breeze	39–49 km/h	Large branches in motion. Whistling heard in overhead wires. Umbrella use becomes difficult. Empty plastic bins tip over.
7	High wind, moderate gale	50–61 km/h	Whole trees in motion. Effort needed to walk against the wind.
8	Gale	62–74 km/h	Some twigs broken from trees. Cars veer on road. Progress on foot is seriously impeded.
9	Strong gale	75–88 km/h	Some branches break off trees, and some small trees blow over. Construction/temporary signs and barricades blow over.
10	Storm	89–102 km/h	Trees are broken off or uprooted, structural damage likely.



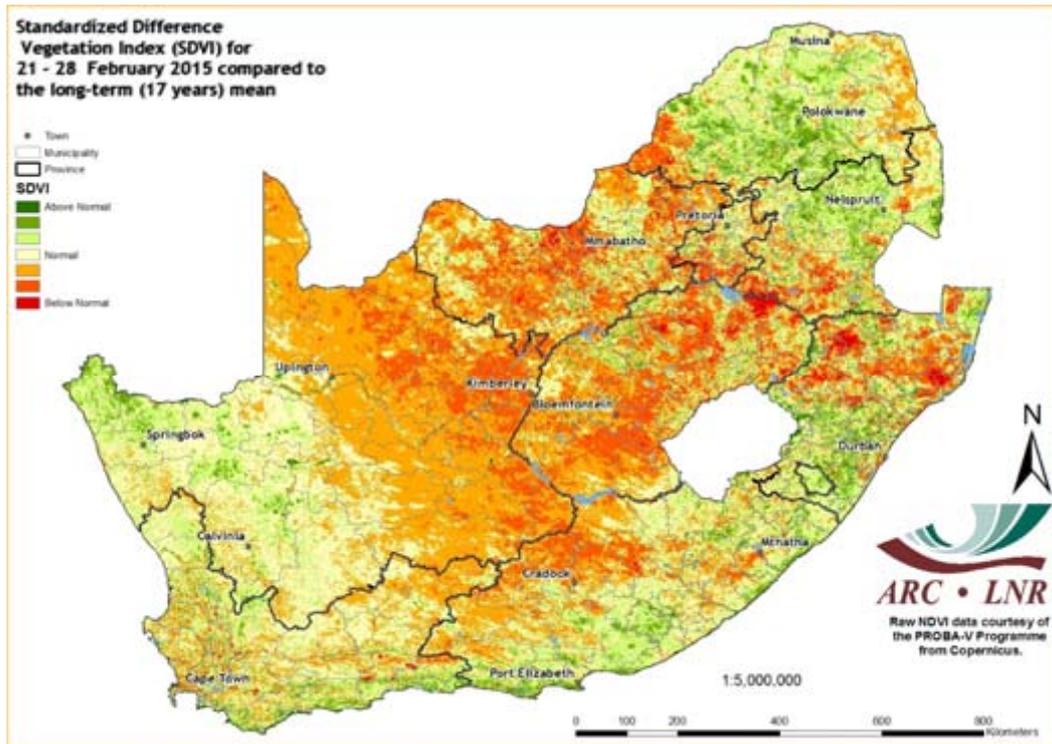
Temperatures



Extreme maximum temperatures remained relatively low over much of the summer rainfall region, but reached the highest values so far this summer over the southwestern parts. Highest temperatures over the southwestern parts were recorded on the 3rd.



Vegetation Activity Anomalies



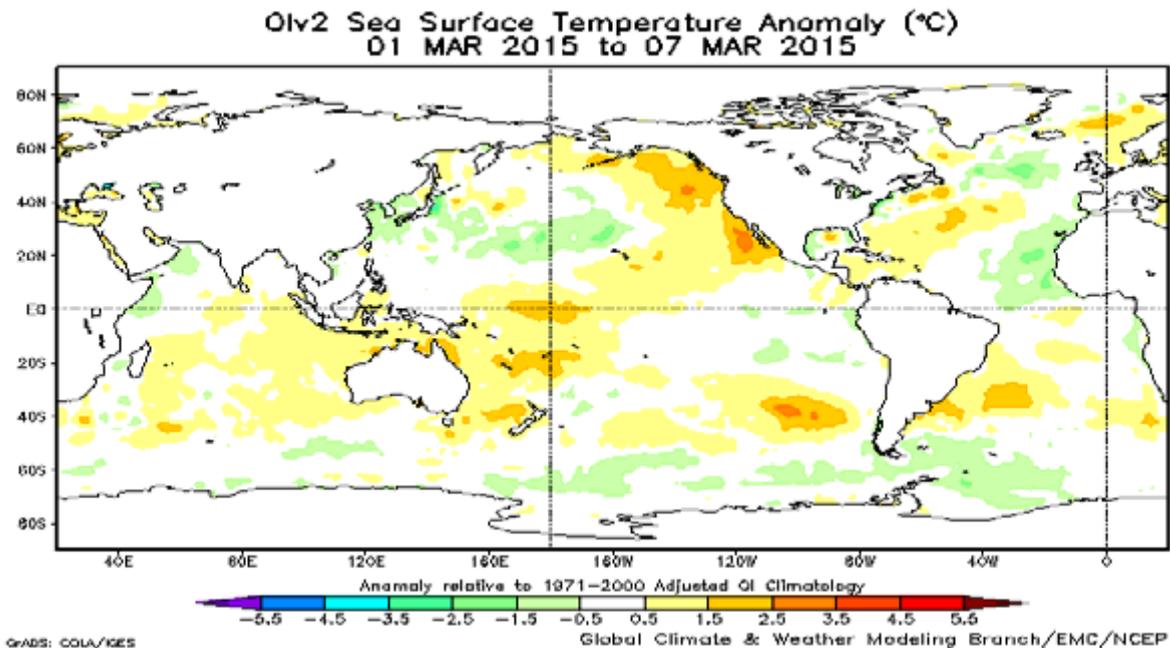
Recent rains (since 16 February) had some positive impact over the central parts of the country, but the SDVI for the last 9 days of February still indicates largely negative vegetation activity anomalies due to the hot and dry conditions during early February. There is also a northwest-southeast-stretching band of large negative anomalies from southwestern Limpopo to northern KwaZulu-Natal.



Latest status of indicators of global climate

- SST (Sea Surface Temperature) anomalies in the Central-Eastern Equatorial Pacific are near-normal, while slightly above-normal towards the west
- SSTs in the Southern Hemisphere still indicates the effect of a positive SAM, usually associated with normal to above-normal rainfall towards late summer while
- The SAM is currently neutral, indicating neither favorable or unfavorable large-scale circulation anomalies for rainfall over the summer rainfall region
- The SOI has increased to neutral values, indicating further potential for normal rainfall

SSTs



SST map: NOAA Climate Prediction Centre - <http://www.cpc.ncep.noaa.gov>

SSTs across the equatorial Pacific are slightly above average. “...The central to western regions of the tropical Pacific Ocean have warmed by 0.2 °C to 0.3 °C over the past fortnight, while monthly sub-surface temperatures were more than 2 °C above average over a large area for February. This is largely the result of weakened trade winds and tropical surface currents in recent weeks. Weakened trade winds are forecast to continue, and this may induce further warming.” - Australian Bureau of Meteorology-
<http://www.bom.gov.au>

Lower SSTs visible towards the High Southern Latitudes and relatively high SSTs over the Mid Latitudes reflects the current summer’s positive tendency in the SAM, usually associated with above-normal rainfall over the summer rainfall region.

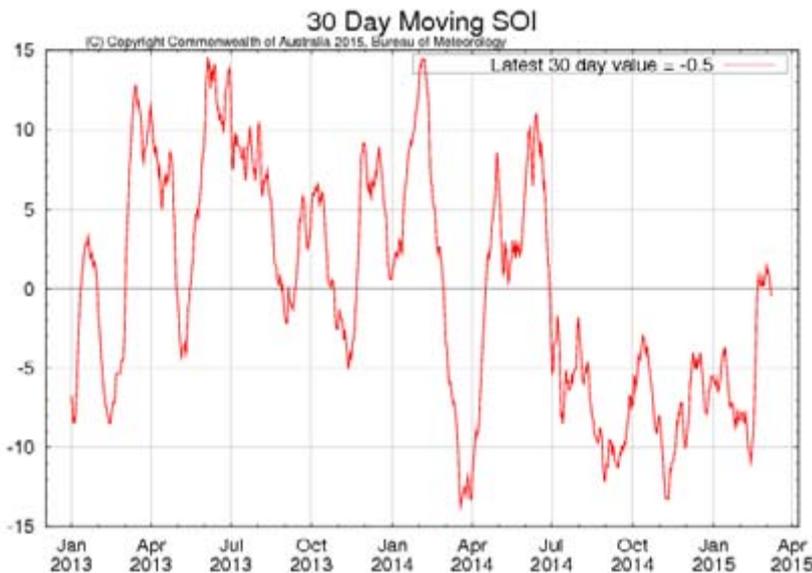


El Niño-Southern Oscillation (SSTs and SOI)



Australian Bureau of Meteorology-
<http://www.bom.gov.au>

SST anomalies over the central-to-eastern Pacific remain relatively small but positive (+0.48) as average for the last week. The anomalies have decreased since November 2014.

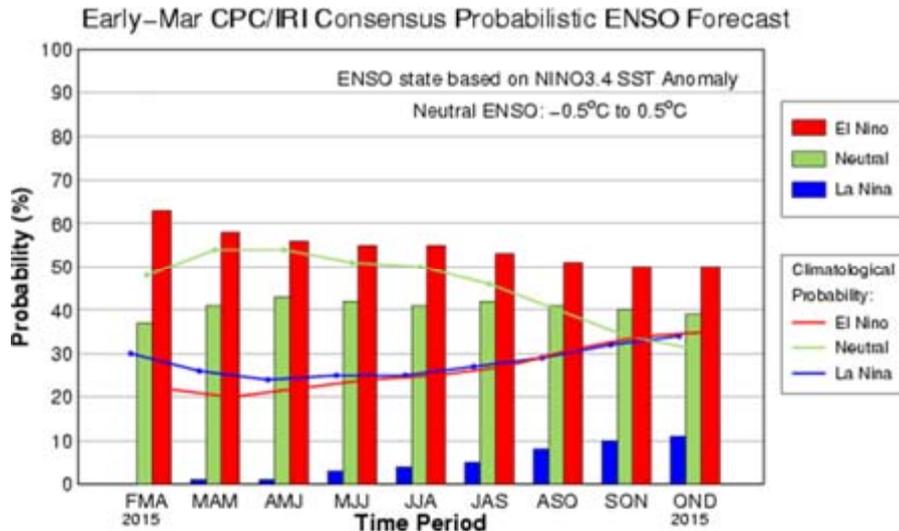


Australian Bureau of Meteorology-
<http://www.bom.gov.au>

The SOI remains neutral with a near-zero 30-day average (-0.5). (The Walker circulation refers to the location of upward and downward large scale air flow along the equator. When the SOI becomes negative, it is an indication that one of the ascending limbs of this circulation pattern, usually located over Africa, may be shifted off the continent, usually leading to lower rainfall over southern Africa).



El Niño-Southern Oscillation (Probabilistic forecast)

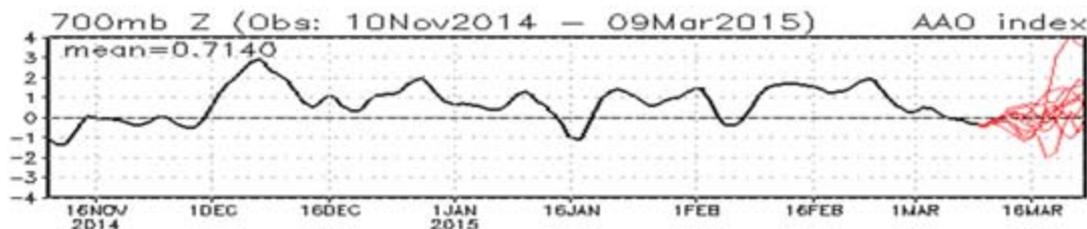


The consensus probabilistic forecast by the Climate Prediction Center (CPC) and International Research Institute for Climate and Society (IRI) indicates a 64% chance for the occurrence of warm ENSO conditions during Austral late summer.

“During January through early February 2015 the SST just met the thresholds for weak Niño conditions. Lately some of the atmospheric variables began indicating an El Niño pattern a little more than they had been before January. The consensus of ENSO prediction models indicate warm neutral to borderline El Niño conditions during the February-April season in progress, continuing into northern spring 2015.” - IRI - <http://iri.columbia.edu/>

CPC ENSO outlook - http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso_advisory/

Southern Annular Mode (SAM)



The Annular Mode Website - <http://www.atmos.colostate.edu/ao/index.html>

The SAM (Southern Annular Mode / Antarctic Oscillation) is an indication of the position and strength of pressure anomalies over the Southern Hemisphere. When this index is positive (negative), it is usually an indication of high-pressure (low-pressure) anomalies over the mid-latitudes. As positive anomalies over the mid-latitudes may result in strong subtropical high pressure regions over the oceanic regions surrounding South Africa, the SAM is positively (negatively) related to South African summer (winter) rainfall. Significant rainfall events in the past have been associated with strong decreases or increases in the SAM.

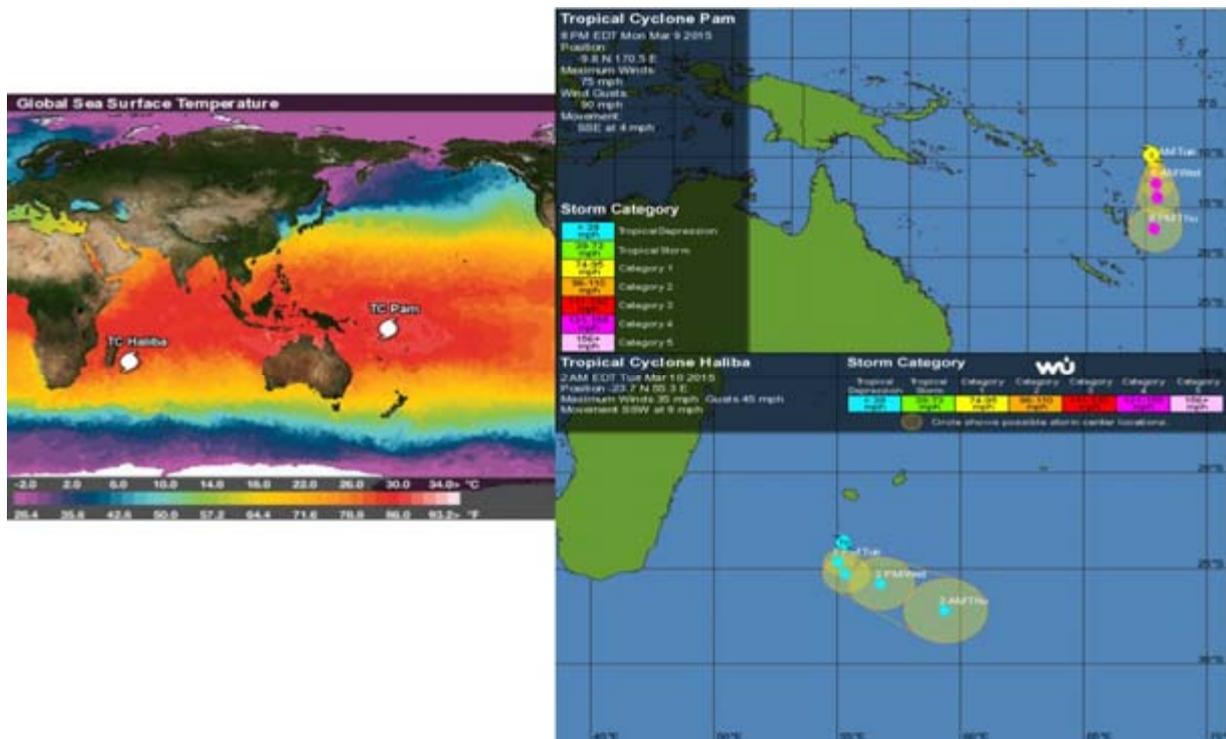
The SAM is near zero. It is expected to remain slightly negative for a couple of days and then increase to positive values, increasing the probability for precipitation over the interior.



Overview of significant weather conditions during the coming week globally

(Sourced from the output of Global Coupled Climate Models, published online)

Tropical Cyclones



Currently, 2 tropical systems are being tracked. *Weather Underground* - <http://www.wunderground.com>

- Tropical Cyclone Pam, over the Western Pacific, expected to move southwards and intensify when possibly affecting parts of the Solomon Islands, Vanuatu and Fiji.
- Tropical Depression Haliba towards the southeast of Madagascar in the Southern Indian Ocean, expected to move southeastwards without further impacting major land areas.

Tropical Cyclone Centre La Reunion -

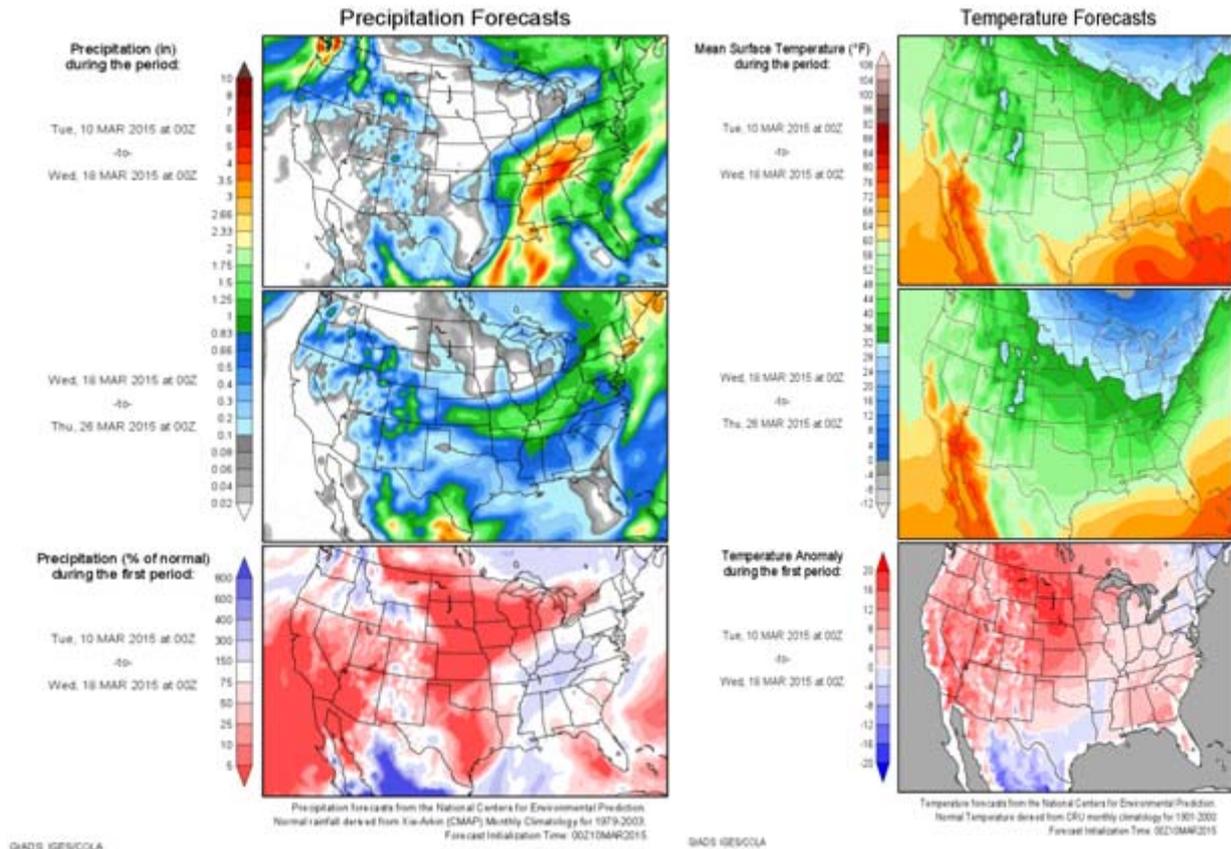
http://www.meteo.fr/temps/domtom/La_Reunion/webcmrs9.0/anglais/index.html

(CIMMS) - *Tropical Cyclone Group* - <http://tropic.ssec.wisc.edu/>

In any event of a tropical system posing a threat to southern Africa, the South African Weather Service (www.weathersa.co.za) will issue the relevant warnings.



Conditions over the USA, Europe and Australia (10 - 16 March) USA



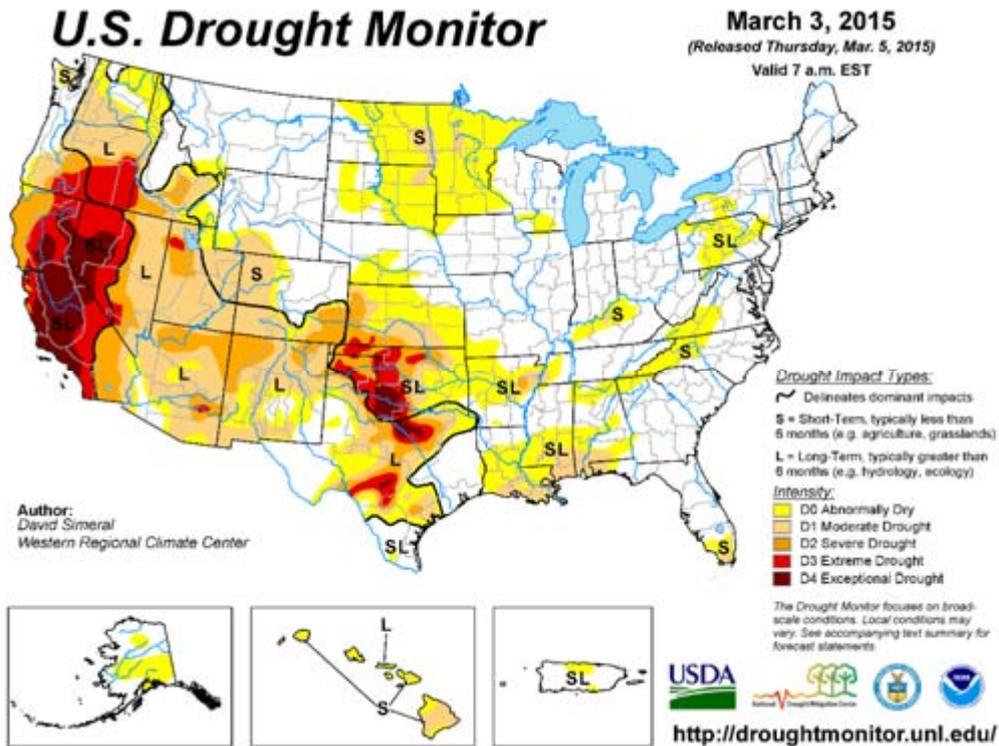
Center for Ocean-Land-Atmosphere Studies (COLA) and Institute of Global Environment and Society (IGES) - <http://Wxmaps.org>

For next 2 days: Rain fueled by Gulf moisture will continue to expand northward from the lower Mississippi River Valley into the Tennessee and Ohio valleys on Tuesday. Localized flash flooding is possible in parts of the Ohio Valley. – NOAA National Weather Service - <http://www.weather.gov>

For the 7-day period: While an anticyclonic upper air circulation over the western parts will result in relatively warm and dry conditions there, wet conditions, with heavy falls on some days, will persist until Saturday over the Mississippi River Valley and surrounding areas. An upper air trough developing to the east of the anticyclonic circulation towards the southwest will result in precipitation firstly over the Pacific Northwest, moving towards the Mountainous West and finally towards the South as the week progresses, resulting in near-normal precipitation and temperatures over those parts. Most of California and Arizona will remain warm and dry, further exacerbating the drought conditions there. While above-normal precipitation is expected over parts of the Midwest and towards the northeast, temperatures will for the first time in months be normal to above normal.

Cumulus

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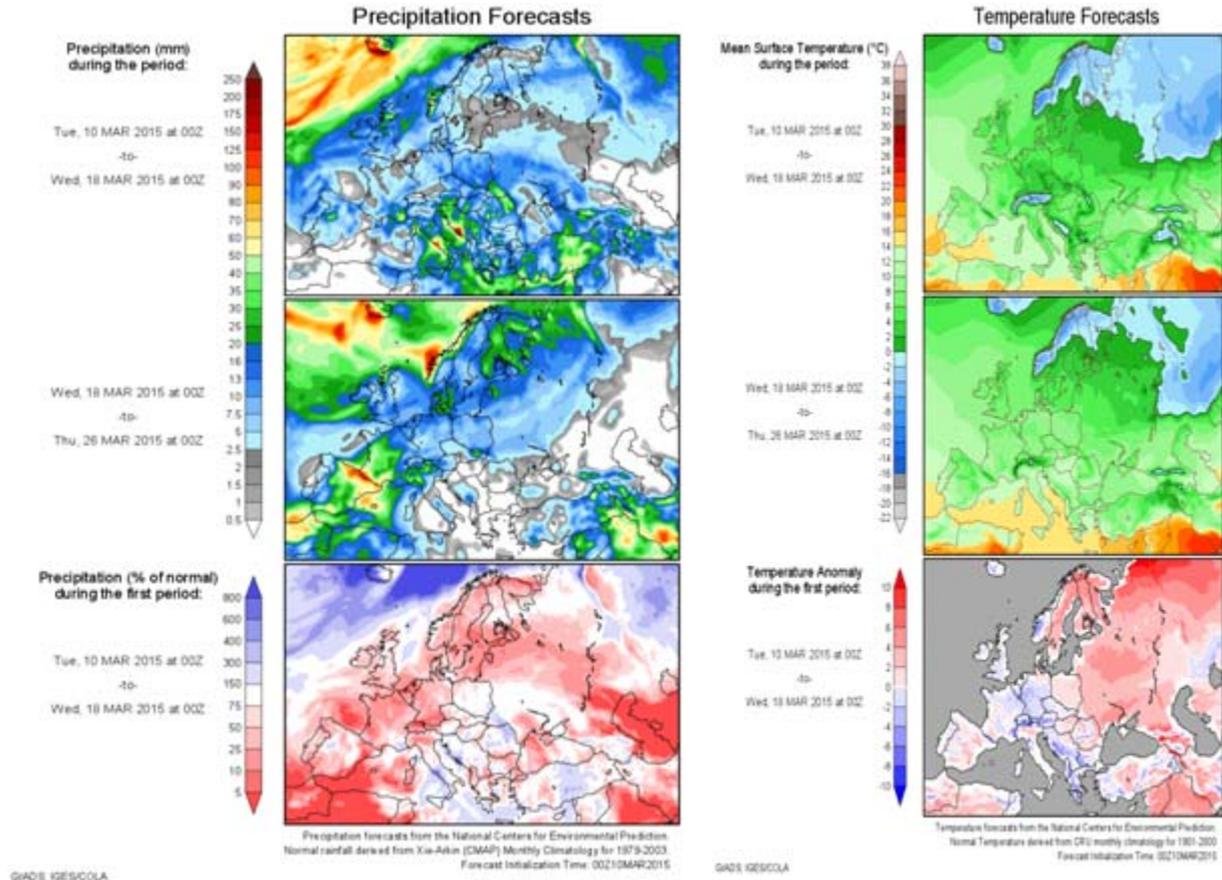
http://droughtmonitor.unl.edu/data/jpg/current/current_usdm.jpg

This U.S. Drought Monitor week saw an active pattern nationwide as a series of storms delivered much-needed rain and mountain snow to portions of the Southwest and a wintery mix of freezing rain and snow to the lower Midwest, Mid-Atlantic, and the Southern Tier from Texas to Georgia. Significant snowfall accumulations were observed in the mountains of northern Arizona, southwestern Colorado, northern New Mexico, and southwestern Utah helping to improve snowpack conditions. In the South, heavy rains fell across portions of Louisiana and Mississippi, while freezing rain and snow dipped as far south as Alabama and Georgia. In the Northeast, snow showers and cold temperatures persisted. Average temperatures east of the Continental Divide were well below normal, dipping up to 20°F below normal in the South, Southern Plains, Midwest, and Northeast. Out West, temperatures were slightly below normal except for portions of the Pacific Northwest where temperatures hovered slightly above normal. *United States Drought Monitor-* <http://droughtmonitor.unl.edu>

This information is relevant for the week ending 3 March.



Europe



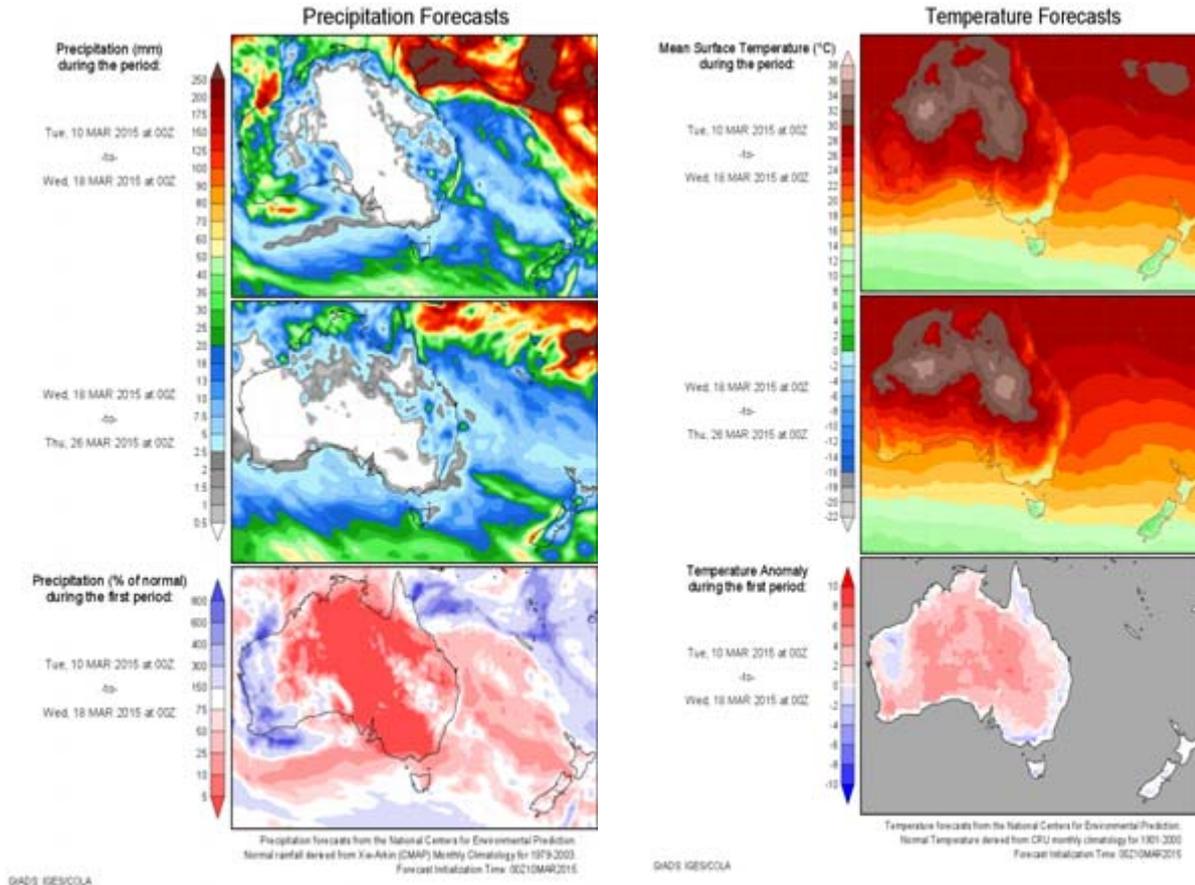
Center for Ocean-Land-Atmosphere Studies (COLA) and Institute of Global Environment and Society (IGES) – <http://Wxmaps.org>

While several low-pressure systems will pass towards the northwest, resulting in some precipitation across the UK and Western Scandinavia, anticyclonic conditions over Central to Western Europe will result in relatively cold and dry conditions there, especially from Wednesday when a northerly to easterly flow will start dominating. To the south of the high pressure system over much of Europe, a cut-off low with redevelopment towards the end of the period will keep it wet across much of the central Mediterranean, Southeastern Europe and the Black Sea region. Significant rainfall is expected at several locations and temperatures will be low over the eastern parts of the region. The cyclonic surface circulation may also result in stormy conditions over the central to eastern parts of the Mediterranean.

Temperatures over Eastern Europe and Russia will be above normal.



Australia



Center for Ocean-Land-Atmosphere Studies (COLA) and Institute of Global Environment and Society (IGES) – <http://Wxmaps.org>

Dry anticyclonic conditions with above-normal temperatures should dominate much of the central to eastern interior of Australia. Over the next few days, a tropical depression/storm will result in heavy rain along the northern coastal belt and adjacent interior of Queensland while another tropical depression will move along the coast of Western Australia, resulting in heavy rain over the western parts. An upper air trough from the west will result in continued rainfall over the western parts by the weekend. An upper air trough will also result in some thunderstorms across central Queensland towards eastern New South Wales during the week while it should remain warm to hot throughout over much of central to eastern Australia.

Precipitation and temperatures should be near normal to below normal over New Zealand.



Overview of expected conditions over South Africa during the next few days

Significant weather events (10 – 16 March)

Near-normal rainfall and temperatures are expected over most of the eastern parts during the coming 7-day period while near-normal to below-normal rainfall with above-normal temperatures are expected over the western parts.

Persistent easterlies will keep the eastern parts warm to mild while the western to southwestern parts may become hot as the flow from the interior moves across these areas.

Upper air troughs and perturbations moving around a high pressure system to the northwest will first result in isolated thundershowers over the central to southeastern interior, spreading to the eastern parts by Thursday. More upper air instability will result in a recurrence of thundershowers during the weekend over the eastern to central parts.

The maps for cumulative rainfall and average temperatures during the next few days are on the next page.

Conditions in main agricultural production regions (10 – 16 March)

Maize production region: Partly cloudy and mild to warm conditions should dominate, with isolated to scattered thundershowers from Wednesday afternoon to Thursday and again during the weekend, persisting into next week.

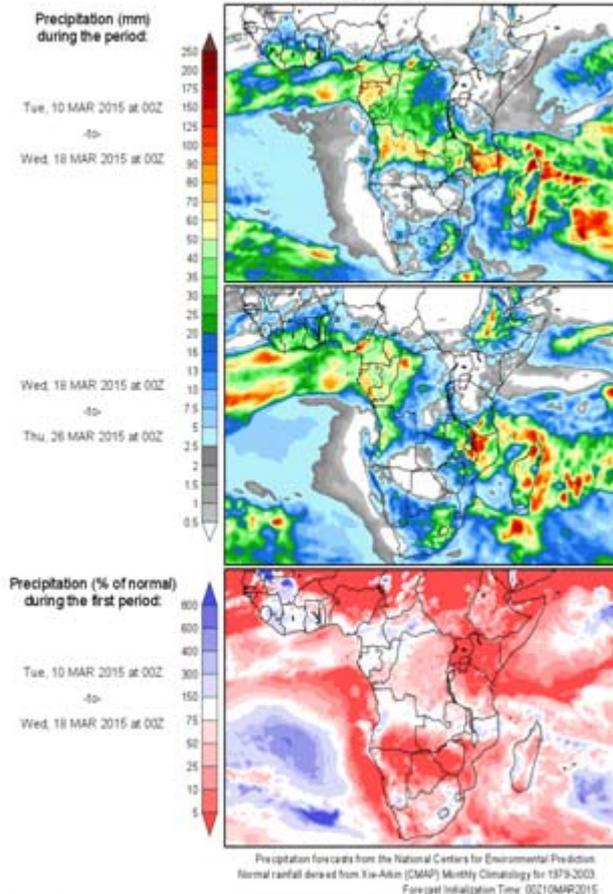
Swartland, Cape Wine lands and Ruens: Hot conditions with northeasterlies to easterlies will initially dominate, and may recur by Friday and Saturday. Southeasterlies to westerlies will keep it mild during the rest of the period. Very little precipitation is expected, apart from some light showers over the southern coastal areas and mountains today, Thursday and Friday.

Cumulus

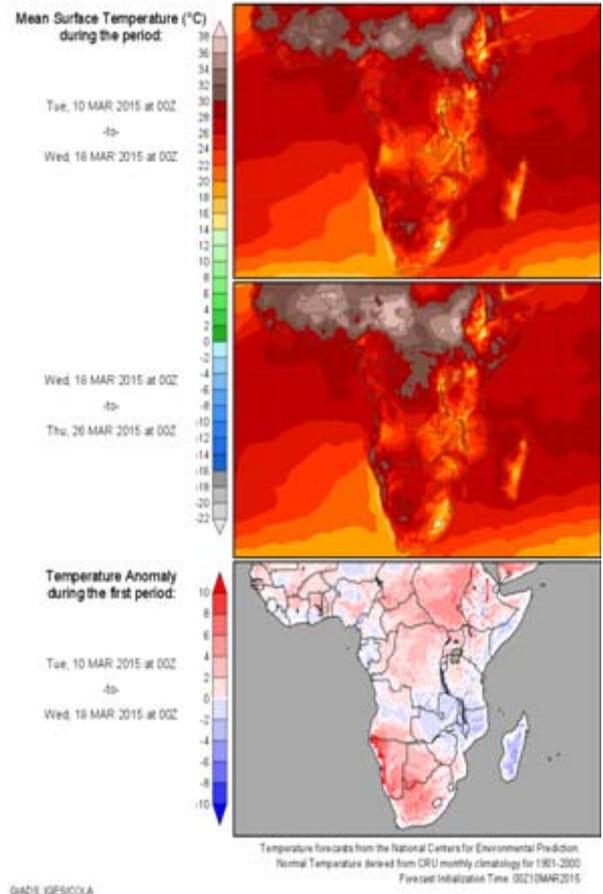
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Absa Versekeringsmaatskappy



Precipitation Forecasts



Temperature Forecasts



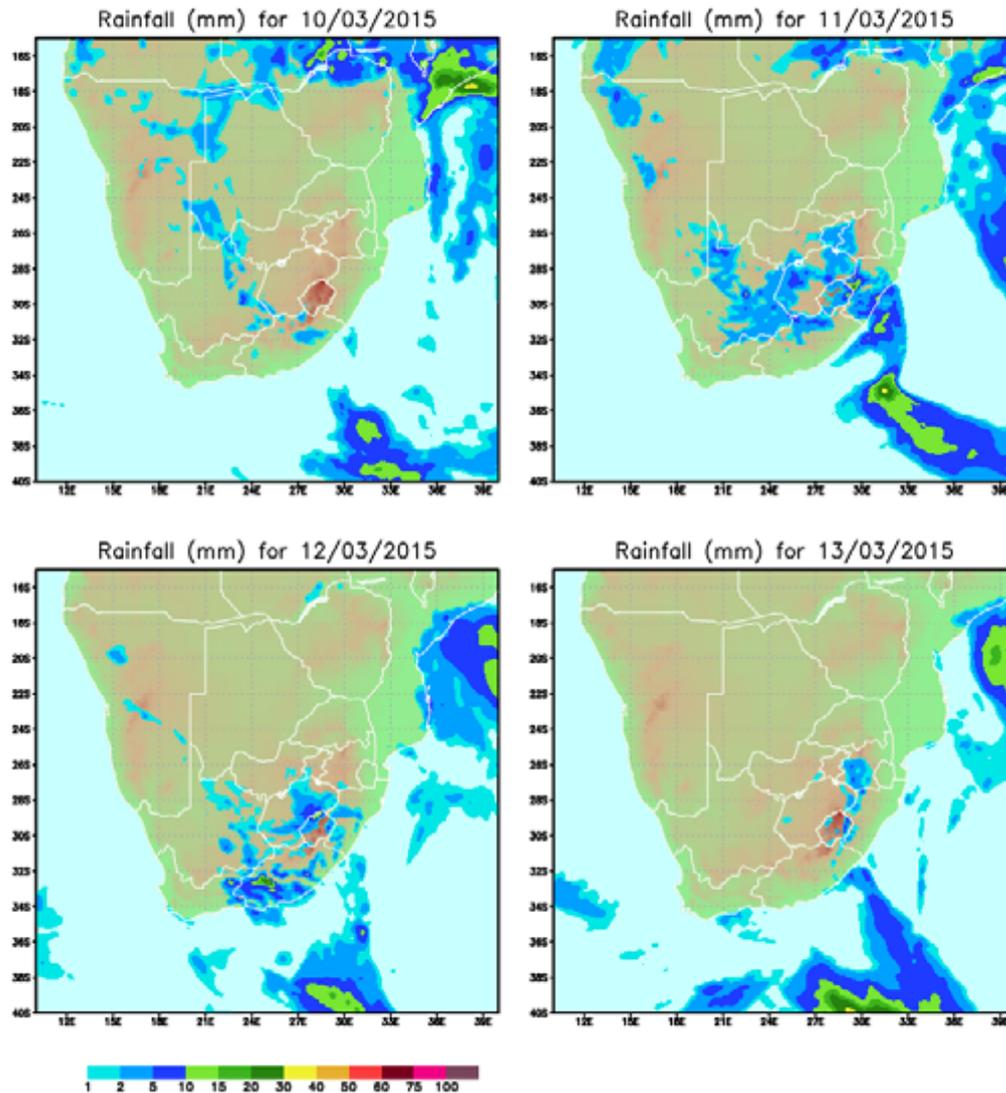
Center for Ocean-Land-Atmosphere Studies (COLA) and Institute of Global Environment and Society (IGES) – <http://Wxmaps.org>



Daily rainfall and temperatures across South Africa

Daily rainfall (mm) for 10 – 13 March 2015

Produced by: The Climate Studies, Modelling and Environmental Health Group of the CSIR.

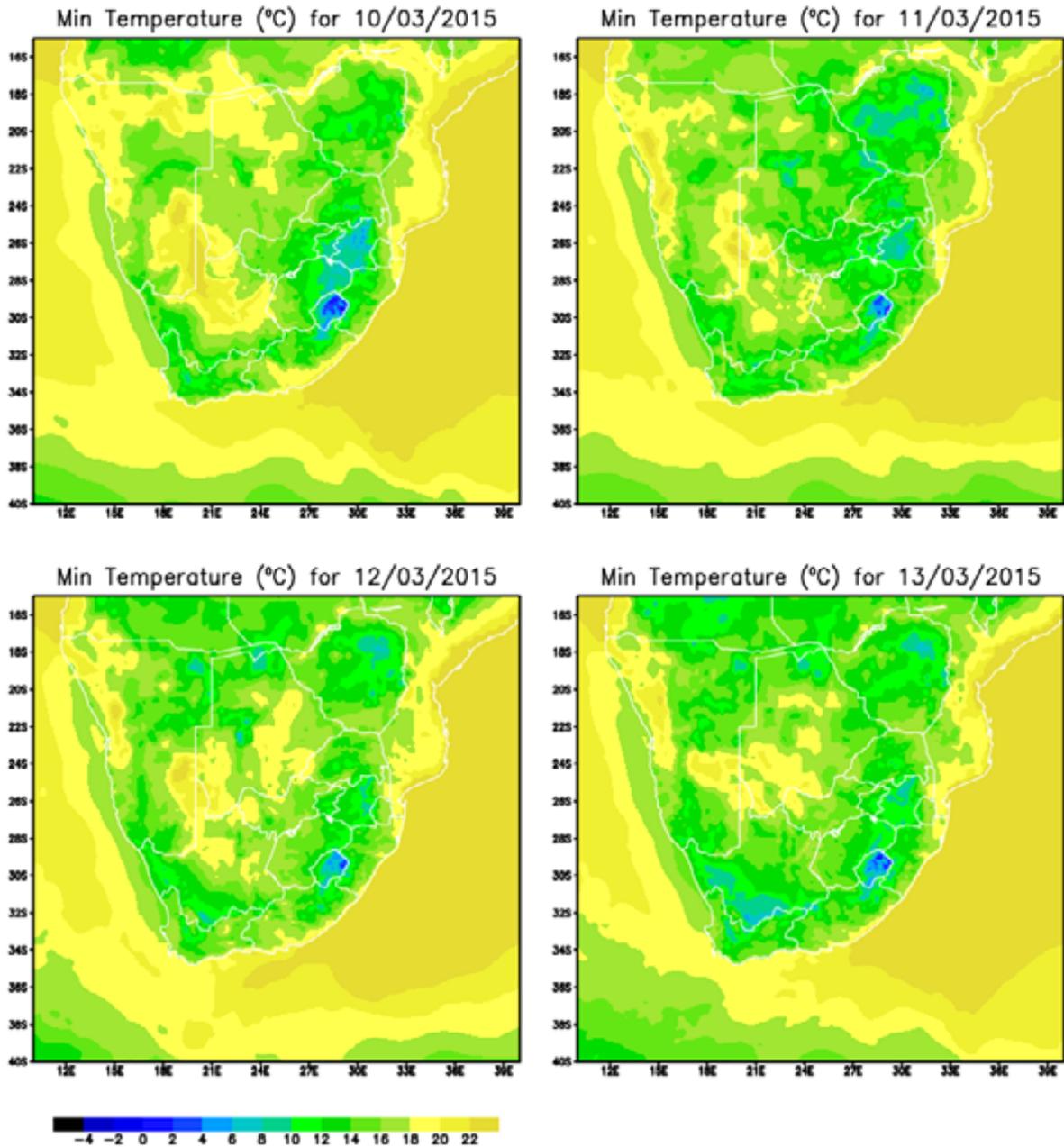


Isolated thundershowers will occur over the western to central interior today, spreading towards the central and eastern parts during the next 3 days.



Daily minimum temperature (°C)

Produced by: The Climate Studies, Modelling and Environmental Health Group of the CSIR.

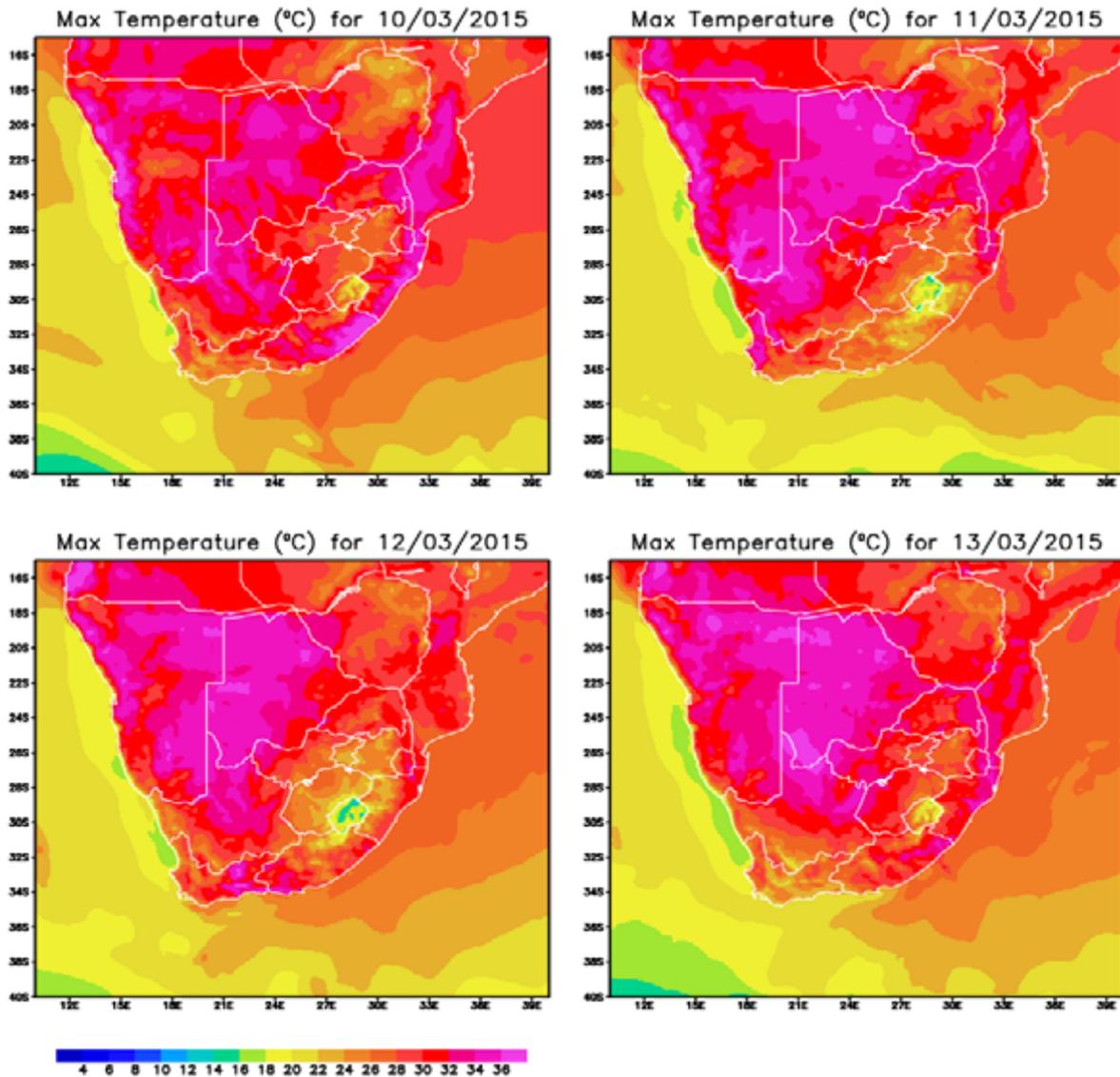


Minimum temperatures will slowly increase during the next few days.



Daily maximum temperatures (°C)

Produced by: The Climate Studies, Modelling and Environmental Health Group of the CSIR.



Maximum temperatures exceeding 35°C will occur over the southwestern parts by Wednesday. Hot conditions will spread towards the southern parts by Thursday while it will also remain hot over the northwestern interior. Maximum temperatures should remain in the high 20s over the Highveld and Escarpment.



Possible extreme conditions - relevant to agriculture

The South African Weather Service issues warnings for any severe weather that may develop, based on much more information (and in near-real time) than the output of one single weather model (GFS atmospheric model - *Center for Ocean-Land-Atmosphere Studies (COLA) and Institute of Global Environment and Society (IGES)* – <http://Wxmaps.org>)

considered here in the beginning of a week-long (starting 10 March) period. It is therefore advised to keep track of warnings that may be issued by the SAWS (www.weathersa.co.za) as the week progresses.

According to current model projections (GFS atmospheric model) of weather conditions during the coming week, the following may be deduced:

- Hot conditions with strong southeasterlies to easterlies will initially occur over the southwestern parts with possible recurrence during the weekend.
- Hot conditions will develop over the northwestern interior and may spread to the southern and southeastern parts on some days.



Sources of information

Rainfall, temperature and wind maps over South Africa for the past week:

Agricultural Research Council - Institute for Soil, Climate and Water (ISCW) – Climate Data Bank. Data recorded by the automatic weather station network of the ARC-ISCW.

Vegetation condition maps: Coarse Resolution Imagery Database (CRID), ARC-ISCW.

Information related to: ENSO, IOD and SOI:

Australian Bureau of Meteorology - <http://www.bom.gov.au>

Climate Prediction Center - <http://www.cpc.ncep.noaa.gov>

International Research Institute for Climate and Society- <http://iri.columbia.edu/>

Information related to the SAM:

The Annular Mode Website - <http://www.atmos.colostate.edu/ao/index.html>

SST map:

NOAA Climate Prediction Center - <http://www.cpc.ncep.noaa.gov>

Daily conditions over South Africa:

CSIR NRE (National Resources and the Environment)

“CSIR NRE produces forecasts on an experimental basis, doesn’t guarantee the accuracy of the daily forecasts and cannot be held accountable for the results of decisions taken based on the forecasts”

Tropical cyclone/hurricane/typhoon information:

Weather Underground - <http://www.wunderground.com>

Cooperative Institute for Meteorological Satellite Studies (CIMMS) - Tropical Cyclone Group -<http://tropic.ssec.wisc.edu/>

Tropical Cyclone Centre La Reunion -http://www.meteo.fr/temps/domtom/La_Reunion/webcmrs9.0/anglais/index.html

Information on drought conditions over the USA:

NOAA National Weather Service - <http://www.weather.gov>

United States Drought Monitor - <http://droughtmonitor.unl.edu>

Precipitation and temperature outlooks for the coming week:

Center for Ocean-Land-Atmosphere Studies (COLA) and Institute of Global Environment and Society (IGES) – <http://Wxmaps.org>

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