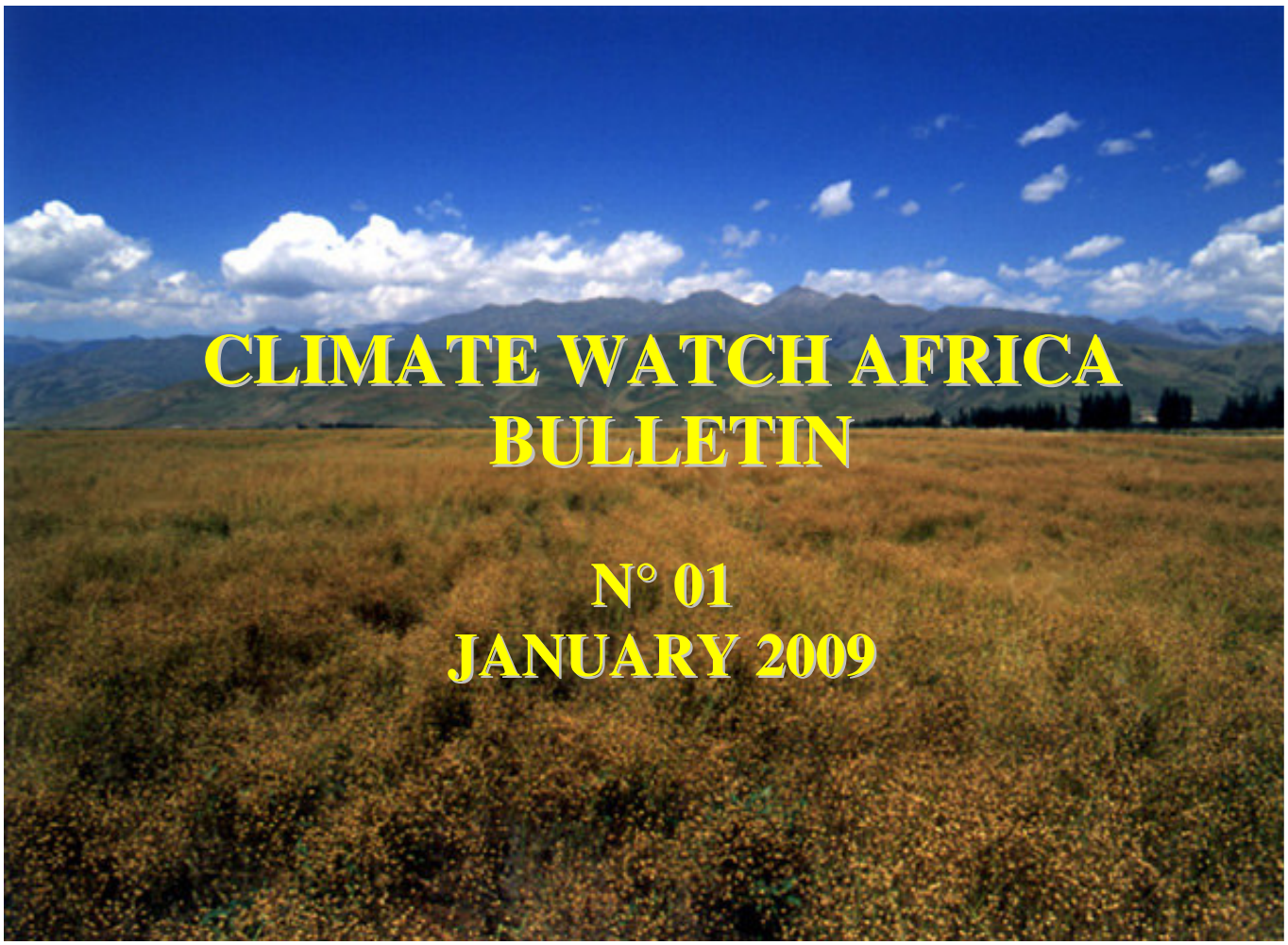
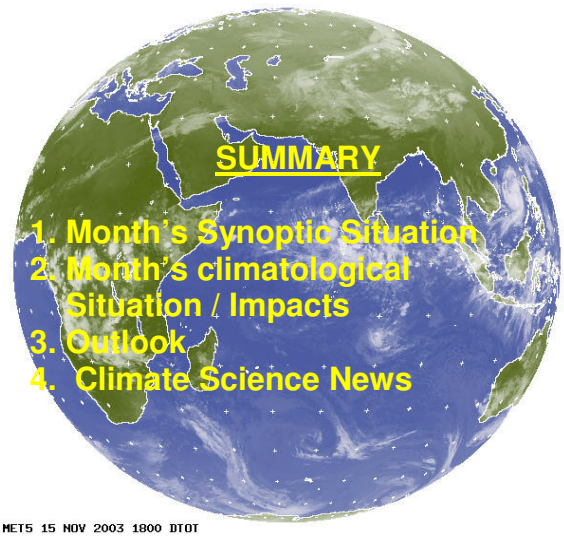
AFRICAN CENTRE OF METEOROLOGICAL APPLICATIONS FOR DEVELOPMENT
CENTRE AFRICAIN POUR LES APPLICATIONS DE LA METEOROLOGIE AU DEVELOPPEMENT



CLIMATE WATCH AFRICA BULLETIN

N° 01
JANUARY 2009



HIGHLIGHTS: Tropical storm Eric and cyclone Fanele with heavy rainfall hits Madagascar on 19th January, 2009,destroying properties and killing 10 people.

1. SITUATION DURING THE MONTH OF JANUARY, 2009

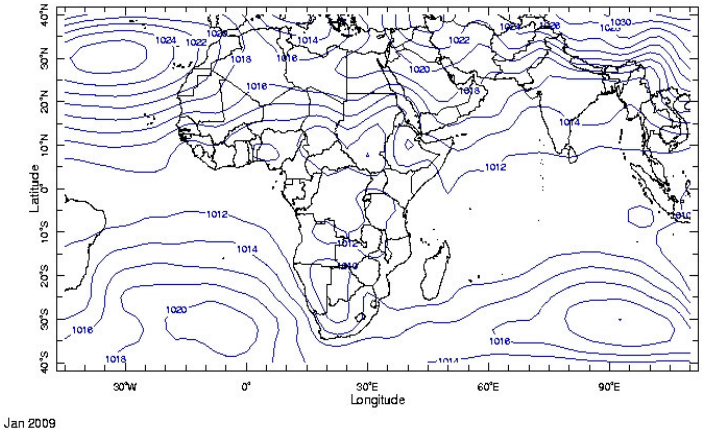
1.1 Centres of Anticyclone

The Azores high pressure at 1026Pa strengthened significantly by 4hPa and shifted to the southwest at about 30°N/35°W.

The St Helena high pressure at 1020hPa maintained its intensity compared to the previous month and shifted to the northwest at 33°S/08°W.

The thermal low of 1010hPa maintained its strength compared to the past month, covering a limited area over west and extreme northeast Nigeria, east Benin, north Cameroon, south Chad, south Sudan, Central African Republic, extreme north Democratic Republic of Congo and central Ethiopia.

The Mascarene high pressure at 1020hPa maintained its intensity compared to the past month and shifted its centre to the northeast at 32°S/93°E with a weak ridge over eastern part of Southern African countries.



Mean surface pressure during the Month of January, 20089 (Source : IRI)

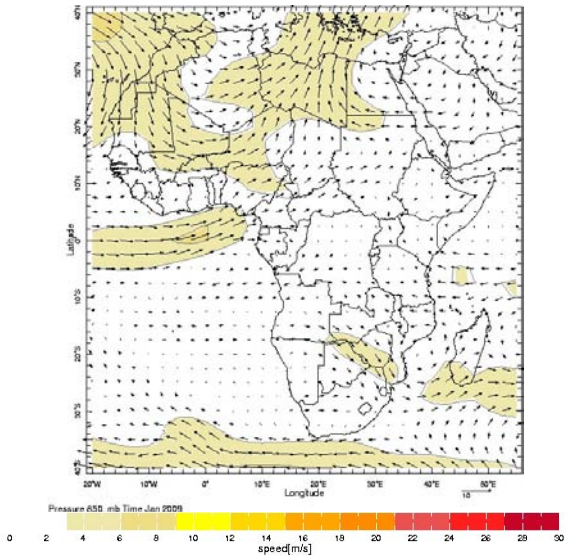
1.2 Low level wind anomaly flow at 850hPa

At 850hPa level, the strong north-westerly winds anomalies from northern Atlantic Ocean were observed over Morocco, western Algeria, Mauritania, Mali, veering to south/southwesterlies over Niger, north Nigeria, east Algeria and Libya

Over the Gulf of Guinea strong westerlies winds anomalies prevailed.

In southern hemisphere strong north-westerly winds anomalies were observed over southeast Angola, south Zambia, south Zimbabwe, north Botswana, north of South Africa, and south Mozambique while southwesterlies anomalies prevailed over southern part of Mozambique Channel and south Madagascar.

The average wind anomaly speed (shaded) was observed at about 08 m/s and above.

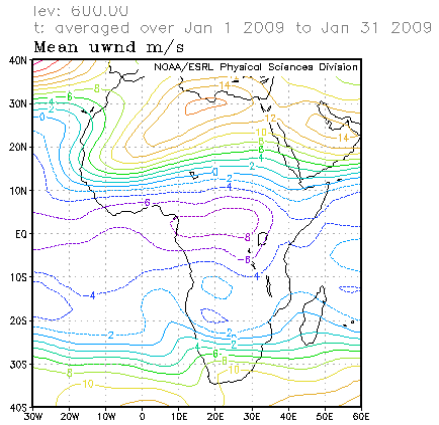


January 2009, Wind Anomalies at 850Hpa (Source : NOAA/NCEP)

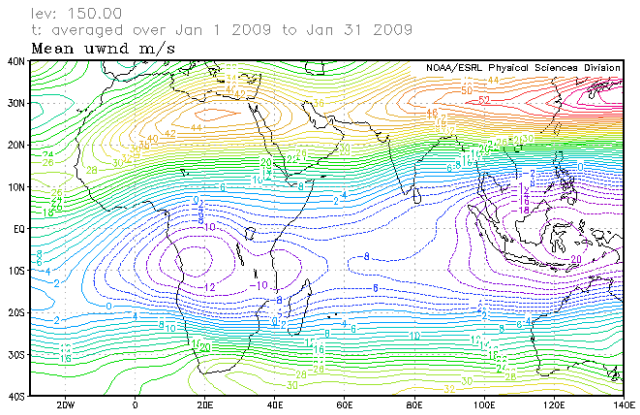
1.3 Mid and upper level winds

At the 600hPa over part of Gulf of Guinea countries and northern part of central Africa countries a wind core of 08 m/s with axis located at about 03°N.

The mean maximum wind speed at 150hPa was 46m/s over eastern part northern Africa. Over southeast Asia there is a wind core of 20m/s with secondary peak of about 14 m/s over western part of central Africa countries.



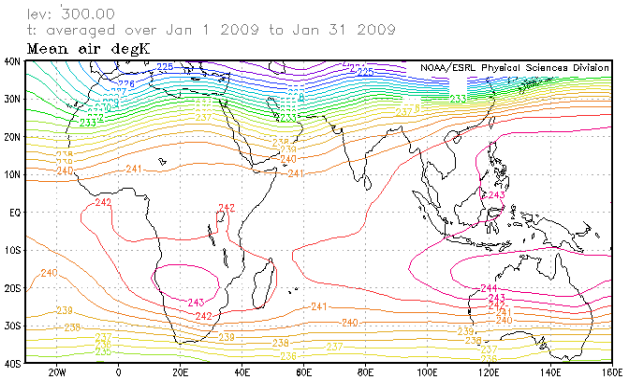
Maximum of 08m/s over part of Gulf of Guinea countries and northern part of central Africa countries. (Source : NOAA/NCEP)



Maximum of 46 m/s over eastern part of northern Africa. Wind core of 20 m/s over southeast Asia and 14m/s over west central Africa (Source : NOAA/NCEP)

1.4 Thermal index

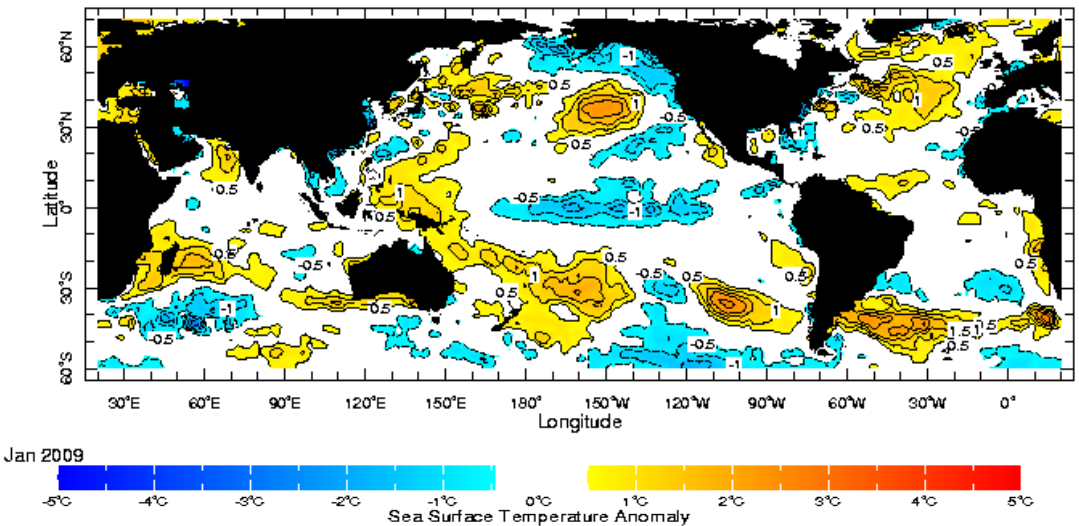
In the month of January, 2009, the thermal index (TI) regime at 300hPa, map shown, had a near-threshold value of 242°K isotherm over southern part of central Africa countries, part of GHA countries extending to northern part of southern African countries maintaining reasonable conditional instability associated with heavy rainfall. The threshold value of 243°K and above maintained the highest conditional instability associated with heavy convective rainfall with floods over extreme southern part of central Africa countries, northern part of southern Africa countries, southeast Asia and northern Australia. The low TI regime value of 241°K and below was associated with suppressed convection and rainfall deficits over the Sahel countries and parts of Gulf of Guinea countries.



(Data Source: NOAA/NCEP)

1.5 Sea Surface Temperature (SST) and El Nino/Southern Oscillation (ENSO)

A neutral to cooling conditions prevailed in the central equatorial, eastern and south central Pacific Ocean, while warming condition prevailed in western, south eastern and central north Pacific. Neutral to warming conditions were observed over most of the Atlantic Ocean except in the south central, northeastern and northwestern parts where some cooling conditions were observed. Neutral to warming condition were observed over most of the Indian Ocean except over central, north western and southeastern where some cooling conditions prevailed. Warming conditions were observed over Mozambique Channel with cooling conditions observed in the south of the Channel.



2. CLIMATOLOGICAL SITUATION AND IMPACTS DURING THE MONTH OF JANUARY, 2009

2.1 Rainfall

The estimated rainfall map below shows rainfall activities increase over northern Africa countries, central Africa countries, GHA countries and Southern Africa countries while the Gulf of Guinea countries experienced spatial rainfall decrease. The Sahel countries remained dry and dusty. In summary.

- **North Africa** had spatial and intensity of rainfall increase recording rainfall amounts ranging from 10mm to 150mm with maximum rainfall about 200mm over extreme north Morocco, Algeria and Tunisia.

- **The Sahel** countries remained dry with localized dust events.

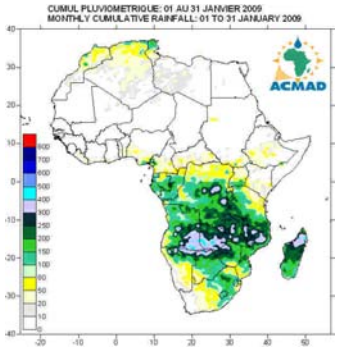
- **Gulf of Guinea** countries experienced significant spatial and intensity of rainfall decrease recording amounts ranging from 10mm to 100mm intensifying to 150mm over eastern coastal zone with a peak of about 400mm over western Cameroon.

- **Central Africa** countries experienced rainfall intensity increase recording amounts ranging from 10mm to 300mm with maximum rainfall amounts ranging from 300 to 500mm over Democratic Republic of Congo and south Angola.

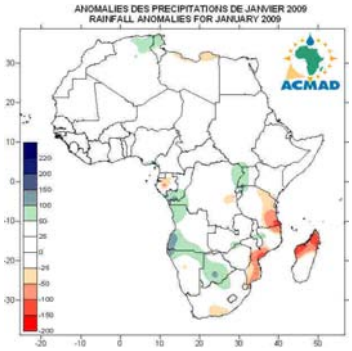
- **GHA** countries experienced spatial and intensity of rainfall increase recording amounts ranging from 10mm to 250mm with some localized peaks between 250 to 300mm over Tanzania and south Uganda.

- **Southern Africa** countries experienced slight spatial and intensity of rainfall increase recording amounts ranging from 10mm to 300 mm with heaviest amounts between 300 to 500mm over north Namibia, Zambia, north Botswana, north Mozambique, north Zimbabwe and north Madagascar.

The January 2009, rainfall anomaly map shows significant rainfall deficits over north Libya, north Gabon, east Democratic Republic of Congo, eastern Tanzania, north, central and southern Mozambique, north Madagascar and south of South Africa, while, excessive rainfall was recorded over north Algeria and Tunisia, south Nigeria/Cameroon, south Gabon and Congo, southwest and northeast Democratic Republic of Congo, north and south Angola, north Namibia, Botswana, north of South Africa, south Zambia/Zimbabwe, central Malawi, west Mozambique and Great Lakes Countries.



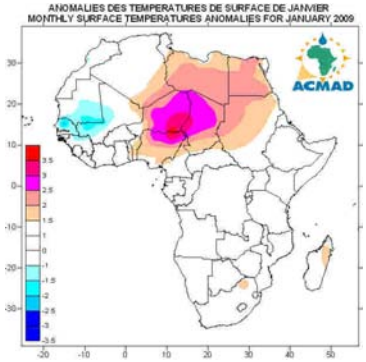
(Data Source: NOAA/NCEP)



(Data Source: NOAA/NCEP)

2.2 Surface Temperature Anomalies

In January 2009, the temperature anomalies over most of African countries were generally normal (1°C to –1°C). However, negative temperature anomalies (<-1.5°C) were observed in northwest Morocco, south Mauritania, west Mali, north Guinea and in Senegal. However, positive temperature anomalies (>1.5°C) were observed in north Madagascar, north of South Africa, north Sudan, Egypt, Libya, south Tunisia, east Algeria, Nigeria, Benin, north Cameroon, north central African Republic with the highest positive temperature anomalies epicenter (>2.5°C) covering Niger, Chad, north Nigeria and north Cameroon.



(Data Source: NOAA/NCEP)

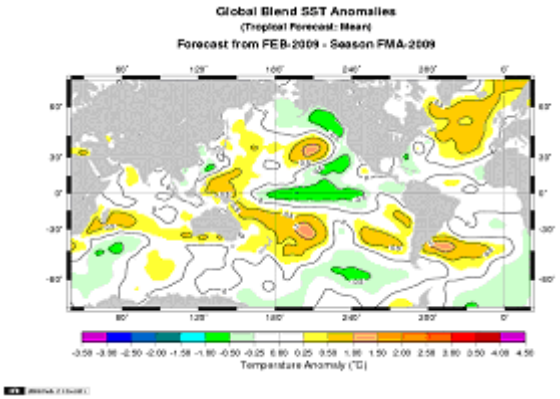
3. OUTLOOK

3.1 Forecast Sea Surface Temperature (SST)

Pacific Ocean: Neutral to cooling conditions will continue in the central, eastern and southern Pacific Ocean, but warming is expected over its western, south central and north central parts.

Atlantic Ocean: A neutral to cooling condition is expected over eastern and northwestern Atlantic Ocean, while warming trend is expected to continue over northern and southwestern and central west Atlantic.

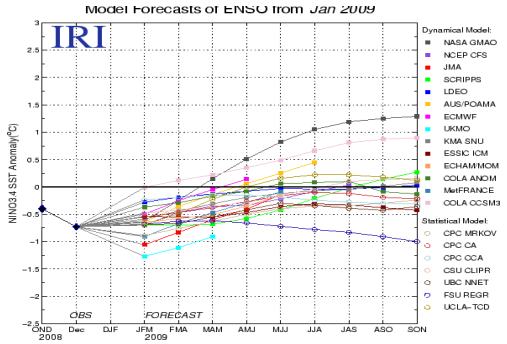
Indian Ocean: Neutral to warming condition is expected over the Indian Ocean and Mozambique Channel.



(source IRI)

3.2 El Ni Niño/La Niña

However, the set of dynamical and statistical model forecasts of ENSO over Nino 3.4 domain (5°N – 5°S, 120°W – 170°W) are generally in agreement regarding La Nina ENSO condition for JFM, until boreal spring 2009, after which conditions are most likely to return to neutral.

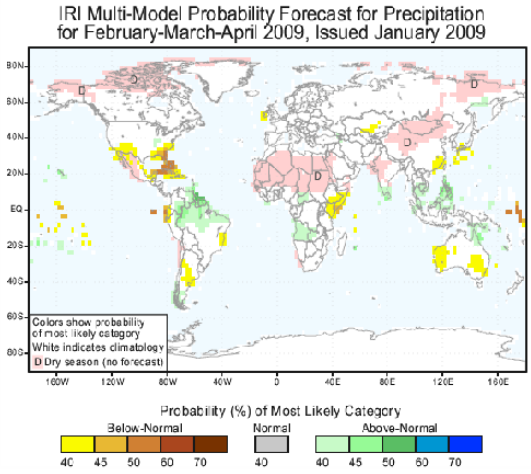


(source: IRI)

3.3 Rainfall

The expected position of the ITD, will lead to low moisture influx and dry, dusty conditions over the Sahel, with the convective zone expected to move slightly north with rainfall reduction over the Gulf of Guinea countries and parts of Central African countries, but expected to intensify over southern parts of southern African countries.

The IRI forecast indicates below normal rainfall over the Gulf of Guinea countries, and extreme western part of southern African countries for February-March-April, while above normal rainfall was forecast over extreme southern part of Chad, Central Africa Republic, extreme southern part of democratic Republic of Congo and Angola.



(source IRI)

Climate Science News

Current ENSO Situation Outlook and Impacts

by
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African **C**enter of **M**eteorological **A**pplications fo**r** **D**evelopment **(ACMAD)**

1. Overview

The monitoring of the El Niño/Southern Oscillation (ENSO) as one of the most important coupled ocean-atmosphere phenomenon that cause global climate variability on interannual time scales has gained special momentum due to its impacts on regional rainfall anomalies over several parts of the Globe. The parameters being used at ACMAD/CED in the ENSO monitoring include the tropical Pacific sea surface temperature (SST), the 300hPa thermal index regime, sea-level pressure (SOI), the surface zonal and meridional winds components among others.

The monthly IRI sea surface temperature and several ENSO indices such as the upper troposphere thermal index (TI) regimes, the Multivariate ENSO Index (MEI), and long Tahiti-Darwin southern oscillation index (SOI) that goes back to 1866 maintained at the **Climate Research Unit of the University of East Anglia website** are used at ACMAD to provide ENSO outlook

2. ENSO Monitoring

2.1 Sea Surface Temperature (SST)

In January, 2009, a neutral to La Nina conditions prevailed in the central equatorial and eastern Pacific Ocean, while warming condition prevailed in western, south eastern and central north Pacific. Warming condition was observed in most of the south western Indian Ocean (SWIO) with pockets of cooling in the north western and eastern Indian Ocean.

2.2 Thermal Index Regime

The thermal index (TI) regime over the Pacific Ocean as one of important tools in the monitoring of the ENSO showed that the month of January, 2009, TI regime at 300hPa, map shown above, had the threshold value of 243°K and above that maintained the highest conditional instability associated with heavy convective rainfall with floods over extreme southern part of central Africa countries, northern part of southern Africa countries, southeast Asia and northern Australia marking the area of large-scale convergence characterized by vigorous convection. This resulted into increased westerlies over Indian Ocean and easterlies over Pacific enhancing cooling particularly in the eastern and central Pacific Ocean.

2.3 Multivariate ENSO Index (MEI)

The monitoring of ENSO by the Multivariate ENSO Index (MEI) of the six main observed variables over the tropical Pacific, the sea-level pressure (P), zonal (U) and meridional (V) components of the surface wind, sea surface temperature (S), surface air temperature (A), and total cloudiness fraction of the sky (C) precisely shows that we are moving from **La Nina to neutral conditions and thereafter to El Nino.**

3. Outlook

The western Pacific is currently the centre of large-scale convergence resulting in vigorous convective activities characterized by massive release of latent heat as demonstrated by the high thermal index regime at 300hPa over the region. The situation will prevail up to the first week of June, 2009.

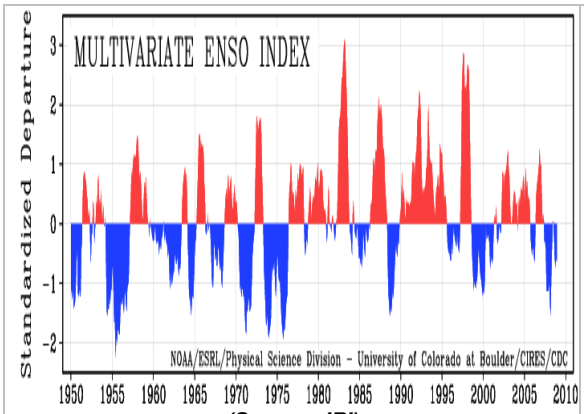
Moderate negative SST anomalies cover most of the equatorial Pacific from west of the dateline to the South American coast with no 'pockets of positive anomalies indicating persisting La Nina condition as confirmed by various models shown above.

The set of dynamical and statistical model forecasts issued during late December 2008 and early January 2009 are generally in agreement regarding La Nina condition for JFM and then returning towards neutral thereafter.

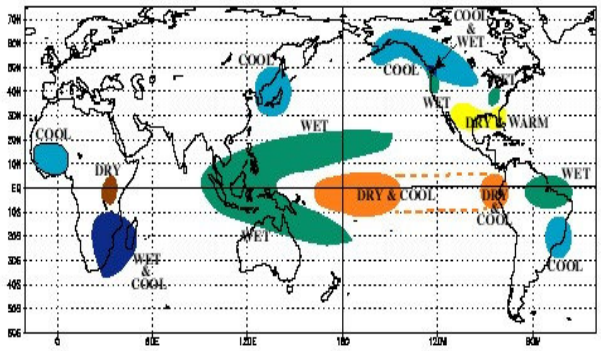
4. Impacts

The presence of La Niña in the Pacific calls for guard against risks of climate extremes during the coming months. Several countries will experience La Nina impacts in a varied manner as shown on the map below. However, climate extremes develop independently of La Niña and El Niño and users should consult local and sub-regional climate outlooks for information during the coming months. For example, some parts of GHA

and possible drought could prevail over some other parts of eastern GHA countries and central Africa due to La Nina will excessive than normal rainfall will be expected over southern Africa countries.



(Source : IRI)



(Source : IRI)