WEEKLY MENINGITIS VIGILANCE FOR AFRICA

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1 Vigilance

- High vigilance is needed for meningitis cases over parts of extreme northern Mauritania, eastern Mali, northern Niger, northern Chad, parts of southern Algeria, and northern Sudan.

- Meningitis cases are very likely over central and northern Mauritania, northern Mali, northern Niger, northern Chad, northern Sudan, southwestern Libya, southern Algeria, and central and southern Egypt.

- Low to no vigilance is needed over the remaining parts of the meningitis belt.
2 Atmospheric conditions

2.1 Relative humidity

Figure 2 shows the mean relative humidity (RH) at 1000 hPa forecasted by ECMWF Model for the period from 29th June to 5th July 2020 issued on 22nd June 2020. It indicates that very dry atmospheric conditions with RH below 20 % are prospected over central and northern Mauritania, northern Mali, central and northern Niger, Algeria, eastern Morocco, northern Chad, northern Sudan, southern Libya, southern Egypt, and Namibia. Moistening atmospheric conditions (RH between 20 and 40 %) are prospected over western Mauritania, central Mali, western Niger, central Chad, central Sudan, central Morocco, northern Algeria, central Libya, central Egypt, Angola, Botswana, extreme southern DRC, western Zambia, and South Africa. Very wet atmospheric conditions (relative humidity at least 60 %) will prevail over Senegal, Gambia, Bissau Guinea, Guinea, Ivory Coast, Liberia, Sierra Leone, Ghana, Burkina Faso, Togo, Benin, Nigeria, southern equatorial countries, southern Somalia, eastern Tanzania, eastern Kenya, Madagascar, and Mozambique. Southern Africa will expect dry conditions during the week.
2.2 Surface dust concentrations

Figure 3 presents the mean surface dust concentrations prospected using ECMWF forecast during 22 – 28 June 2020 period. It shows that dusty atmospheric conditions with more than 300 $\mu$g m$^{-3}$ on average were prospected over some parts of the Sahara and western Africa. High concentrations were prospected over western African (eastern Senegal, western and northern Mauritania, and Morocco), northern Mali, northern Niger, northern Chad, northeastern Sudan, much parts of Algeria, and northern Somalia. Azores High pressure position (Figure not shown) and gust front associated mesoscale convective systems (MCS) allowed dust lifting over western part of West Africa (Senegal, Mauritania). The position of the Intertropical Discontinuity (ITD) and wet soils created good air quality over Guinea Golf countries with moist wind (see Figure 5) coming from the sea (monsoon flow) allowing the triggering of precipitation. Moderate dust concentrations were prospected over northern and eastern Ethiopia, southern Somalia, northern Nigeria, Benin, northern CAR, much parts of Burkina Faso, and much parts of northern Africa.

In term of surface dust concentration, the large values prospected over the Sahel, East Africa and parts of northern Africa predicted an impact of the occurrence of meningitis cases and respiratory diseases over Senegal, Mali, Mauritania, Burkina Faso, Niger, Chad, northern CAR, northern Nigeria, Morocco, Algeria, Libya, Egypt, Ethiopia, Somalia, Eritrea, Djibouti, and Sudan.
2.3 Temperature

Figure 4 shows the mean temperature at 1000 hPa during the period from 29 June to 5 July 2020 forecasted by ECMWF model issued on 22nd June 2020 using the 51 ensemble members. During this period, warm temperatures at least 33 °C are prospected over Mauritania, central and northern Mali, central and northern Chad, Niger, northern Ethiopia, northern Sudan, Algeria, southwestern Libya, and extreme southern Egypt. The heating over northern Africa will be maintained by the daily oscillation of the Saharian heat low (SHL) over this region and is expected to decrease during the forecasted week compare to the previous week. Moderate to warm temperature (between 25 and 33 °C) are prospected over Senegal, Guinea, Gambia, Bissau Guinea, northern Ivory Coast, northern Ghana, Togo, and Benin, central and northern Nigeria, parts of central Africa, and East Africa. Temperature are prospected to decrease significantly over southern Africa due to the installation of the winter in the South Hemisphere.
2.4 Meridional wind speed

Figure 5 shows the mean meridional wind speed at 1000 hPa during the period from 29 June to 5 July 2020 forecasted by ECMWF model issued on 22nd June 2020. It indicates that the ITD is expected to move southward over Senegal and northward over Mauritania, Mali, Niger, Chad and Sudan compared to his position during the last week. It will be located on average over northern Senegal, northern Mauritania, extreme northern Mali, extreme northern Niger, northern Chad, and northern Sudan. This prospected position of the ITD shall allow good air quality and precipitation over Gulf of Guinea countries and onset of the monsoon over parts of central and northeastern Senegal, central and eastern Mauritania, northern Mali and central and northern Niger. Southerly wind are forecasted over central and Eastern Africa and much part of southern Africa. Harmattan wind associated with dry and dusty atmospheric conditions (see Figure 3), and relatively warm air are prospected over central and northern Mauritania, northern Chad, northern Niger, and northern Sudan. These conditions will allow favorable conditions for meningitis cases over this area during the week from 29th June to 5th July 2020.
Figure 5 – ECMWF forecast of meridional wind speed (m s$^{-1}$) at 1000 hPa during the period from 29 June to 5 July 2020 issued of 22th June 2020 using the 51 ensemble members.
3 Vigilance Map for meningitis outbreak

Valid from 29th June to 6th July 2020.

VIGILANCE MAP FOR EMERGENCE OF MENINGITIS IN AFRICA
ISSUED ON JUNE 29, 2020

HAZARD
Dust, wind, relative humidity and temperature conditions are very much favorable for emergence of meningitis cases

Meningitis cases very likely

MEASURES
Activation of meningitis surveillance and systems

HAZARD
Dust, wind, relative humidity and temperature conditions are favorable for emergence of meningitis

POTENTIAL IMPACTS
Meningitis cases very likely and epidemics status possible

MEASURES
Strengthen meningitis surveillance and systems