WEEKLY MENINGITIS VIGILANCE FOR AFRICA

Bulletin No. 013

Issued on March 30, 2020

Valid until April 6, 2020

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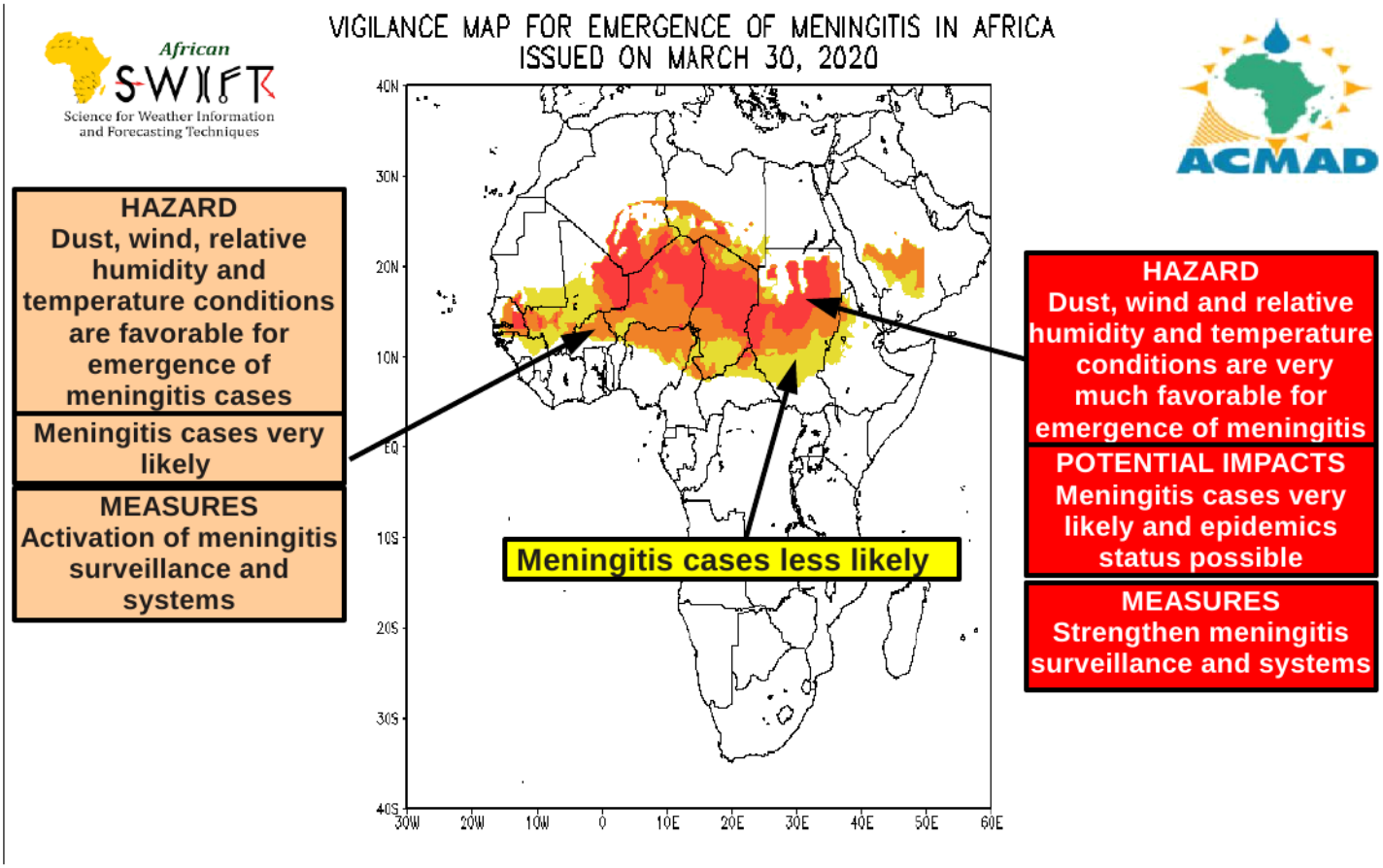
This bulletin was supported by UK Research and Innovation as part of the Global Challenges Research Fund, grant number NE/P021077/1.

1 Vigilance

- **High vigilance is needed for meningitis cases over eastern Senegal, eastern Mali, northern Niger, extreme northern Nigeria, central and northern Chad, Sudan, extreme northern CAR, and southern Algeria.**

- **Meningitis cases are very likely over central Senegal, southern Mali, northern Burkina Faso, northern Nigeria, northern Cameroon, northern CAR, and Benin, southern Chad, southern Sudan, and western Ethiopia.**

- **Low to no vigilance is needed over the remaining parts of the meningitis belt.**



2 Atmospheric conditions

2.1 Relative humidity

Figure 1 shows the mean relative humidity (RH) at 1000 hPa estimated from ERA5 reanalysis from ECMWF during 19 – 25 March 2020 period. It indicates that very dry atmospheric conditions with RH below 20 % remained over the Sahelian countries, northern Nigeria, northern CAR, northern South Sudan, Sudan, southern Algeria, Libya, southwestern Egypt, and western Ethiopia. Moistening atmospheric conditions (RH between 20 and 40 %) were observed over western Senegal, Gambia, Bissau Guinea, northern Guinea, Western and central Mauritania, central Burkina Faso, northern Nigeria, northern Benin, Togo, northern Cameroon and CAR, much parts of Algeria, central South Sudan, parts of Ethiopia. Very wet atmospheric conditions (relative humidity at least 60 %) was observed over Ivory Coast, Liberia, Sierra Leona, Ghana, southern Nigeria, southern equatorial countries, Somalia, part of South Africa, Madagascar, Mozambique, northern Botswana, Morocco, northern Algeria, Tunisia, extreme northern Libya, and Egypt.

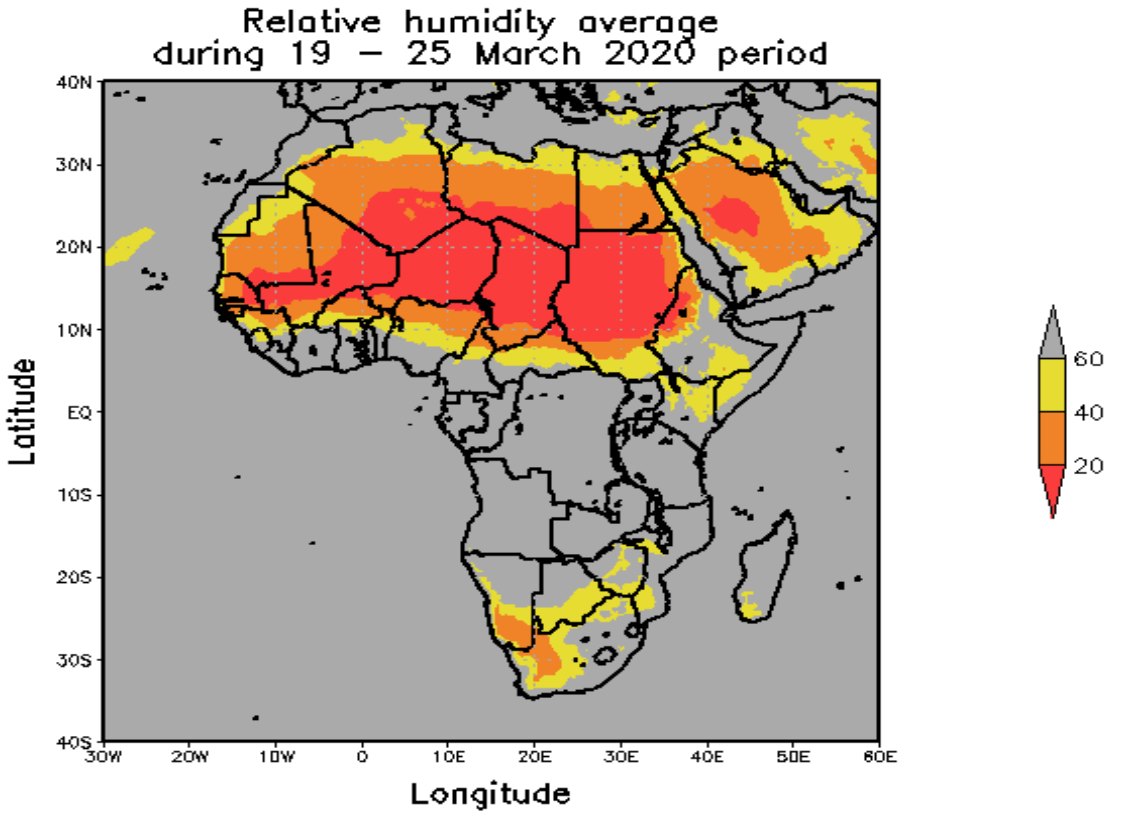


FIGURE 1 – Mean relative humidity (%) at 1000 hPa for the period 19 –25 March 2020 estimated from ERA5 reanalysis from ECMWF.

2.2 Surface dust concentrations

Figure 2 presents the mean surface dust concentrations prospected using ECMWF forecast during the period 19 – 25 March 2020. It indicates that heterogeneous very dusty atmospheric conditions were prospected over the northern African dust belt : much parts of the eastern and central Sahel and Sahara with more than 300 μg m^{-3} on average during that period. Azores High pressure position (Figure not shown) allowed the dusty atmospheric conditions over western part of West Africa (eastern Senegal, and western Mauritania). Large uplift of surface dust was prospected over Chad, northern Niger, Sudan, Libya, northern Mali, and Algeria. The position of the ITD (see 4) created good air quality over Guinea Golf countries with moist wind coming from the sea (monsoon flow). Moderate dust concentrations were prospected over northern Ethiopia, northern Cameroon, northern Nigeria, CAR, Burkina Faso, and much ports of northern Africa.

In term of surface dust concentration, the large values prospected over the Sahel 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 Cameroon and CAR, northern Nigeria, Morocco, Algeria, Libya, Egypt, Sudan, northern South Sudan, and northern Ethiopia.

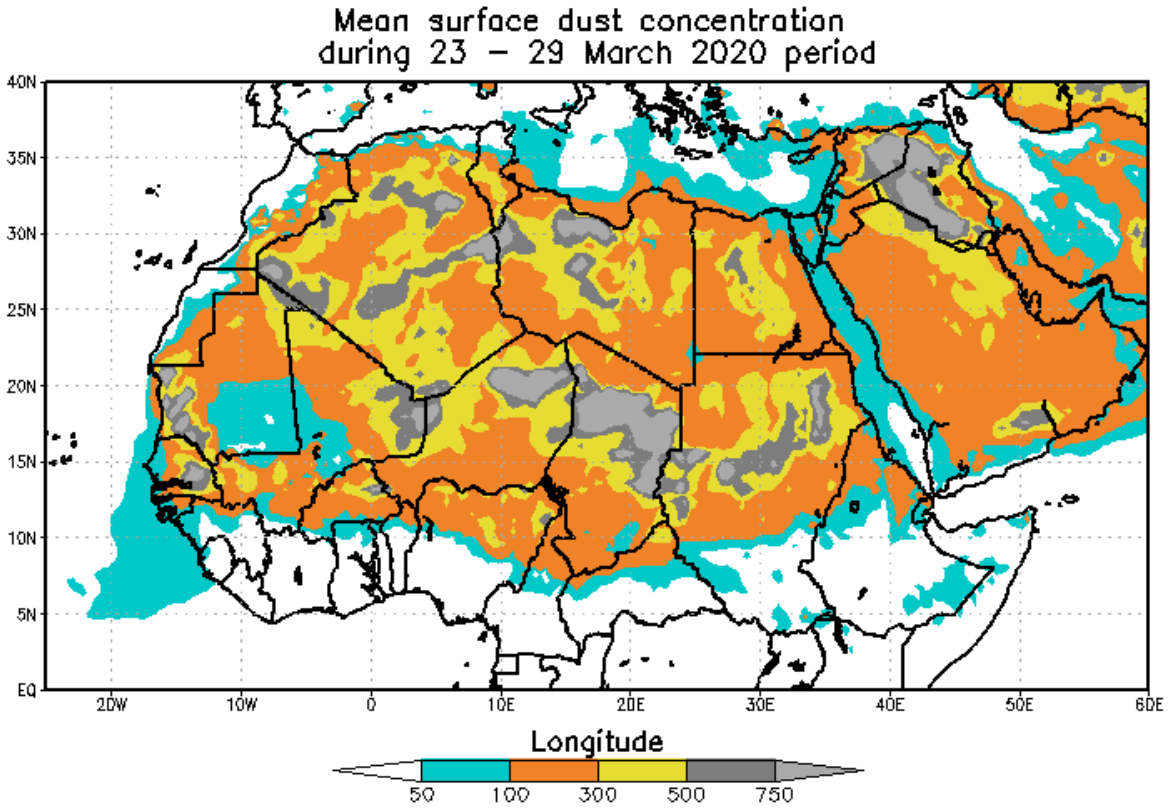


FIGURE 2 – Mean surface dust concentration (μg m^{-3}) forecasted from ECMWF during 23 – 29 March 2020 period .

2.3 Temperature

Figure 3 shows the mean temperature at 1000 hPa during 19 –25 March 2020 period. It indicates that coldest atmosphere with temperature lower than 18 ^{o}C remained over northern Morocco, Algeria, Tunisia, northern Libya, and Egypt. During this period, warm temperatures at least 33 ^{o}C were observed over southeastern Senegal, southern and central Mali, Burkina Faso, northern Benin, Togo, Ghana, Ivory Coast, and Guinea, northern Nigeria, northern Cameroon, Chad, Niger, northern CAR, South Sudan, parts of western Ethiopia, southern Sudan, parts of Kenya, and southern Namibia. Moderate to warm temperature (between 25 and 33 ^{o}C) prevailed over central Senegal, northern Mali, Guinea, Sierra Leona, Liberia, central Ivory Coast, Ghana, and Togo, Benin, southern Nigeria, parts of central Africa, South Africa, southern Botswana, and western Namibia. The peak of heating over northern South Africa, eastern Namibia, southern Angola, and western Botswana remained but decreased during the last 7 days. The heating over Parts of East, Central, and West Africa remained and indicated the position of the Heat Low (HL).

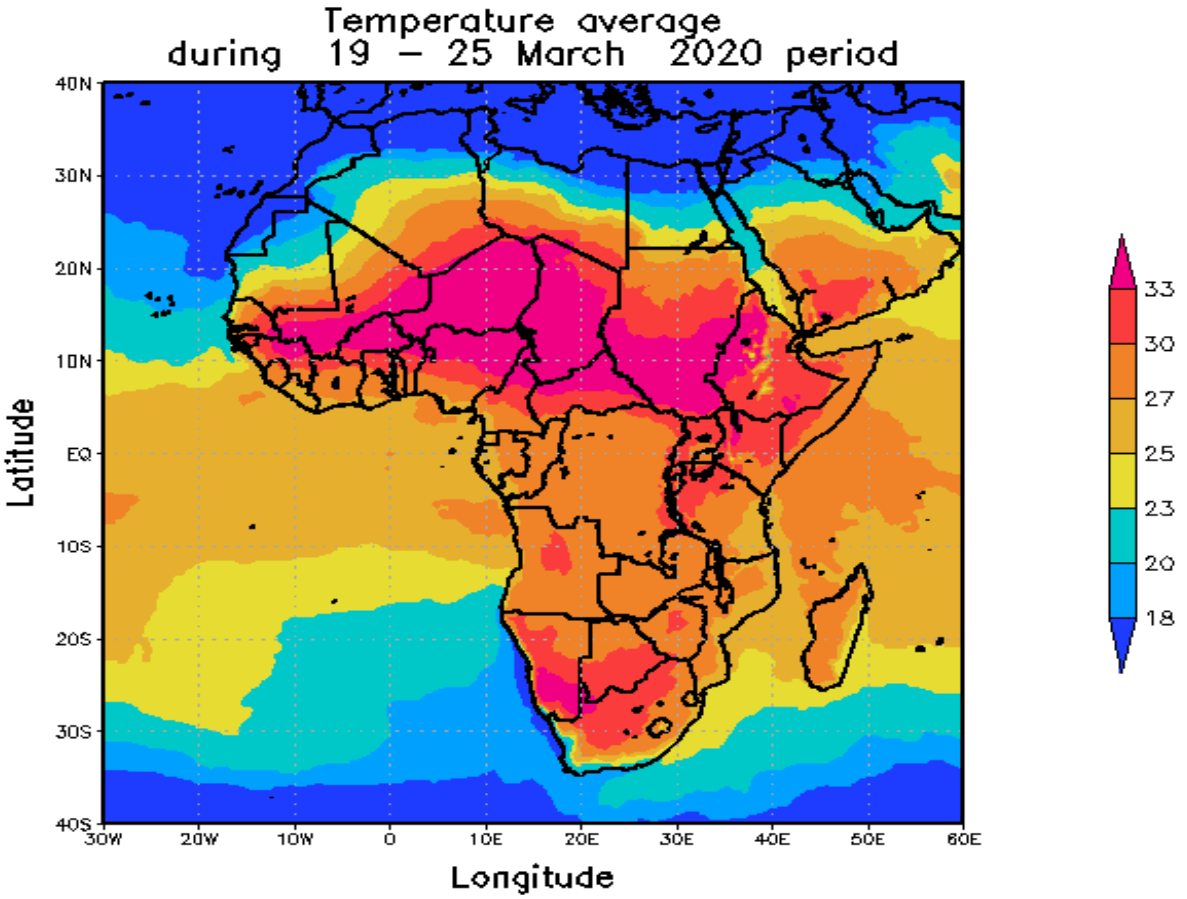


FIGURE 3 – Mean temperature (^{o}C) at 1000 hPa for the period from 19 –25 March 2020 estimated from ERA5 reanalysis produced by ECMWF.

2.4 Meridional wind speed

Figure 4 shows the mean meridional wind speed at 1000 hPa during 19 – 25 March 2020 period. It indicates that the ITD moved slightly northward compare to his position during the previous week. During this period, it was located on average over northern Guinea, Southern Mali, Central Burkina Faso, northern Nigeria, extreme southern, and southern South Sudan. The conditions are favorable to good air quality and precipitation over Gulf of Guinea countries. Southerly wind prevailed over central and Eastern Africa and much part of southern Africa. The corridor of southerly wind in the lowest layer remained over Niger, Chad and Libya. These conditions was created by the presence of a low pressure over Algeria. Harmattan wind associated with very dry and dusty atmospheric conditions, and relativity warm air prevailed over Mauritania, Senegal, Mali, Bissau Guinea, northern Guinea, northern Burkina Faso, and Sudan. The situation allows favorable conditions for meningitis cases over this area during the week from 30th March to 6th April 2020.

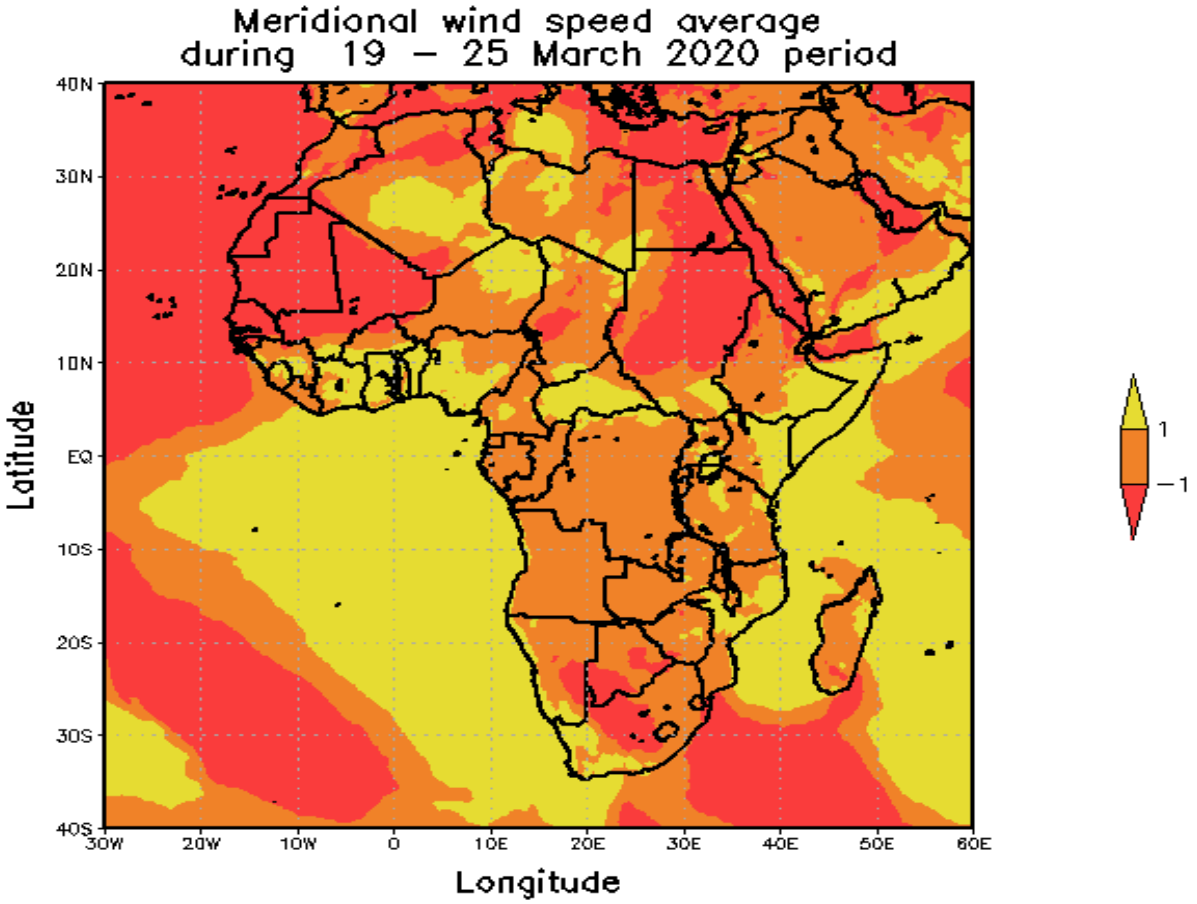


FIGURE 4 – Mean meridional wind speed (m s^{-1}) at 1000 hPa during 19 –25 March 2020 period, estimated from ERA5 reanalysis produced by ECMWF.