

# WEEKLY MENINGITIS VIGILANCE FOR AFRICA

Bulletin No. 022

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Valid until June 6, 2021

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## 1 Vigilance

Week 1 : from 31<sup>st</sup> May to 6<sup>th</sup> June 2021

- Meningitis cases are very likely over central Chad, central and northern Sudan, southern Algeria, western, central, and northern Mali, northern Niger, much parts of Mauritania, extreme northern Burkina Faso, and eastern Senegal.
- Meningitis cases are less likely over the rest of the African meningitis belt.

Week 2 : from 7<sup>th</sup> to 13<sup>th</sup> June 2021

- Meningitis cases are very likely over central Chad, central and northern Sudan, southern Algeria, northern Niger, northern Mali, western and northern Mauritania, and eastern Senegal.
- Meningitis cases are less likely over the rest of the African meningitis belt.

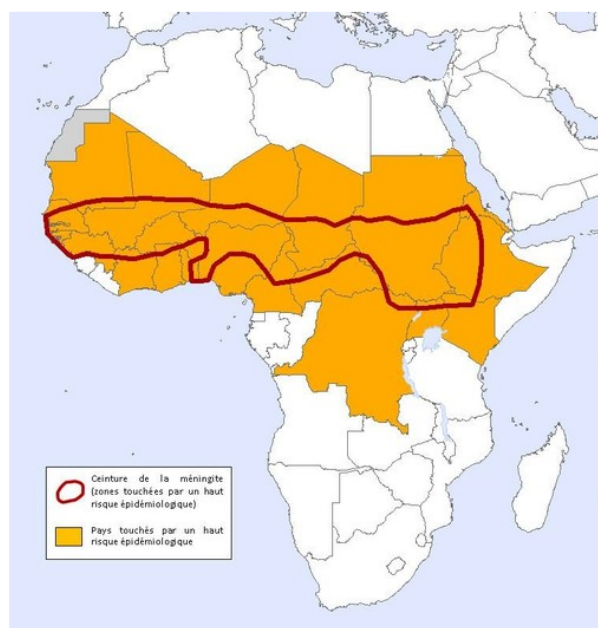


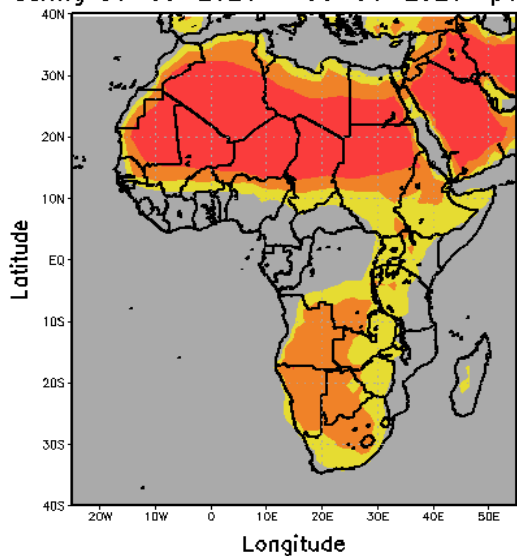
FIGURE 1 – African Meningitis Belt.

## 2 Atmospheric conditions

### 2.1 Relative humidity

Figure 2 shows the weekly mean relative humidity (RH) at 1000 hPa predicted by ECMWF Model for the periods from 31<sup>st</sup> May to 6<sup>th</sup> June 2021 and from 7<sup>th</sup> May to 13<sup>th</sup> June 2021 issued on 24<sup>th</sup> May 2021. It indicates that during the next two weeks, very dry atmospheric conditions with RH below 20 % will remain over northern Sahel (Senegal to Sudan), and Sahara. These very dry conditions predict favorable conditions for dust lifting over the Bodele depression and the Sahara. Moistening atmospheric conditions (RH between 20 and 60 %) are prospected over southern Sahel, southern Africa, and western East Africa countries, Tunisia, northern Egypt, northern Algeria, northern Libya, Morocco, western Mauritania, eastern Senegal, and northern Cameroon. Very wet atmospheric conditions (relative humidity more than 60 %) will prevail over Gulf of Guinea countries under the monsoon flow, Central Africa, Madagascar, and eastern East Africa.

Weekly ECMWF mean relative humidity at 1000 hPa during 31-05-2021 – 06-06-2021 period



Weekly ECMWF mean relative humidity at 1000 hPa during 07-06-2021 – 13-06-2021 period

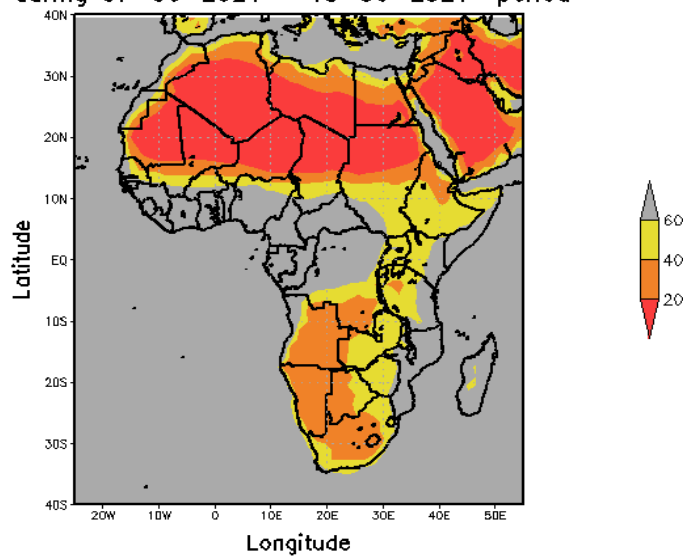


FIGURE 2 – ECMWF forecast of weekly mean relative humidity (%) at 1000 hPa for the week 31 May – 6 June 2021 (left) and week 7 – 13 June 2021 (right). The forecast data are issued on 24<sup>th</sup> May 2021 and the mean is computed using the 51 ensemble members.

## 2.2 Air quality forecast

Figure 3 presents the impact on health of weekly surface dust concentrations and local air pollution prospected using forecasts from the Barcelona Dust Forecast Center and Caribbean Institute for Meteorology and Hydrology. During the week from 31<sup>st</sup> May to 6<sup>th</sup> June 2021, episodic dust outbreaks are expected over extreme western Sahel, western Northern Africa, and Bodele depression. A low pressure system associated with the Saharan Heat Low (SHL) is predicted over western Sahel and will allow mixing of dust and local pollution. This depression will allow vertical dusts lifting in the atmospheric boundary layer. Northern Africa will be under a high pressure system located over Mediterranean Sea and moving eastward. This high pressure will allow dust lifting over the Sahara and northern Africa. During the week, the Libya High is expected to be active episodically and will allow dust lifting over the Bodele depression. Over these regions listed below, surface dust concentrations are predicted to be greater than  $300 \mu\text{g m}^{-3}$  on average. These dusty conditions will impact health and visibility. This situation will make the air quality unhealthy over central and northern Chad, northern Niger, southern Libya, southwestern Egypt, northern Sudan, western Algeria, western Morocco, extreme northern Mali, central and northern Senegal, and Mauritania.

In term of surface dust concentrations and air pollution, the large values prospected over western and eastern Sahel, and Sahara predicted an impact of the occurrence of meningitis cases and respiratory diseases over Niger, Chad, Senegal, Mali, Mauritania, Morocco, Algeria, Libya, Egypt, and Sudan.

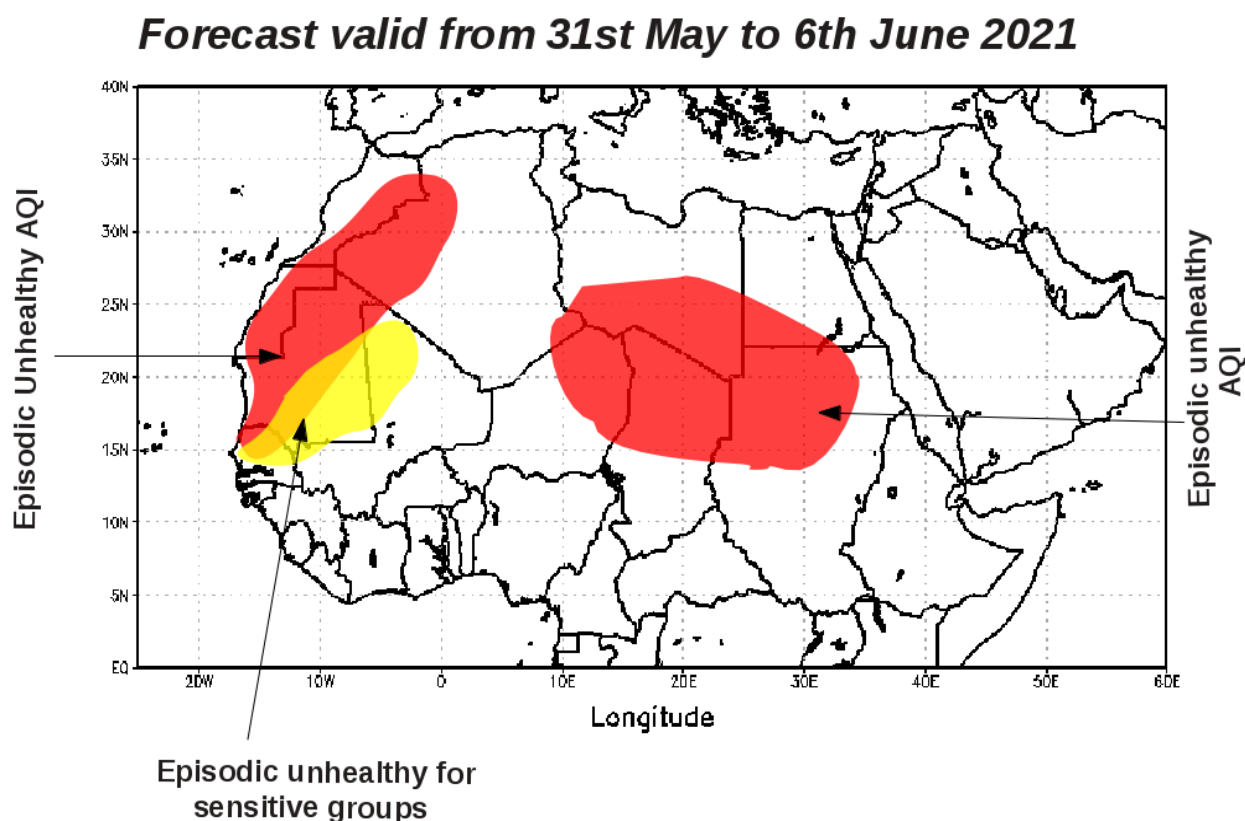
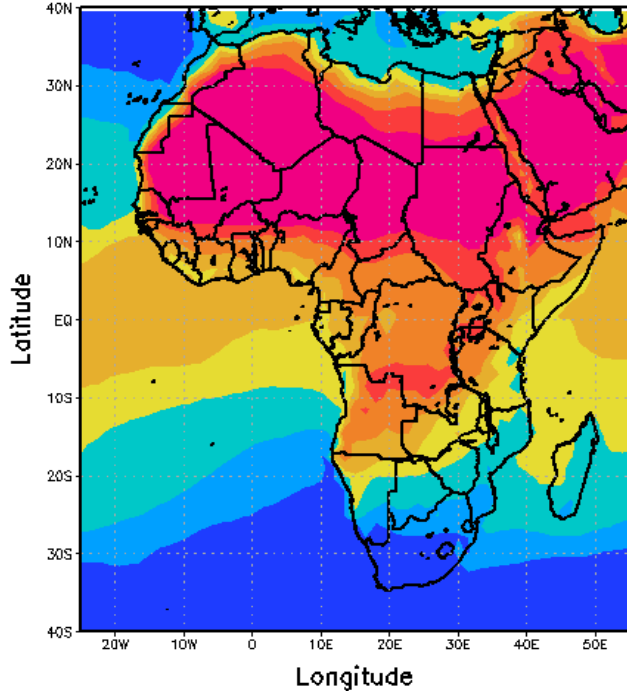


FIGURE 3 – Vigilance map of expected air quality over the African meningitis belt during the week from 31<sup>st</sup> May to 6<sup>th</sup> June 2021. This map is a synthesis of several model dust forecasts during that period.

## 2.3 Temperature

Figure 4 shows the weekly mean temperature at 1000 hPa during the weeks from 31<sup>st</sup> May to 6<sup>th</sup> June and 7<sup>th</sup> to 13<sup>th</sup> June 2021 forecasted by ECMWF model issued on 24<sup>th</sup> May 2021 using the 51 ensemble members. During the first week of the forecasts, warmest temperatures are predicted over Sahel and Sahara with temperature greater than 33 °C. Warm temperatures are also predicted over Sudan and northern Ethiopia. Punctual heat wave associated with the occurrence of the Saharan Heat low are predicted over Sahel (eastern Senegal, central and northern Mali, Mauritania, central and northern Niger, northern Chad, northern Sudan, and southern Algeria). Moderate to warm temperature (between 25 and 33 °C) are predicted over Senegal, Gambia, Bissau Guinea, Gulf of Guinea countries, southern Sudan, South Sudan, and much parts of East Africa, central Africa, northern Namibia, and western Zambia. Coldest temperatures are expected over southern South Africa. Temperatures are expected to be stationary over the African meningitis belt during the 2 following weeks. The episodic heat waves are predicted to persist during the two forecasted weeks.

Weekly ECMWF mean temperature at 1000 hPa during 31-05-2021 – 06-06-2021 period



Weekly ECMWF mean temperature at 1000 hPa during 07-06-2021 – 13-06-2021 period

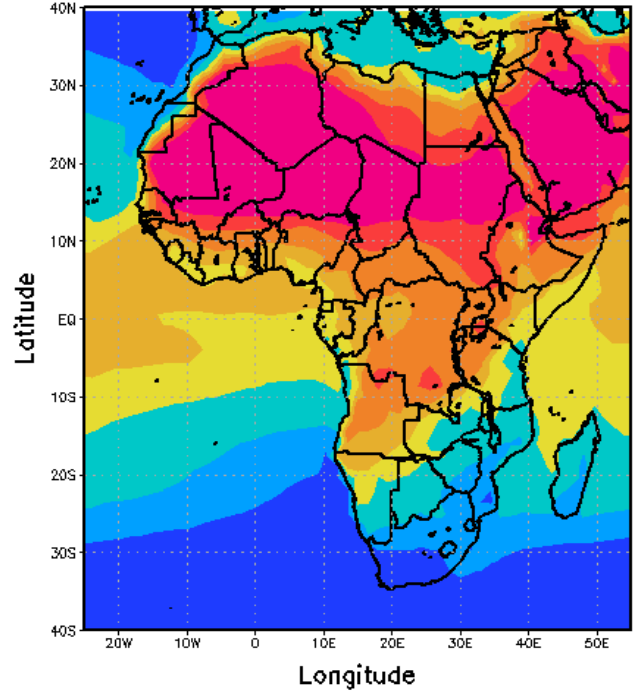
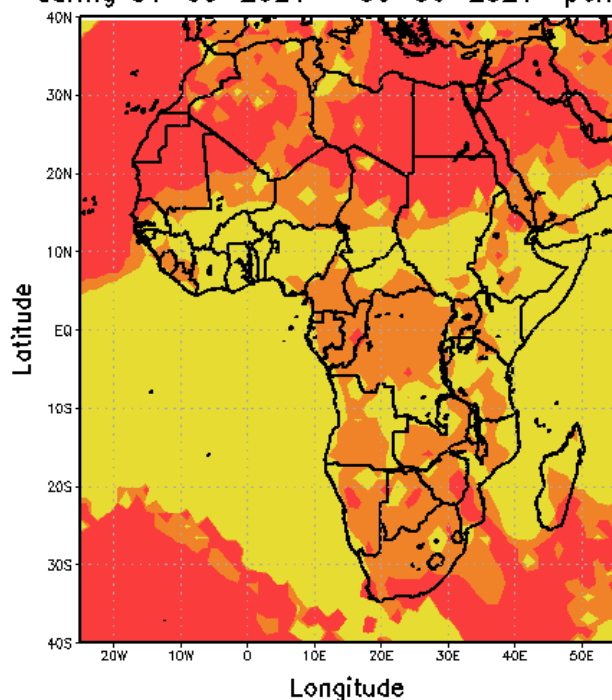


FIGURE 4 – ECMWF forecast of weekly mean air temperature ( °C) at 1000 hPa for the week 31 May – 6 June 2021 (left) and week 7 – 13 June 2021 (right). The forecast data are issued on 24<sup>th</sup> May 2021 and the mean is computed using the 51 ensemble members.

## 2.4 Meridional wind speed

Figure 5 shows the weekly mean meridional wind speed at 1000 hPa during the weeks from 31<sup>st</sup> May to 6<sup>th</sup> June 2021 and 7<sup>th</sup> to 13<sup>th</sup> June 2021 predicted by ECMWF model issued on 24<sup>th</sup> May 2021. It indicates that during the first week, the ITD is expected over central Senegal, central Mali, central Niger, central Chad, and central Sudan. It is expected to move slightly northward over Senegal, Mali and eastern Sahel during next week. This prospected position of the ITD shall allow improved air quality with less dust and precipitation over Gulf of Guinea countries and southern Sahel. However, the diurnal oscillations of the ITD will favor local air pollution and transported dusts over central Sahel (see Figure 3). Atmospheric conditions are expected to impact health over the central and northern this region. Southerly wind are forecasted over Central and East Africa and much part of southern Africa. Harmattan wind associated with very dry and episodic dusty and warm atmospheric conditions (see Figure 3) are expected over northern Sudan, northern Chad, northern Niger, northern Mali, extreme northern Senegal, Mauritania, Algeria, Morocco, Egypt, and Libya. These atmospheric conditions will allow favorable conditions for episodic dust lifting over Mauritania and Algeria dust sources and the occurrence of meningitis cases over these areas during the next two weeks.

Weekly ECMWF mean meridional wind at 1000 hPa during 31-05-2021 - 06-06-2021 period



Weekly ECMWF mean meridional wind at 1000 hPa during 07-06-2021 - 13-06-2021 period

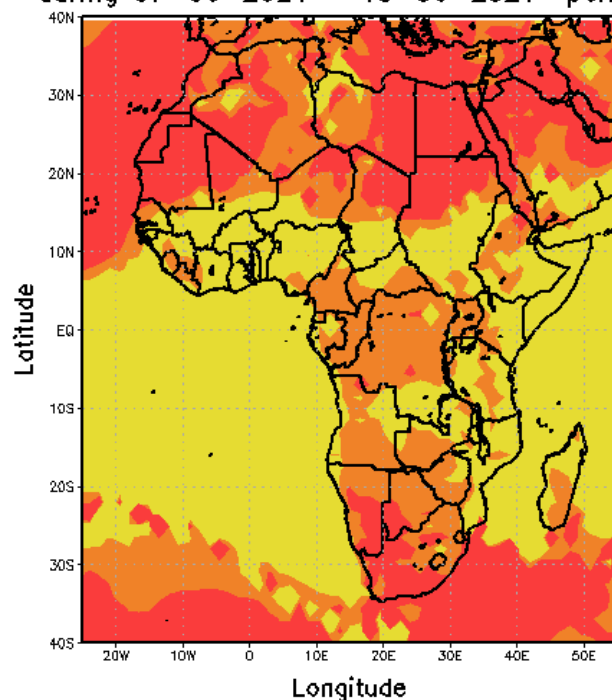
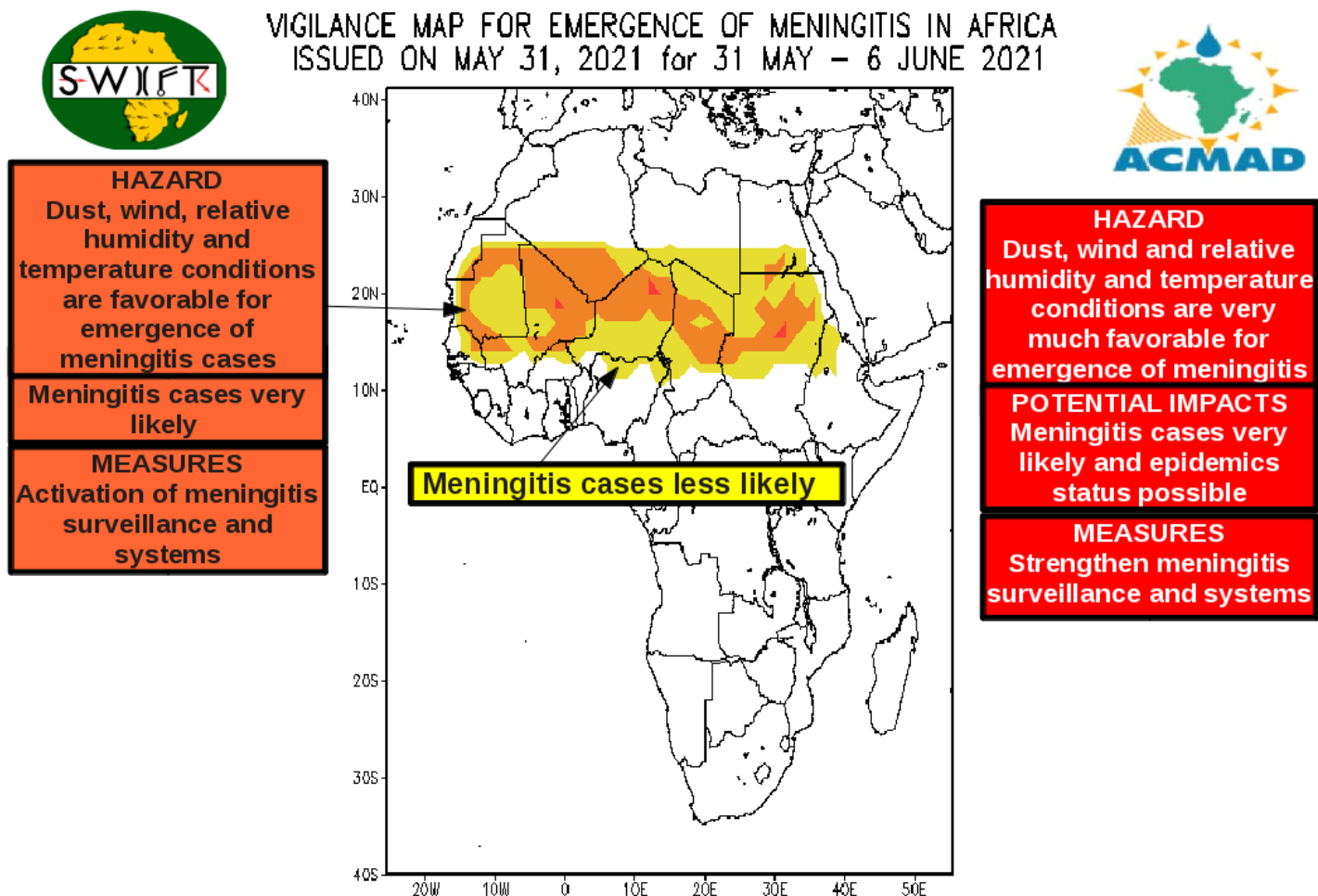


FIGURE 5 – ECMWF forecast of weekly mean meridional wind speed ( $\text{m s}^{-1}$ ) at 1000 hPa for the week 31 May – 6 June 2021 (left) and week 7 – 13 June 2021 (right). The forecast data are issued on 24<sup>th</sup> May 2021 and the mean is computed using the 51 ensemble members.

### 3 Vigilance Map for meningitis outbreak

Valid from 31<sup>st</sup> May to 6<sup>th</sup> June 2021.





Valid from 7<sup>th</sup> to 13<sup>th</sup> June 2021.



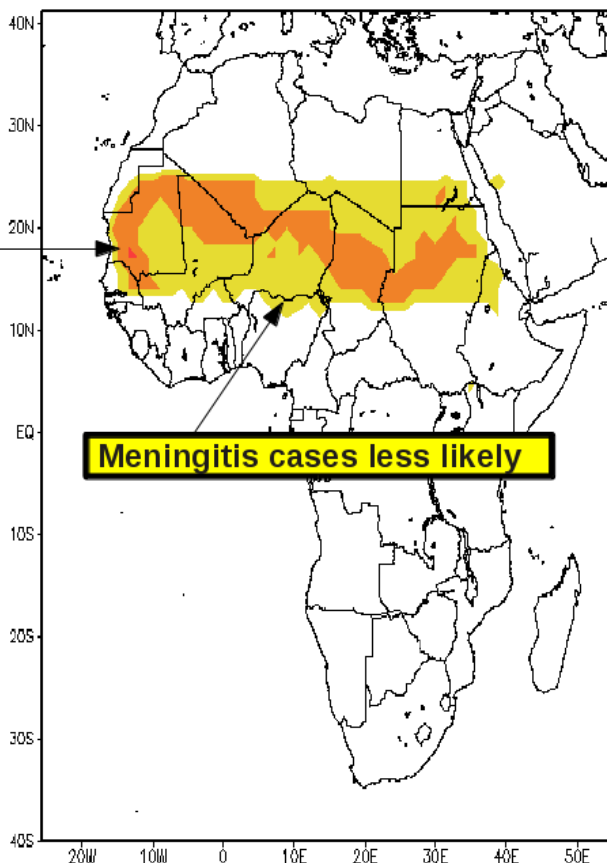
VIGILANCE MAP FOR EMERGENCE OF MENINGITIS IN AFRICA  
ISSUED ON MAY 31, 2021 for 7 - 13 JUNE 2021



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

**Meningitis cases very likely**

**MEASURES**  
Activation of meningitis surveillance and systems



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

**POTENTIAL IMPACTS**  
Meningitis cases very likely and epidemics status possible

**MEASURES**  
Strengthen meningitis surveillance and systems