

Ethiopia

- Ethiopia Bordering Countries





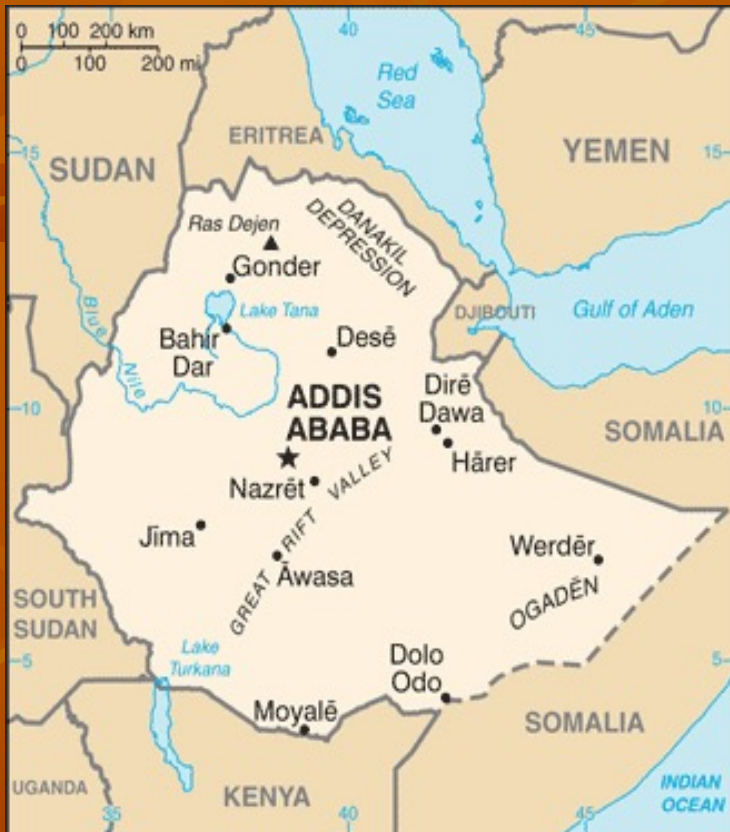
EFFECT OF DUST STORM TO AVIATION OVER NORTH WESTERN ETHIOPIA

FEYISSA BEYENE

ETHIOPIAN NATIONAL
METEOROLOGY AGENCY

E-mail:- feyb_2006@yahoo.com

LOCATION



- ❖ Ethiopia is located in the eastern Africa, west of Somalia.
- ❖ Between 3 and 15-degree north latitude and 33 and 48-degree east longitude.
- ❖ A total area of 1,104,300 sq km about the size of Texas, Oklahoma, and New Mexico combined cities.
- ❖ A total population of 90,8737,739(July, 2011 est.)

2.Generation of Dust storm Over Sudan and its propagation and effect over North Western Ethiopia

- During the dry season the high over the Sahara and Arabian intensify to Northern high lands of Ethiopia.
- When these highs are stronger than normal conditions the winds are strong and the general wind flow at the surface and low level is from northwesterly and northeasterly which are from dry air masses.
- The wind bring dust storm and reduce the surface horizontal visibility and flight visibility to less than normal from surface up to 10,000ft over the north half of the country.

3.Forecasting Dust storm over northwestern Ethiopia

- During the short rainy season (February to May) the extra tropical lows develop over the Mediterranean Sea and trough extend southward to the high lands of Ethiopia from these lows.
- When the position of the trough is over the high lands the general flow over the northwestern regions of the country is strong northwesterly wind, which is from the arid region of Sudan. Some time dust is associated with thunderstorm, which is known as Haboob, generate and reduce the surface horizontal and vertical visibility to less than 1km for along hours, which is a hazardous to aviation.
- EUMETSAT PICTURE (visible) detect the dust storm phenomena and monitoring the continuity of the picture we can forecast the effect of it.

4. Dust storm over North Western Ethiopia During May 11, 2009



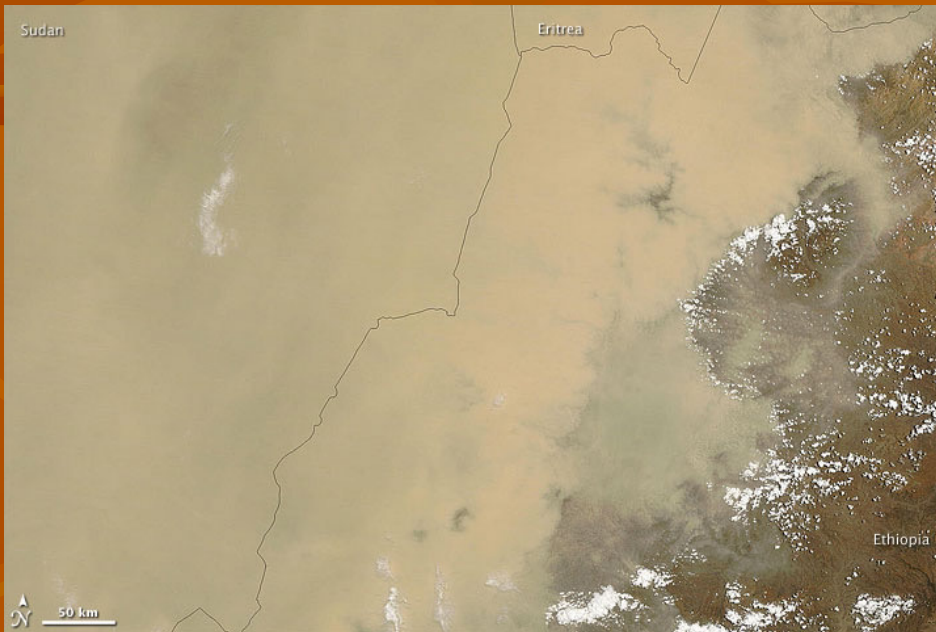
- It is common to observe such dust storm in May before the onset of kiremt(summer).
- During the year dust storm has a wider coverage over high lands of northwestern Ethiopia.

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- On May 11, 2009 dust continued to hover (drift) over central Sudan and spread into neighboring countries to the Eritrea and Ethiopia.

The satellite image of May 11, opaque dust fills much of scene, but relatively clear skies prevail along the dust plume's eastern edge.

Over the northern Ethiopia the dust plume encounter a cloud fringed higher mass.



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- East of the cloud fringe, thin dust plum's and small clouds collectively form parallel lines running east-west.
- North and south of this air mass, the dust plum's borders appear less distinct. The dust completely obscures Ethiopia's Tana Hayk(Lake Tana) which is visible in the image acquired on April 23.
- On may 11,2009 MODIS on NASA'S aqua satellite observed this dust storm blowing east ward over the red sea.

Danakil Depression and Eretale



The Omo Valley



WANCHI LAKE

