TANZANIA METEOROLOGICAL AGENCY

MONTHLY WEATHER BULLETIN

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DECEMBER – HIGHLIGHTS

- *Delayed and erratic onset of seasonal rains over areas with a unimodal rainfall regime*
- *Poor pasture conditions, low vegetation cover and land encroachments over areas of central and northeastern highlands*

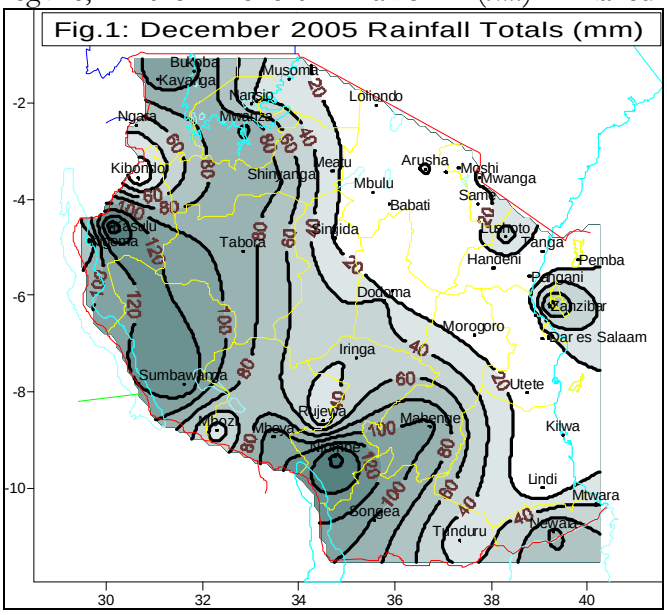
SYNOPTIC SUMMARY

The Azores and Siberian anticyclones were intense, while the Mascarene and St. Helena anticyclones were generally weak as they were eroded by the frontal systems passing over the southern tip of Africa. The Inter-Tropical Convergence Zone (ITCZ) remained diffused over the East African region while it was strong over Malawi, Mozambique, Zimbabwe and South Africa by the end of December. Over Tanzania the zonal component of the ITCZ was very much defused than the meridional component to the western part of the country (Kigoma region) and neighbouring areas. The northeasterly wind flow from the northwestern Indian Ocean continued to dominate. The convergence of northwesterly to westerly wind flow from the Congo basin and northeasterly to northerly wind flow from the northern Indian Ocean over the western part of the country and Lake Victoria Basin (LVB) contributed to rainfall activities over those areas mainly over western (Kigoma region) and south western highlands. The northeasterly wind flow from the northern Indian Ocean over the coastal areas of Tanzania and northeastern highlands contributed to dry weather conditions with some patches of rains over those areas.

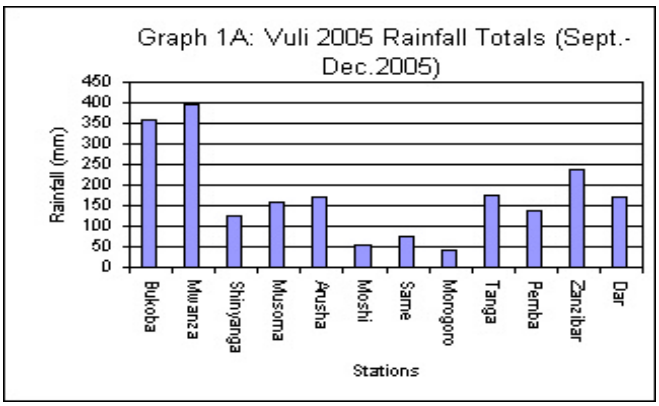
WEATHER SUMMARY

RAINFALL

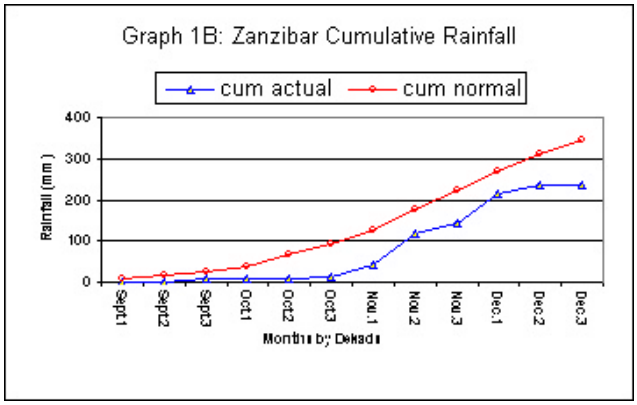
Onset of the seasonal rains over areas with a unimodal rainfall pattern was erratic and delayed, while over most areas with a bimodal rainfall regime, the short rains (*vuli*) failed.



The northeastern highlands and northern coast were generally dry, except for Lushoto and Zanzibar in northern coast which reported rainfall between 50 and 90 mm during the month. The highest rainfall amounts of about 160 mm were reported over the western (Kasulu) and Njombe in the southwestern highlands (Fig. 1). Over LVB (Bukoba and Mwanza Airports) recorded about 100 mm of rainfall.



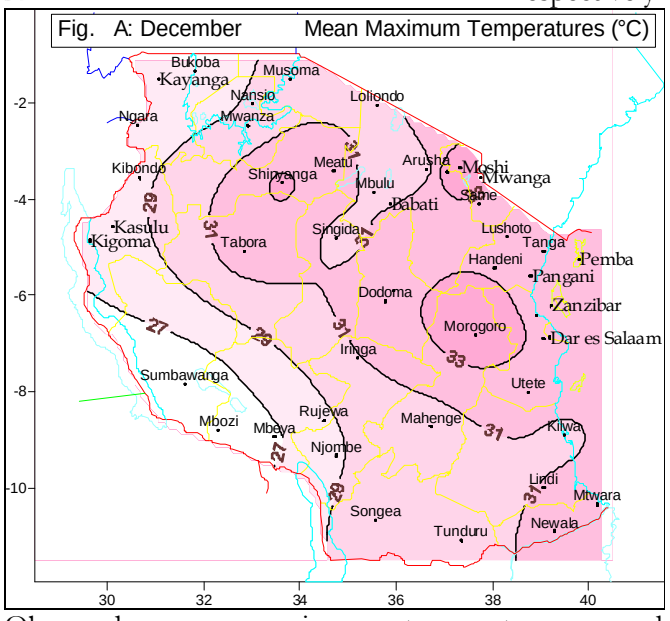
Graph 1A shows the total rainfall for vuli season (September to December 2005) over a few selected



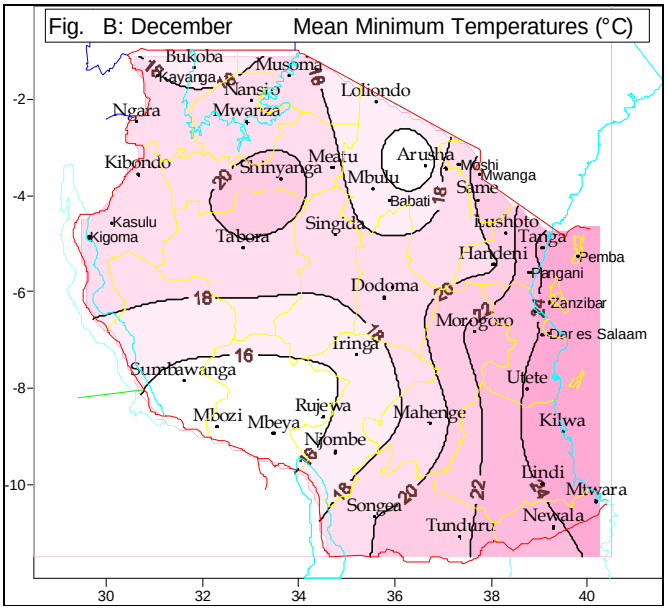
stations. Bukoba, Mwanza and Zanzibar stations which, reported rainfall of above 200 mm. However, over the *vuli* areas, rainfall performance has been below normal for all areas. For example, at Zanzibar Airport rainfall over this area indicates a shortfall of about 109 mm since September to date. (Graph 1B).

MEAN AIR TEMPERATURE

Temperature conditions during the month of December were expressed as mean air maximum and minimum temperatures as shown in Figs. 2A and 2B respectively.



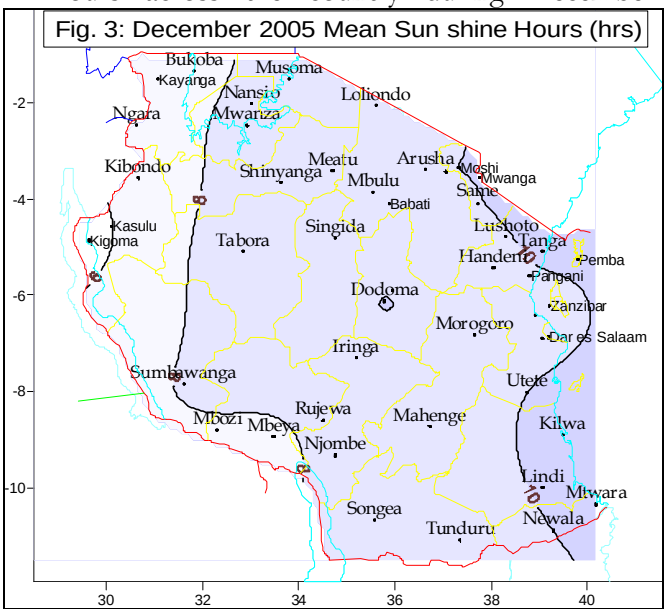
Observed mean maximum temperature ranged between about 27 ºC over areas in Rukwa and Mbeya regions and just above 33 ºC over Morogoro, Shinyanga and Kilimanjaro regions (Fig. 2A). The actual maximum temperature of 35.2 ºC was observed over Moshi town during the second dekad of the month.



The mean minimum air temperatures ranged from just below 16 ºC to slightly above 24 ºC (Fig. 2B). A general warming of about 1.0 ºC was observed across the country between November and December, except over northeastern highlands where lower temperature values of about 13 ºC were experienced as a result of predominant clear sky nights.

SUNSHINE HOURS

Figure 3, indicates the spread of mean sunshine hours across the country during December.

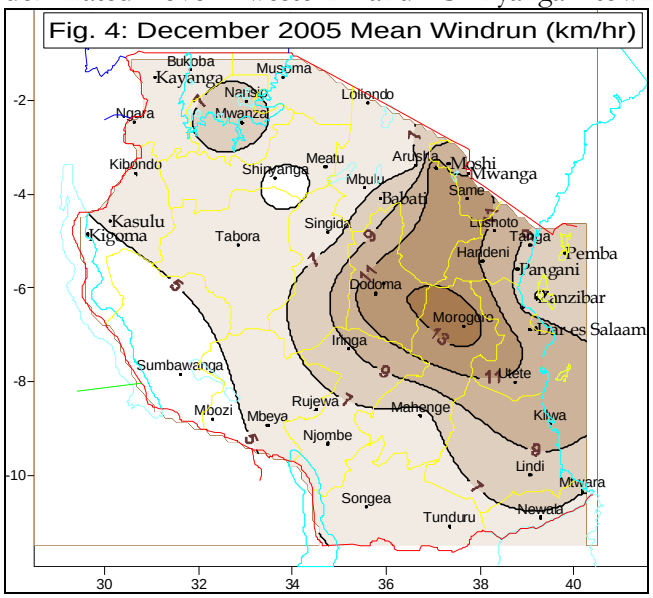


Durations of mean bright sunshine ranged from about 6 hrs/day to about 10 hrs/day. The longest durations of above 10 hrs/day dominated over the

coastal belt and northeastern highlands. The lowest durations of below half daylight hours were observed largely over the western part (Kigoma region). The large part of the country experienced sunshine durations between 8 and 10 hours a day mainly due to decreased cloudy activities during the month.

MEAN DAILY WIND SPEED

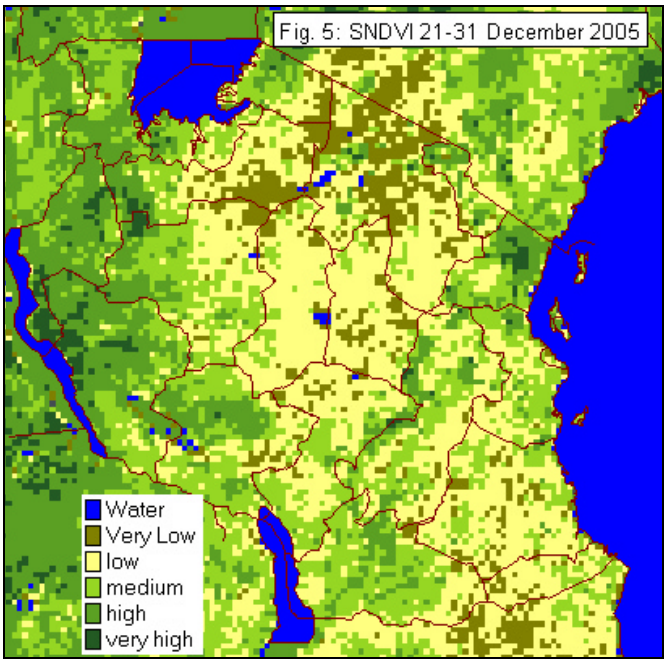
During the period, the mean wind run across the country ranged from just below 5 km/hr to just above 13 km/hr as shown in Figure 4. The core maximum of about 13 km/hr was located over areas of Dodoma and Morogoro regions. On the other hand, lower wind speeds of less than 5 km/hr dominated over western and Shinyanga town.



The high wind speeds led to high evaporation rates, increased presence of dust devils and enhanced wind erosion on bare grounds.

SATELLITE INFORMATION

Figure 5 depicts vegetation greenness as indicated by the Spot Normalized Difference Vegetation Index (SNDVI) from METEOSAT satellite sensor for the second dekad of December. During the period the extreme northern coast (Tanga region) and western sector of the country indicated an increase in vegetation greening, while very low to low vegetation cover dominated over central, northeastern highlands and southern coast. Such low vegetation cover depicts the negative effects caused by the poor performance of *vuli* rains over the northeastern highlands and a late onset of seasonal rains over central and southern coast.



Pasture conditions has therefore remained poor over most areas and land encroachment by livestock/wild animals have continued over the northeastern highlands and central region.

AGROMETEOROLOGY

Soil moisture deficits were observed over most areas except over the regions in the western sector of the country where soil moisture replenishment was realized. Over the unimodal rainfall regime (central, western, southern and southwestern highlands) most farmers completed land preparations and planting of maize started during the month over western sector of the country (Kigoma south, Rukwa, Mbeya, and Ruvuma regions) where moisture repleinishment was satisfactory for crop establishment.

For *vuli* crop, maize over Mlingano and Kasulu was reported in moderate state between tasseling and earing stages. On the other hand, given the poor *vuli* rains performance, farmers could not plant crops over most areas of northern coast and northeastern highlands (Loliondo, Mbulu and Babati districts). Wilting of crops was reported in districts of Ngara, Bukoba in Kagera region, Tarime in Mara region, Pangani and Lushoto districts in Tanga region. Therefore the 2005 *vuli* crop harvests will be poor.

HYDROMETEOROLOGY

Water levels in rivers, dams and lakes fell even further during the period. Water for industrial and domestic purposes should be used very sparingly.

ENVIRONMENTAL

The warm/hot conditions and high evaporation rates are being experienced in many parts of the country.

EXPECTED SYNOPTIC SITUATION DURING JANUARY

The Arabian anticyclone is expected to remain strong, while Azores anticyclone will remain weak. The Mascarene and St. Helena anticyclone are expected to weaken. The position of the ITCZ is expected to remain its position over southern areas. The meridional arm of the ITCZ is expected to be more active and oscillating eastwards at times.

The westerly wind flows from the Congo basin are expected to strengthen and converging with the northeasterly monsoon (NE) flow from the northwest Indian Ocean, and rainfall activities are therefore expected to increase slightly over the western and southwestern highlands of Tanzania.

EXPECTED WEATHER SITUATION DURING JANUARY

The western parts of the country (Kigoma region), southwestern highlands (Rukwa and Mbeya regions), southern (Ruvuma region), and southern coast are expected to feature partly cloudy to cloudy conditions with showers and thunderstorms over few areas and sunny periods. The LVB will feature partly cloudy conditions with isolated cases of thundershowers mainly over Kagera region and sunny periods. Central areas (Dodoma and Singida regions) will feature partly cloudy conditions with occasional thundershowers over few areas and sunny periods. The northeastern highlands and few areas of northern coast (Tanga, Pemba and northern Morogoro) will feature partly cloudy conditions with light rains and sunny periods.

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