EUROPEAN COMMISSION
DIRECTORATE-GENERAL
Joint Research Centre

Crop yield monitoring in Eastern Africa

Bulletin for rain-fed maize crop prospects in 2004

July 2004

Year 2004, No.3, date 13 of August

LARGE DECREASE OF THE VEGETATION ACTIVITY IN THE IGAD

Agricultural and pastoralist areas are affected by below normal rainfall received in the IGAD countries. Most of the districts of Somalia are severely affected (Figure 1).

In Kenya the districts that present a large decrease in vegetation activity are: Tana River, Isiolo, Lamu, Homa-Bay, Kisumu, Busia and Kwale.

In Uganda the districts with a NDVI profile below normal are: Matheniko, Usuk, Kumi, Ngora, Pallisa, Butebo, Kibuku, Budaka, Bunyole, Busiki, Kisoko, Tororo, Bukooli, Bunya, Dokolo and Kwania.

Warder, Gode, Liben, South Omo, East Wellega and Gambela-Three are the districts affected in Ethiopia.

The concerned administrative areas in Sudan are: Kapoeta, Acobo, Nasir, El Renk, Melut and Nyala.

In Eritrea where the crop season has just started, Adi Keyh, Sen'ate, Tsorena and Mitswa'e City districts present at the start of the season a below normal NDVI profile.

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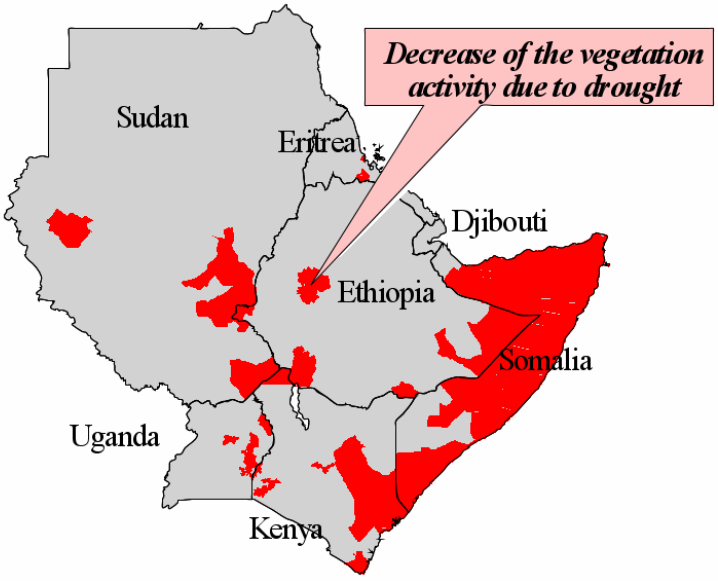

Figure 1. Crops and pastoralist areas of particular concern based on the temporal analysis of the administrative NDVI profile compared to normal profile (1999-2003). These areas present a large decrease in the vegetation activity captured by the sensor of SPOT VGT satellite.

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Rainfall analysis

The difference between current and normal cumulated rainfall is shown on the map of Figure 2, Page 3.

The graphs in Figure 2 represent the comparison between cumulated current rainfall and cumulated normal, spatially averaged by country and taking into consideration only the areas planted with maize and sorghum.

Rainfall is below normal in major areas of Ethiopia, Somalia, Kenya and western part of South Sudan including Darfur area.

Vegetation index analysis

The difference in the vegetation index (NDVI) between July 2004 and the same month of the previous year shows some areas with negative differences mainly in southeastern part of South Sudan. (Figure 3, Page 4).

The negative differences observed are due to the irregular rainy season.

The South of Somalia presents a clear decrease of vegetation activity shown by the NDVI profile when compared with the previous crop season and average NDVI profiles (more details about crop situation in Somalia can be find on ftp://mars.jrc.it/bulletin/somalia).

Figures 5 to 10; show the results of the administrative NDVI temporal analysis. The analysis includes even administrative units outside the maize area given the possibility to the user to better analyze the pastoral region.

Crop water requirement

Figure 4, shows the Water Requirement Satisfaction Index (WRSI), obtained by using the FAO Crop Specific Water Balance (CSWB) model.

The Figure 4 represents a forecast of WRSI for maize at the end of the growing season. Long-term average climatological data are used to calculate the WRSI for the period between the current dekad and the end-of-season.

In general the regional maize situation up to now seems slightly worse than the previous crop season. The maize yield expectation is lower for Somalia, Kenya and Ethiopia compared to 2003.

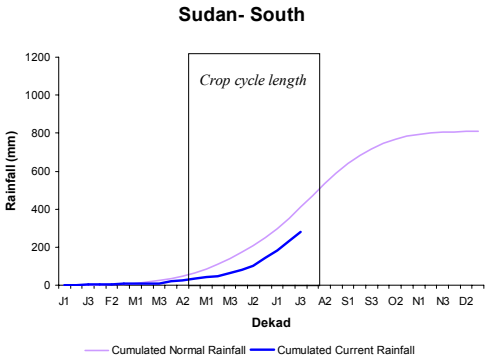
Even if the WRSI shows a very good yield expectation for Uganda, the NDVI temporal analysis done at administrative level, reveals some units with large decrease of vegetation activity which should lead to important yield reduction (Figure 10). These administrative units are: *Matheniko, Usuk, Kumi, Ngora, Pallisa, Butebo, Kibuku, Budaka, Bunyole, Busiki, Kisoko, Tororo, Bukooli, Bunya, Dokolo and Kwania.*

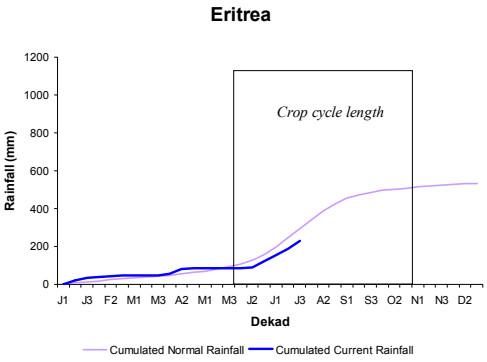
The JRC, in collaboration with FAO is pleased to present this issue of "Crop yield monitoring in Eastern Africa" for the 2004 crop season.

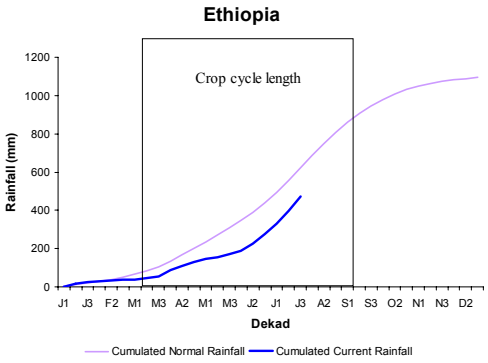
MARS-FOOAID will provide regular monthly updates on the progress of the 2004 crop season. The bulletin will be available in the "Crop and Rangeland Monitoring Network for the Greater Horn of Africa": http://marsunit.jrc.it/Africa/ or ftp://mars.jrc.it/bulletin/EasternAfrica. Also MARS-FOOD crop monitoring products will be available through the JRC Digital Map Archive: http://dma.jrc.it.

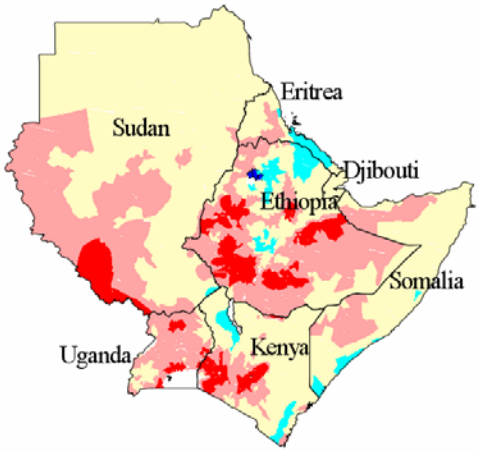
Another useful product for Somalia is available on: ftp://mars.jrc.it/Bulletin/Somalia

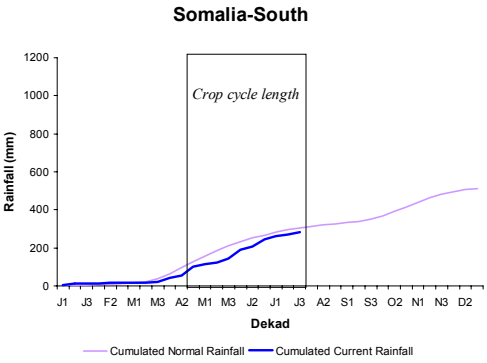
Comments and remarks for improvement of this pilot bulletin are welcome.

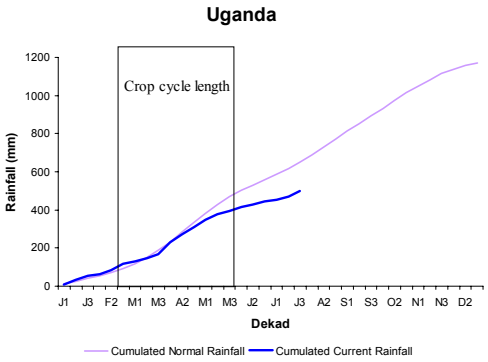


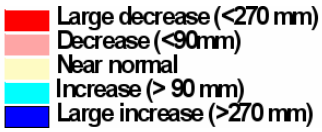












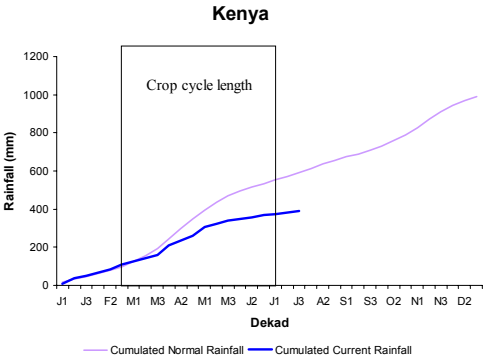
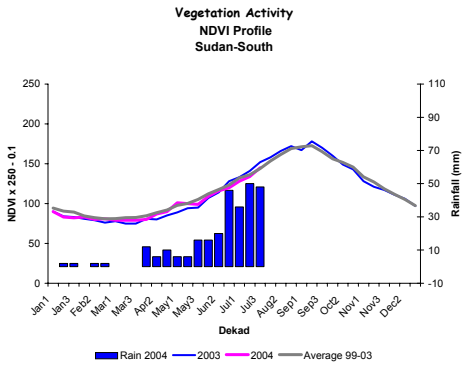
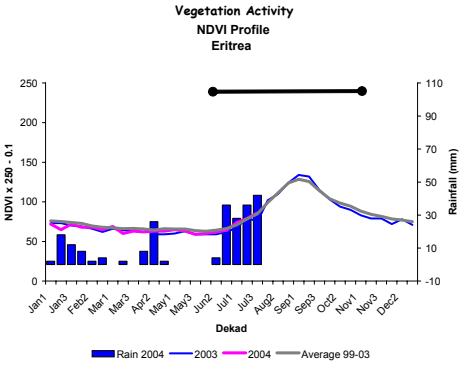
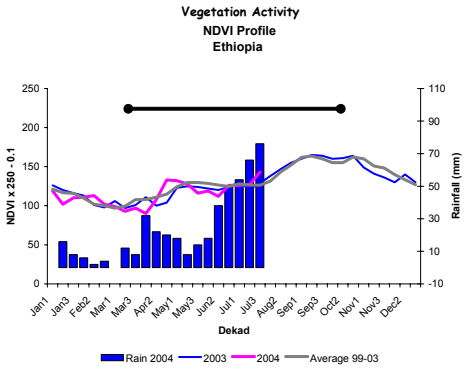
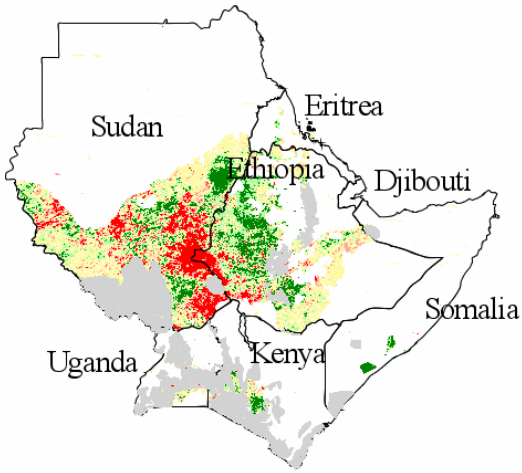


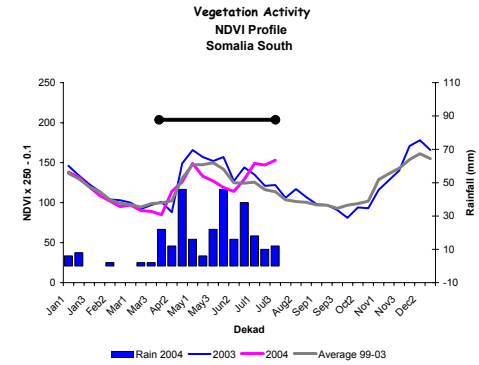
Figure 2. Rainfall difference with the cumulated normal up to the 3rd dekad of July 2004. Data are derived from the ECMWF model. Cumulated actual rainfall compared with normal in the graphs was spatially-averaged taking into consideration only the areas cultivated with maize and sorghum.

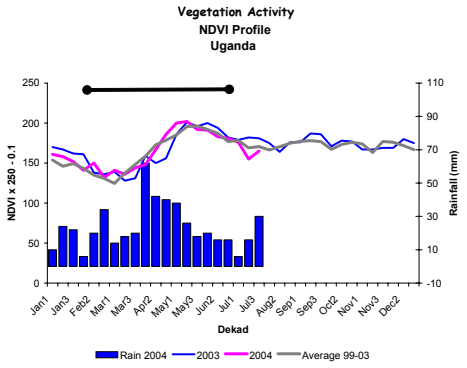


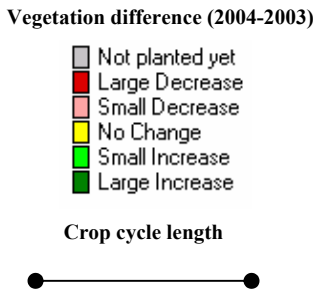












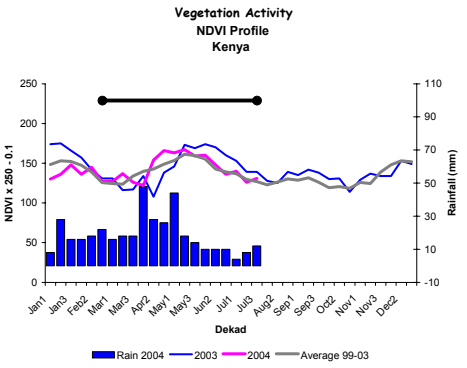


Figure 3. Normalized Difference Vegetation Index (NDVI). Absolute difference between July 2004 and the same month of the previous year. The areas that were not planted with maize and the areas, in which the crop cycle is completed, have been masked-out.

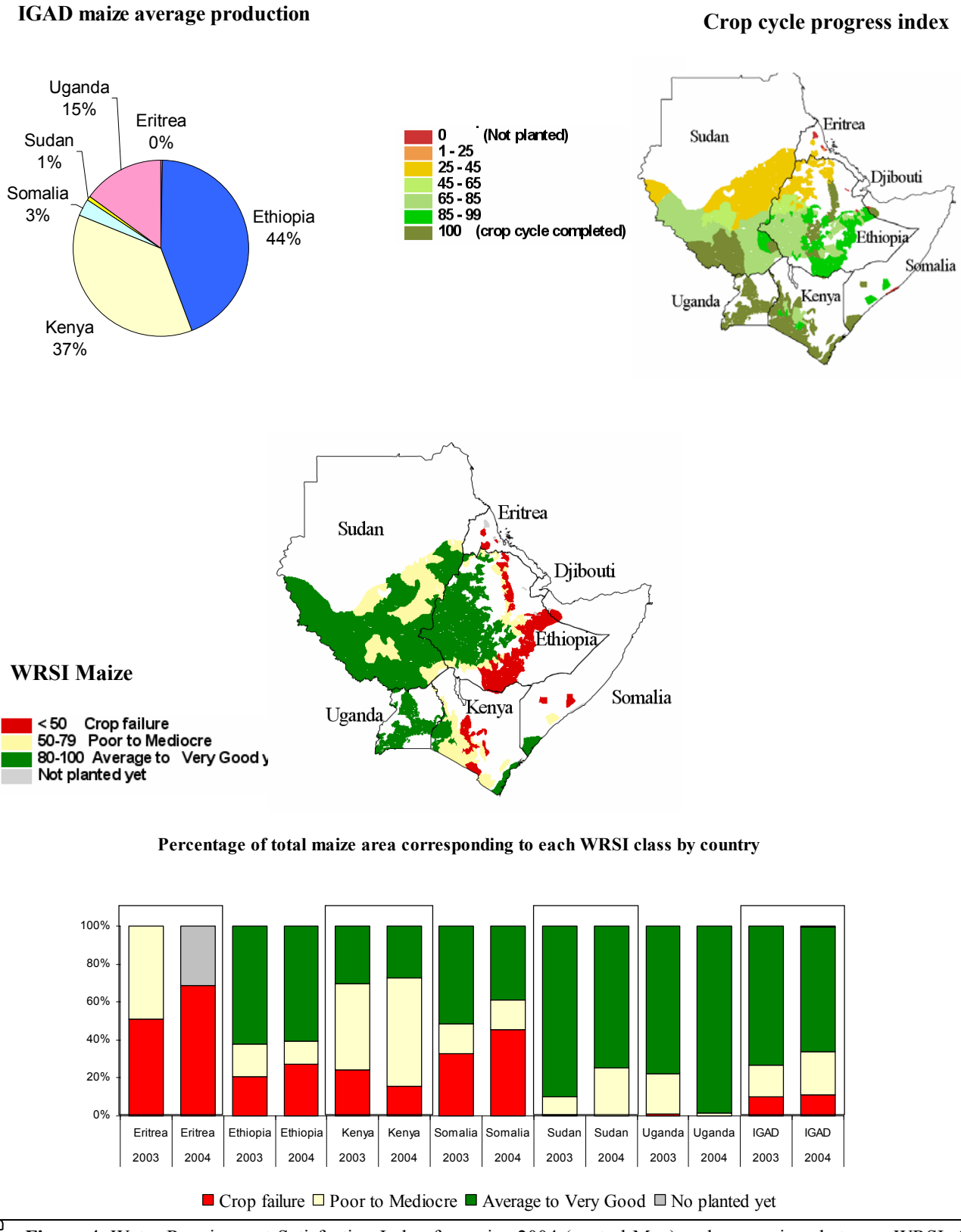


Figure 4. Water Requirement Satisfaction Index for maize 2004 (central Map) and comparison between WRSIs 2003 and 2004 (Bar graph)**.** For the whole region the situation of the rain-fed maize seems slightly worse than in 2003. In the areas where the maize cycle is not completed, normal rainfall was used to obtain the final value of WRSI. For these areas the WRSI values have to be considered as an early forecast for the crop yield situation (see Crop cycle progress index).

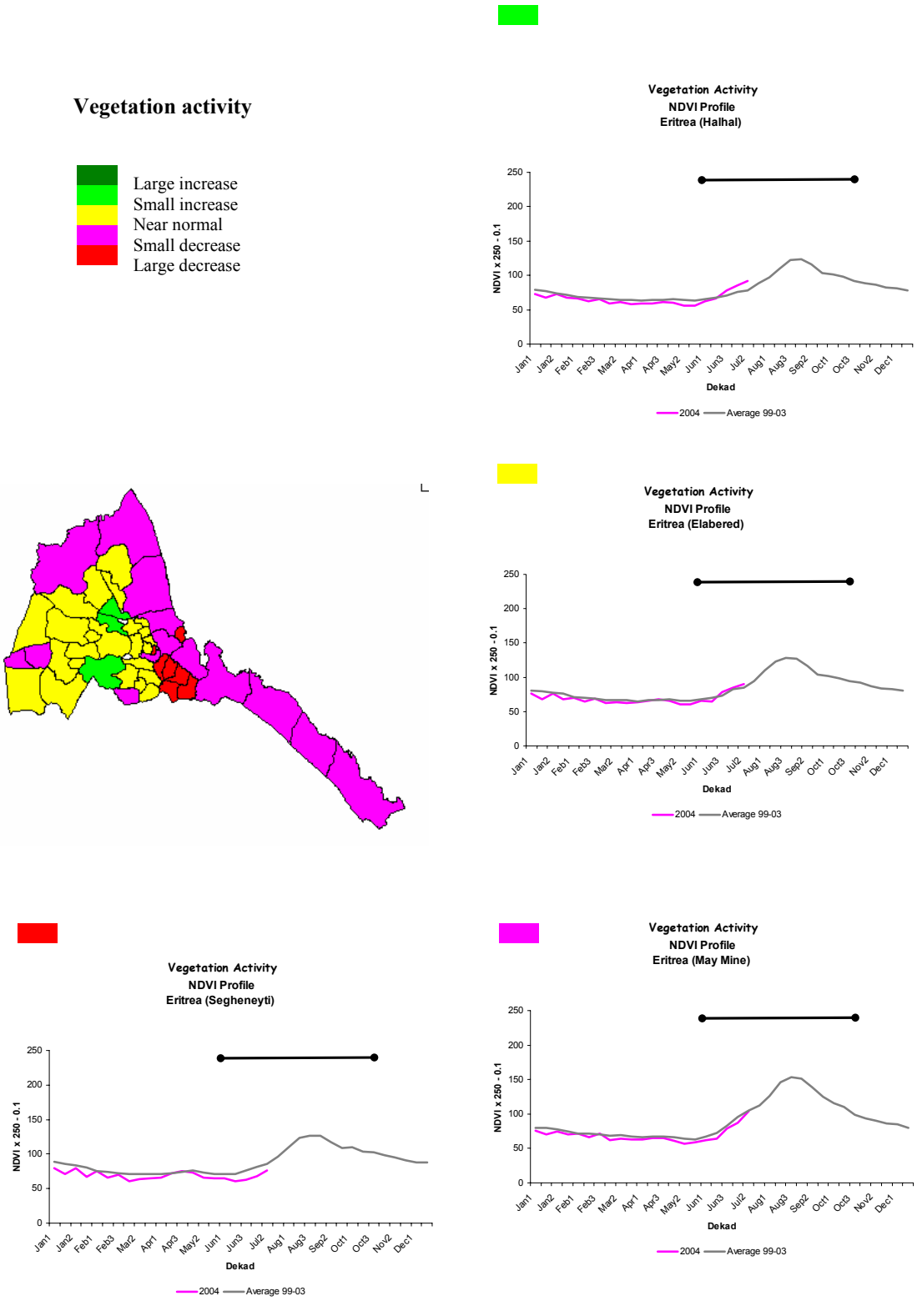


Figure 5. Administrative NDVI profiles for Eritrea. For most of maize and sorghum's areas the vegetation activity is classified as near normal or slightly better than normal based on the NDVI profiles.

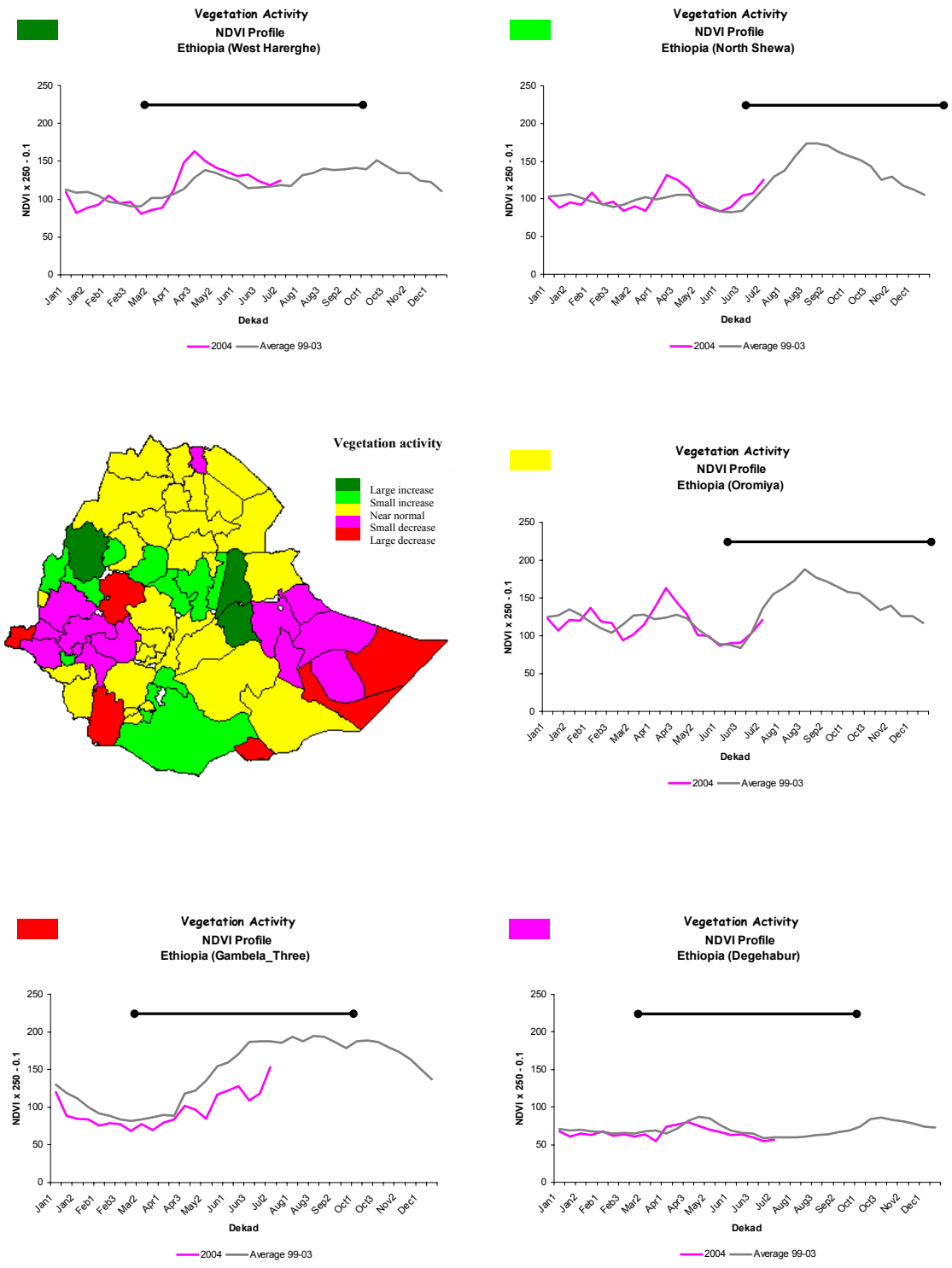


Figure 6. Administrative NDVI profiles for Ethiopia. Mainly the districts of Somali, Gambela and western part of Oromiya regions are affected by drought showing a decrease of the vegetation activity**.**

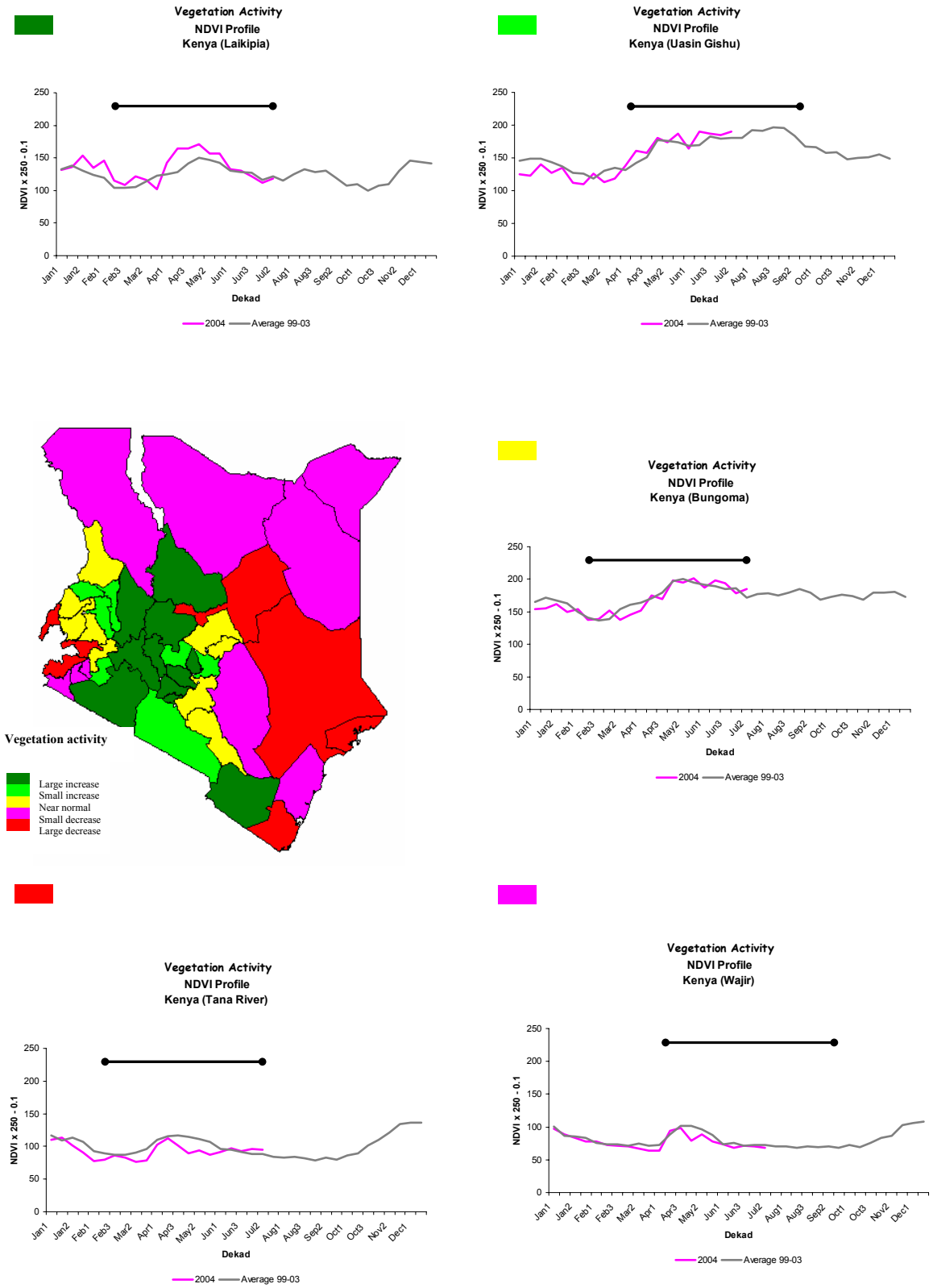


Figure 7. Administrative NDVI profiles for Kenya. Mainly the districts of Coast, Nyanza, north part of North Eastern, Eastern and Rift Valley are affected by drought showing a decrease of the vegetation activity**.**

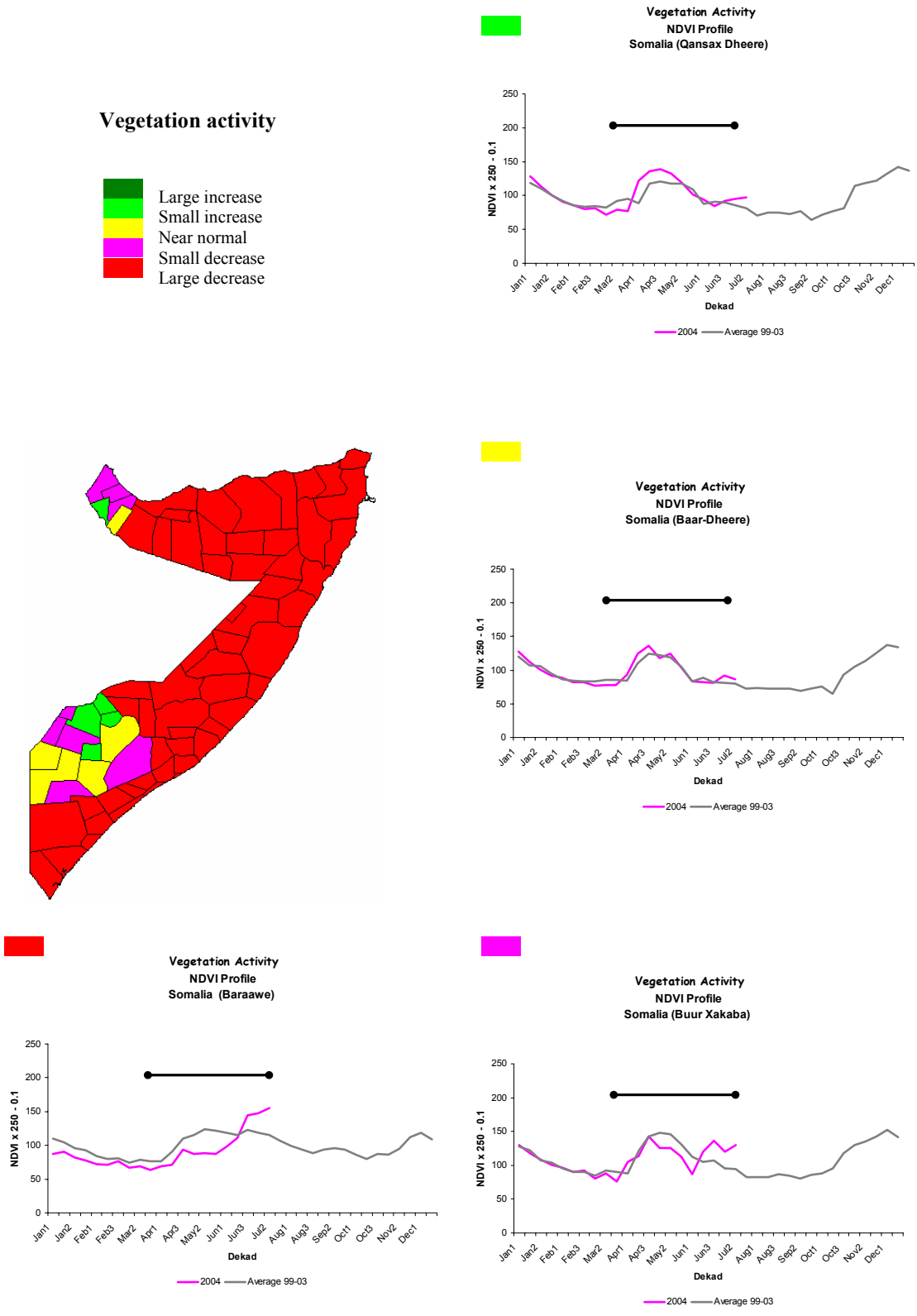


Figure 8. Administrative NDVI profiles for Somalia. Most of the country is affected by the drought.

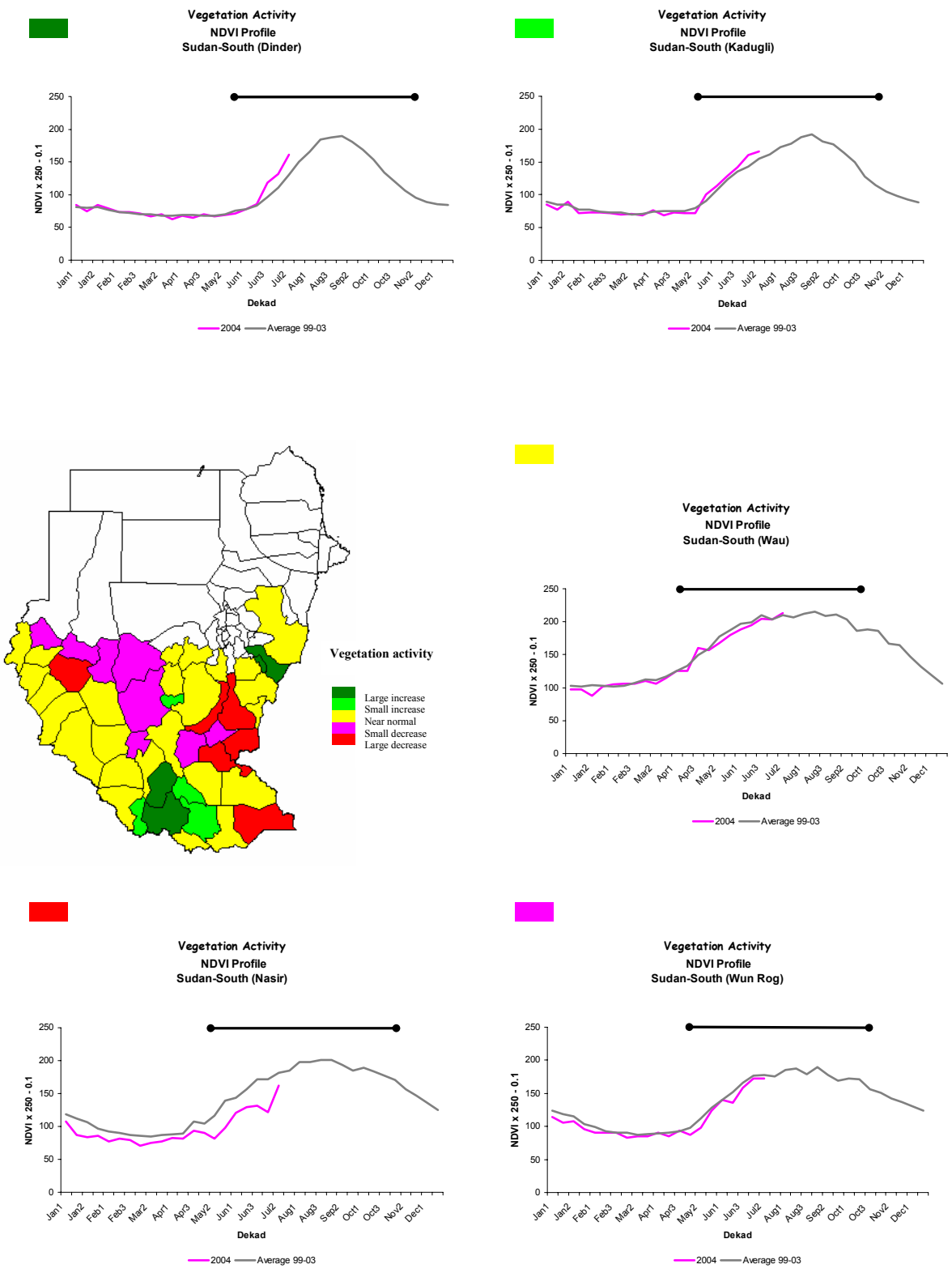


Figure 9. Administrative NDVI profiles for Sudan. The districts of Juba, part of Junglei, Upper Nile and Southern Darfur show a decrease of the vegetation activity.

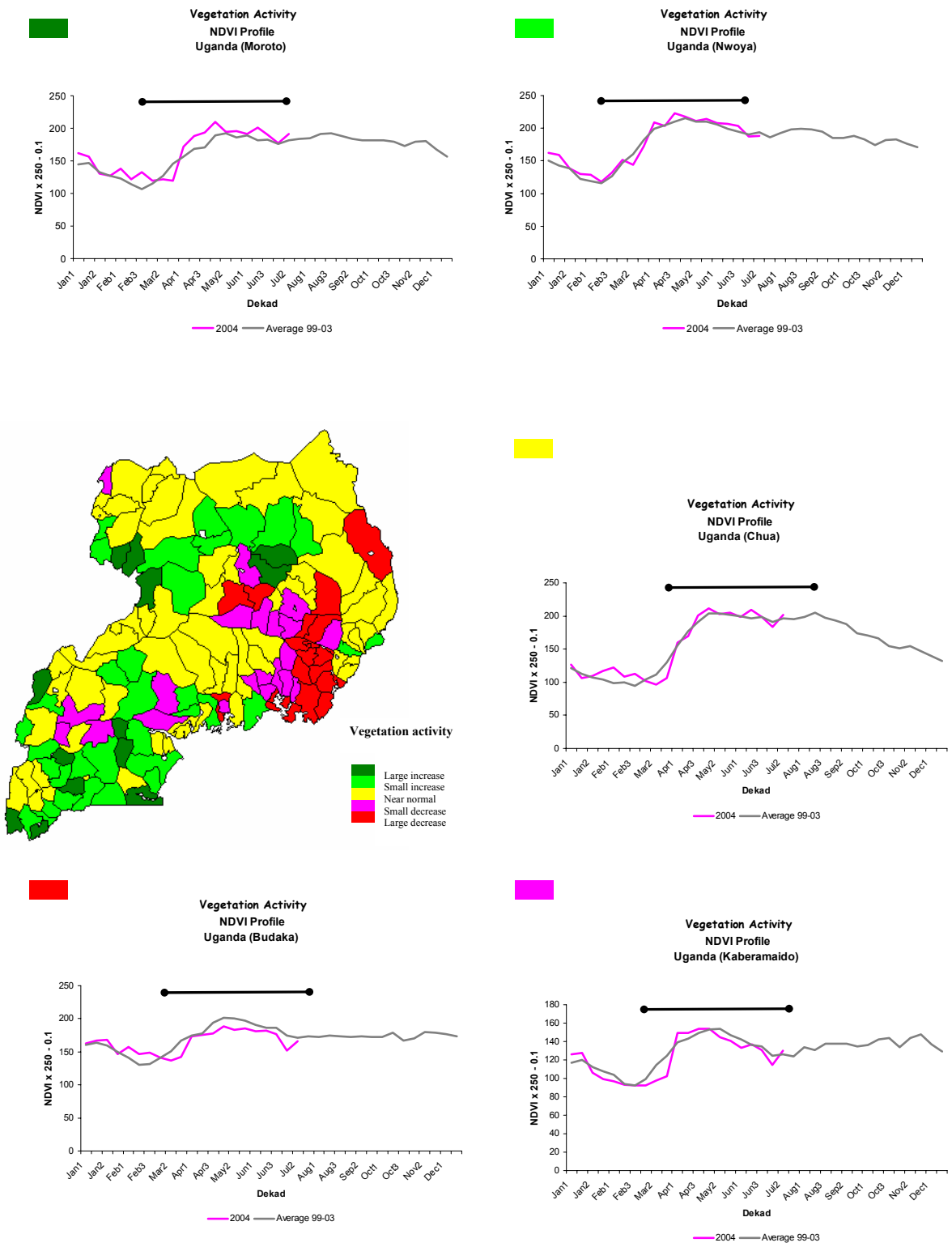


Figure 10. Administrative NDVI profiles for Uganda. Mainly the districts of East Province show a decrease of the vegetation activity.