Report of Monitoring and Assessment of Desert Locust in Africa and Asia

Early November 2021

Desert Locust Monitoring and Loss Assessment

in Somalia and Ethiopia

Overview

Integrated with multi-source Earth Observation data, e.g. meteorological data, field data, and remote sensing data (such as GF series in China, MODIS and Landsat series in US, Sentinel series in EU), and self-developed models and algorithms for Desert Locust monitoring and forecasting, the research team constructed the 'Vegetation pests and diseases monitoring and forecasting system', which could regularly release thematical maps and reports on Desert Locust.

This report focuses on the dynamic update of desert locust monitoring and loss assessment in Somalia and Ethiopia.

The results showed that, in October 2021, the desert locusts in Somalia were mainly distributed in the north. Compared with September 2021, the newly damaged vegetation area was 201.2 thousand hectares, including 0.2 thousand hectares of cropland, 7.7 thousand hectares of grassland, and 193.3 thousand hectares of the shrub. Desert locusts

Content

in Ethiopia were mainly distributed in the northeast and east. Compared with September 2021, the newly damaged vegetation area was 675.8 thousand hectares, including 84.1 thousand hectares of cropland, 111.6 thousand hectares of grassland, and 480.1 thousand hectares of shrub. From November to December, locusts in northern Somalia and eastern Ethiopia will continue to lay eggs, hatch and mature. At the same time, affected by the north wind, locust swarms in eastern Ethiopia and northern Somalia will migrate to northeastern Kenya. The next two months are important planting seasons and growing seasons for crops in Somalia, and important harvest seasons for crops in Ethiopia. It is still

necessary to continue to pay attention to the dynamics of the desert locust disaster in Somalia and Ethiopia to prevent repeated losses to its agricultural and pasture production. The research results are as follows:

Desert Locust Monitoring and Loss Assessment in Somalia

In early October 2021, the locust swarms in the spring breeding area in northeastern Somalia continued to mature, lay eggs and reproduce, resulting in a further increase in the number of locusts in Somalia; In mid-to-late October 2021, as locust swarms in northeastern Ethiopia spread southeast to northern Somalia, locust swarms in southern Yemen migrated through the Gulf of Aden to northern Somalia. The monitoring results show that in October, desert locust in Somalia harmed about 476.1 thousand hectares of vegetation area (Figure 1).

The research results show that compared with September 2021, in October 2021, desert locust in Somalia newly harmed about a total of 201.2 thousand hectares of vegetation area, including 0.2 thousand hectares of cropland, 7.7 thousand hectares of grassland, and 193.3 thousand hectares of shrub, accounting for 0.2%, 0.2% and 0.4% of the total cropland, grassland, and shrub in Somalia, respectively. The affected areas were mainly located in the north of Somalia. Among them, Togdheer in the northwest was the largest affected area (with affected area of 54.5 thousand hectares), followed by Bari in the northeast (with affected area of 44.0 thousand hectares), again were Mudug in the northeast and Sool in the northwest (with affected area of 34.9 and 25.0 thousand hectares respectively). Awdal, Woqooyi galbeed, Sanaag, and Nugaal had affected areas of 15.4, 10.8, 10.2 and 6.4 thousand hectares respectively.

Comprehensive analysis shows that, from November to December 2021, as ground control continues, the scale and number of desert locust swarms in Somalia will be significantly reduced compared to the same period last year. Forecasts show that locusts in northern Somalia will continue to lay eggs, reproduce, and mature, and the number of locusts is expected to increase further. At the same time, affected by the north wind, locust swarms in northeastern Somalia will migrate south to northeastern Kenya. The next two months are important planting seasons and growing season for crops in Somalia. It is still necessary to continue to pay attention to the dynamics of the desert locust disasters and carry out timely ground investigations and control actions to prevent the desert locusts from repeatedly causing damage to Somalia's agricultural production and food security.
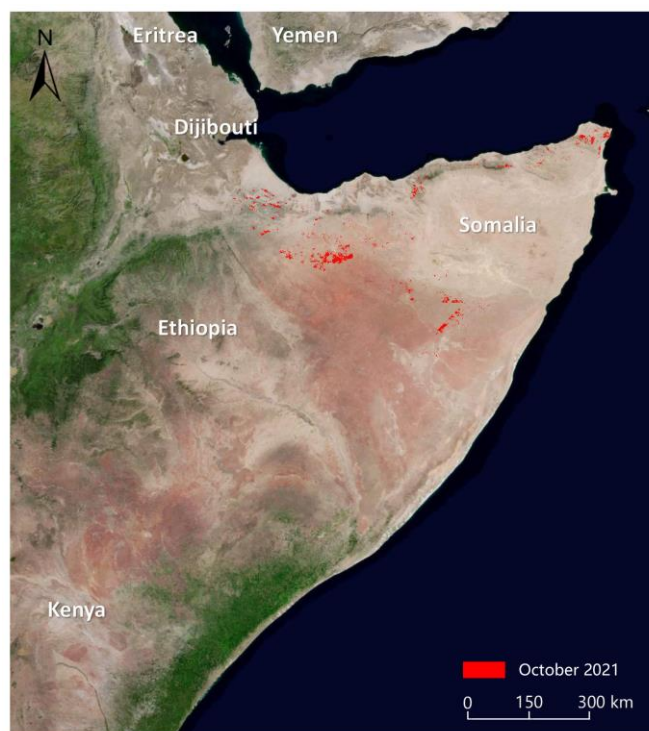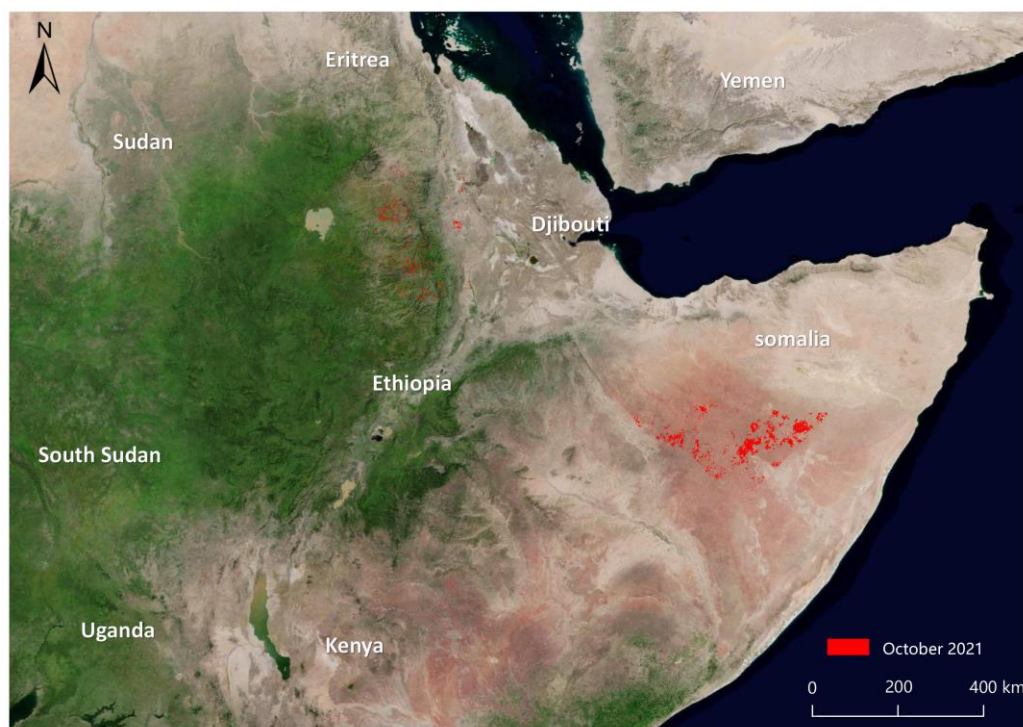
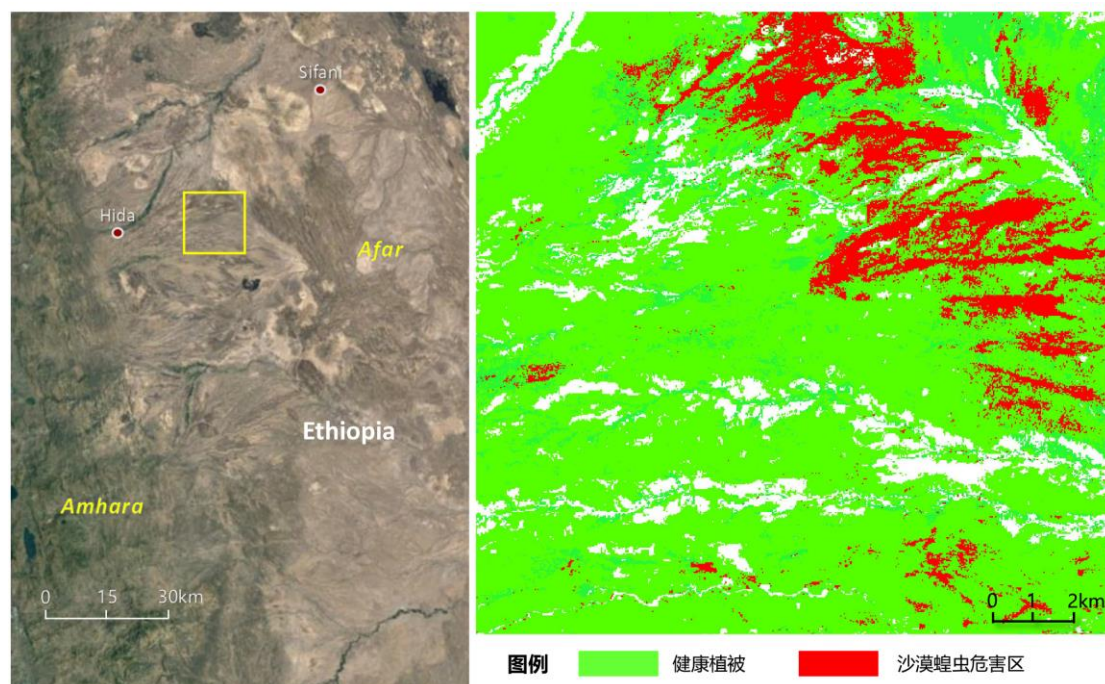*Figure 1* *Monitoring of Desert Locust damage in Somalia (October 2021)*

Desert Locust Monitoring and Loss Assessment in Ethiopia

In October 2021, locust swarms in northeastern Ethiopia spread northward to Eritrea and the Red Sea coast and spread eastward through Djibouti to eastern Ethiopia and northern Somalia, resulting in a decrease in the number of locusts in Ethiopia. The monitoring results show that in October, desert locust in Ethiopia harmed about 853.4 thousand hectares of vegetation area (Figure 2).

The result of research shows that, compared with September 2021, in October 2021, desert locusts in Ethiopia newly harmed about a total of 675.8 thousand hectares of vegetation area, including 84.1 thousand hectares of cropland, 111.6 thousand hectares of grassland, and 480.1 thousand hectares of shrub, accounting for0.3%, 0.6% and 0.7% of the total cropland, grassland, and shrub in Ethiopia, respectively. The affected areas were mainly located in the northeast and east of Ethiopia. Among them, Somalia in the east was the largest affected area (with affected area of 549.4 thousand hectares); followed by Amhara in the northeast (with affected area of 118.3 thousand hectares), again were Tigray in the northeast (with affected area of 6.9 thousand hectares). Afar in the northeast was less affected (with affected area of 1.2 thousand hectares).

This study also used Sentinel-2 satellite remote sensing data to monitor the desert locust damage in the severely affected vegetation areas in Western Ethiopia (Figure 3). The data acquisition time is October 2021, and the spatial resolution is 10m. The study area is in the western part of Afar, 40.7 kilometers southeast from Sifani, and 18.6 kilometers west from Hida. The vegetation types include

cropland, grassland, and shrub, with a total area of 24.18 thousand hectares, including 4.16 thousand hectares of cropland, 16.90 thousand hectares of grassland, and 3.12 thousand hectares of shrub. The monitoring results showed that the damaged area of vegetation in the study area was 2.87 thousand hectares, accounting for 11.9% of the study area's total area. Among them, grassland suffered the most, with a damaged area of 2.06 thousand hectares, followed by farmland of 0.44 thousand hectares, and shrub of 0.37 thousand hectares, accounting for 10.6%, 12.2%, and 11.9% of the total area of grassland, farmland, and shrub in the study area, respectively. The results of the study show that desert locusts still threaten the vegetation of Ethiopia, and continuous monitoring of the locust situation is needed to ensure Ethiopia's agricultural production and food security.

Comprehensive analysis shows that, from November to December 2021, as ground control continues, the size and number of desert locust swarms in Ethiopia will be significantly reduced compared to the same period last year. Forecasts show that locusts in eastern Ethiopia will continue to lay eggs, reproduce, and mature. At the same time, affected by the north wind, the locust swarms in eastern Ethiopia will migrate south to northeastern Kenya, and the number of locusts is expected to further decrease. The next two months are important harvest season for crops in Ethiopia. It is still necessary to pay continuous attention to the dynamics of the desert locusts and carry out timely ground investigations and control actions to prevent desert locusts from repeatedly damage to Ethiopia's agricultural production and food security.

***Figure 2** Monitoring of Desert Locust damage in Ethiopia (October 2021)*

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Figure 3 *Monitoring of Desert Locust damage in the key damage area of Ethiopia based on Sentinel-2 images (October 2021)*

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The Vegetation Pests and Diseases Monitoring and Forecasting system are available under:
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