Report of Monitoring, Early Warning and Assessment of Desert Locust

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Desert Locust Monitoring and Loss Assessment in Saudi Arabia, Eritrea and Somalia (January 2024)

Integrated with multi-source Earth Observation data, e.g. meteorological data, field data, and remote sensing data (such as MODIS in the US, etc), 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 updates of desert locust monitoring and loss assessment in Saudi Arabia, Eritrea and Somalia. The remote sensing monitoring results showed that, in January and February 2024, desert locusts were primarily distributed in the western coastal areas of the Red Sea in Saudi Arabia, the central region of Eritrea, and the northwestern region of Somalia. These areas faced a significant threat to vegetation, resulting in respective impacts on 16.8 thousand hectares, 12.9 thousand hectares, and 13.8 thousand hectares. It is expected that over the next two months, a decrease in rainfall is anticipated along the coastlines of the Red Sea and the Gulf of Aden, leading to arid conditions that are unfavourable for the survival and reproduction of desert locusts. Consequently, the population of locusts in the western coastal areas of Saudi Arabia, central Eritrea, and northwestern Somalia is projected to decrease. Simultaneously, driven by the rainfall patterns, locust swarms in northwestern Somalia are expected to migrate to the eastern regions of Ethiopia, where they will undergo minor breeding activities, resulting in an increase in locust numbers in the eastern regions of Ethiopia. This period is the main growing season for cereal crops in Saudi Arabia and the main growing and harvesting season for cereal crops in Somalia. Continuous attention to the dynamics of the desert locust disaster remains necessary to

prevent losses in agricultural and pasture production. The specific research results are as follows.

■ 1. Desert Locust Monitoring and Loss Assessment in Saudi Arabia

In January 2024, there was abundant rainfall along the western coastal areas of the Red Sea in Saudi Arabia, fostering robust vegetation growth. These favorable conditions facilitated the egg-laying and reproduction of desert locusts, leading to a further increase in the population of locusts in that region. The monitoring results showed that in January, the total damaged vegetation area was 16.8 thousand hectares in Saudi Arabia, including 4.3 thousand hectares of cropland, 5.2 thousand hectares of grassland, and 7.3 thousand hectares of shrub (Figure 1), accounting for 1.96%, 0.26%, and 0.18% of the total area of the cropland, grassland, and shrub, respectively. Compared to December 2023, the newly damaged vegetation area in Saudi Arabia increased by 1.2 thousand hectares. Asīr experienced the most extensive impact, with 5.8 thousand hectares of vegetation affected, followed by Jizan, with 5.4 thousand hectares. Additionally, the affected areas in Makkah and Al Bahah provinces were 5.2 and 0.4 thousand hectares, respectively.
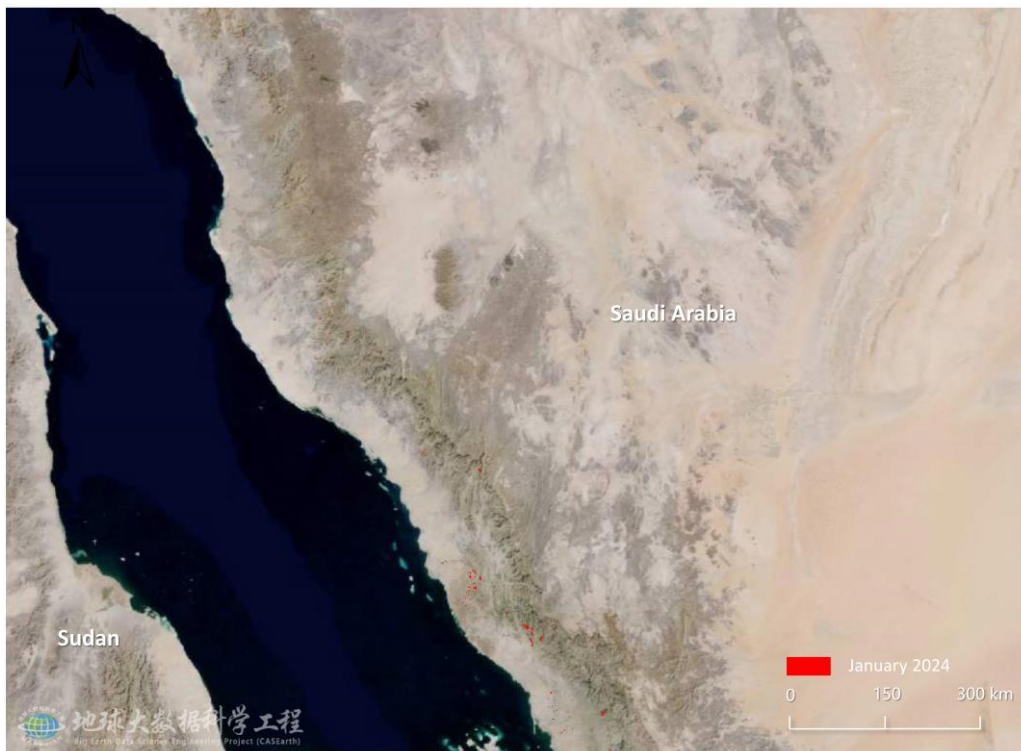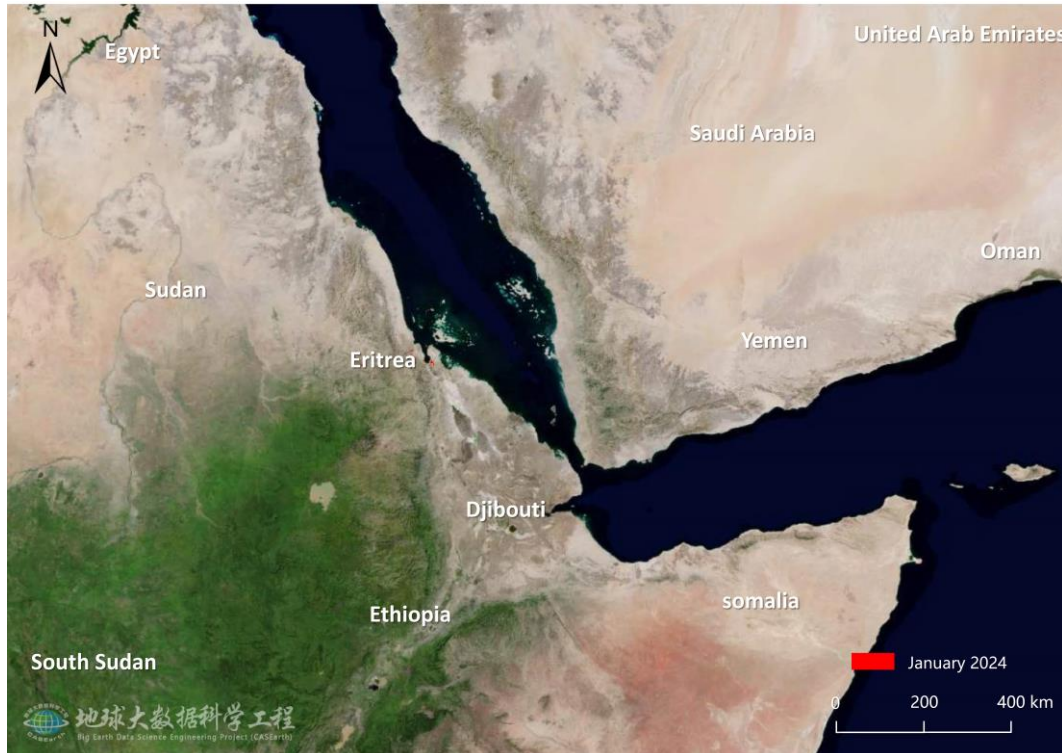

Fig.1 Monitoring of Desert Locust damage in Saudi Arabia (January 2024)

■ 2. Desert Locust Monitoring and Loss Assessment in Eritrea

In January 2024, desert locusts were predominantly distributed in the central coastal regions of Eritrea, where abundant rainfall and favorable vegetation growth provided conducive conditions for locust oviposition and reproduction, leading to a further increase in the population of desert locusts. The monitoring results showed that in January, the total damaged vegetation area was 12.9 thousand hectares in Eritrea, including 2.8 thousand hectares of cropland, 3.8 thousand hectares of grassland, and 6.3 thousand hectares of shrub

(Figure 2), accounting for 0.64%, 0.08%, and 0.48% of the total area of the cropland, grassland, and shrub, respectively. Compared to December 2023, the newly damaged vegetation area in Eritrea increased by 3.8 thousand hectares, including 1.1 thousand hectares of cropland, 0.9 thousand hectares of grassland, and 1.8 thousand hectares of shrubs. Semien keih Bahri experienced the most extensive impacts, with 9.7 thousand hectares of vegetation affected, followed by Gash Barka, with 3.2 thousand hectares.

Fig.2 Monitoring of Desert Locust damage in Eritrea (January 2024)

■ **3. Desert Locust Monitoring and Loss Assessment in Somalia**

In January 2024, there was a decrease in rainfall in the northwestern region of Somalia, which was unfavorable for the oviposition and reproduction of desert locusts. Consequently, the population of desert locusts in this region declined. The monitoring results showed that in January, the total damaged vegetation area was 13.8 thousand hectares in Somalia, including 4.5 thousand hectares of grassland and 9.3 thousand hectares of shrub (Figure 3), accounting for 0.01% and 0.04% of the total area of the grassland and shrub, respectively. North-West experienced the most significant impact, with, with 7.6 thousand hectares of vegetation affected, followed by Sanaag, with 5.0 thousand hectares. Additionally, the affected area of vegetation in Awdal was 1.2 thousand hectares.
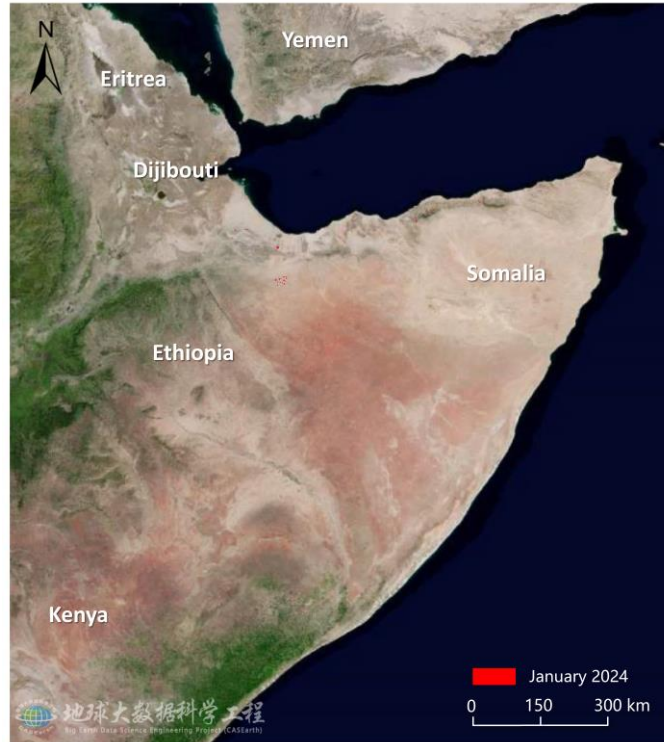
Fig.3 Monitoring of Desert Locust damage in Somalia (January 2024)

The comprehensive analysis shows that, in the next two months, a decrease in rainfall is anticipated along the coastlines of the Red Sea and the Gulf of Aden, resulting in arid conditions which are unfavorable for the survival and reproduction of desert locusts. Consequently, the population of locusts in the western coastal areas of Saudi Arabia, central Eritrea, and northwestern Somalia is projected to decrease. Simultaneously, driven by the rainfall patterns, locust swarms in northwestern Somalia are expected to migrate to the eastern regions of Ethiopia, where they will engage in minor breeding activities, resulting in an increase in locust numbers in the eastern regions of Ethiopia. Continuous attention to the dynamics of the desert locust disaster in Saudi Arabia, Eritrea and Somalia remains necessary to prevent repeated losses in agricultural and pasture production.

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