Report of Monitoring, Early Warning and Assessment of Desert Locust

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Desert Locust Monitoring and Loss Assessment in Eritrea, Somalia and Yemen (July 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.

The remote sensing monitoring results showed that, in July 2024, desert locusts were primarily found in the central region of Eritrea, the northwestern and northern coastal areas of the Gulf of Aden in Somalia, and the western inland areas of Yemen. These areas experienced significant threats to vegetation, impacting 13.2 thousand hectares, 14.6 thousand hectares, and 29.3 thousand hectares, respectively. It is anticipated that, over the next two months, increased rainfall due to tropical cyclones will lead to abundant rainfall in the western region of Eritrea and the central and western inland areas of Yemen, resulting in favorable conditions for desert locusts to lay eggs and reproduce, which will lead to a slight increase in their numbers. In Somalia, the high temperatures and drought will not be conducive to the survival of desert locusts, leading to a decrease in their population within the country. This period marks the main harvest and planting season for cereal crops in Somalia, as well as the main growing and harvest season in Eritrea and Yemen. Continuous monitoring of the desert locust dynamics is essential to prevent recurrent losses in agricultural and pasture production. The specific research results are as follows.

■ 1. Desert Locust Monitoring and Loss Assessment in Eritrea

In July 2024, desert locusts were primarily found in the central regions of Eritrea, where abundant rainfall fostered robust vegetation growth. These favorable conditions facilitated the egg-laying and reproduction of desert locusts, leading to a slight increase in their population. The monitoring results showed that in July, the total damaged vegetation area in Eritrea was 13.2 thousand hectares, including 2.7 thousand hectares of farmland, 5.5 thousand hectares of grassland, and 5.0 thousand hectares of shrubland (Figure 1), accounting for 0.62%, 0.12%, and 0.38% of the total area of farmland, grassland, and shrubland, respectively. The Gash Barka region experienced the most extensive impact, with 7.9 thousand hectares of vegetation affected, followed by the Debub region, with 4.1 thousand hectares. Additionally, the Semien Keih Bahri region had 1.2 thousand hectares affected.

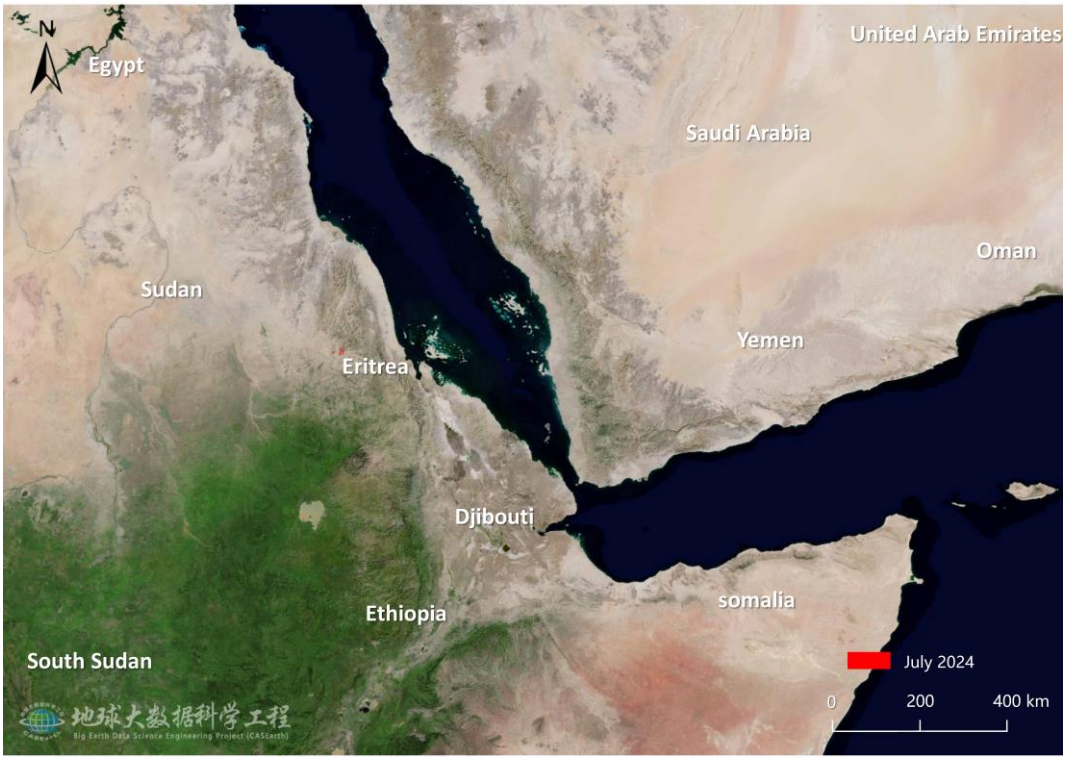

Fig.1 Monitoring of Desert Locust damage in Eritrea (July 2024)

■ 2. Desert Locust Monitoring and Loss Assessment in Somalia

In July 2024, increased rainfall in the northwestern region of Somalia favored the egg-laying and reproduction of desert locusts, leading to an increase in their numbers in the area. The monitoring results showed that in July, the total damaged vegetation area was 14.6 thousand hectares in Somalia, including 7.4 thousand hectares of grassland and 7.2 thousand hectares of shrubland (Figure 2), accounting for 0.03% and 0.04% of the total area of grassland and shrubland, respectively. The North-West experienced the most significant impact, with 5.2 thousand hectares of vegetation affected, followed by the Sanaag, with 4.6 thousand hectares. Additionally, the affected areas of vegetation in Awdal and Togdheer were 3.3 thousand hectares and 1.5 thousand hectares, respectively.

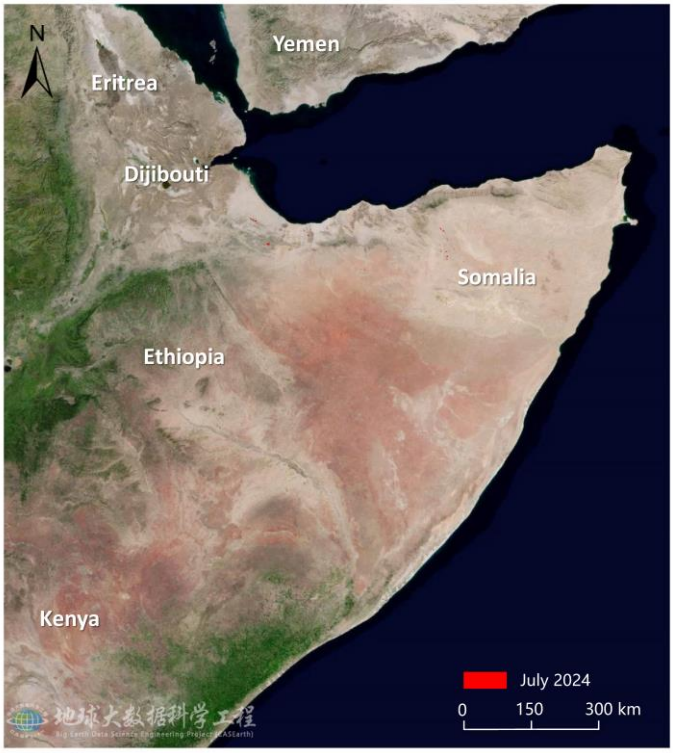

Fig.2 Monitoring of Desert Locust damage in Somalia (July 2024)

■ 3. Desert Locust Monitoring and Loss Assessment in Yemen

In July 2024, desert locusts were primarily distributed in the central and western inland regions of Yemen, where abundant rainfall influenced by tropical cyclones and favorable vegetation growth provided conducive conditions for locust oviposition and reproduction. The monitoring results showed that in July, the total damaged vegetation area was 29.3 thousand hectares in Yemen, including 5.7 thousand hectares of cropland, 8.5 thousand hectares of grassland, and 15.1 thousand hectares of shrubland (Figure 3), accounting for 1.16%, 0.22%, and 0.28% of the total area of cropland, grassland, and shrubland, respectively. Al Hudaydah experienced the most significant impact, with 11.9 thousand hectares of vegetation affected, followed by Dhamār, with 7.7 thousand hectares. Additionally, the affected areas in Ibb, Abyān, Lahij, and Ta'izz were 3.9 thousand hectares, 3.1 thousand hectares, 1.5 thousand hectares, and 1.2 thousand hectares, respectively.

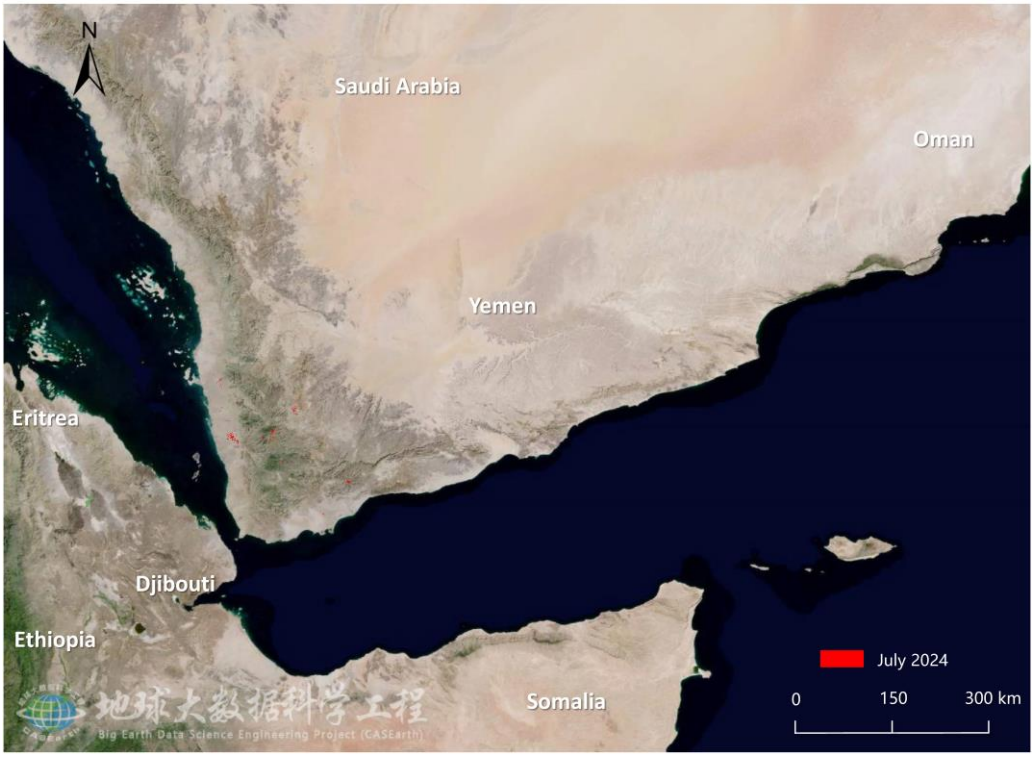

Fig.3 Monitoring of Desert Locust damage in Yemen (July 2024)

The comprehensive analysis shows that, in the next two months, increased rainfall due to tropical cyclones will lead to abundant rainfall in the western region of Eritrea and the central and western inland areas of Yemen, resulting in favorable conditions for desert locusts to lay eggs and reproduce, which will lead to a slight increase in their numbers. In Somalia, the high temperatures and drought will not be conducive to the survival of desert locusts, leading to a decrease in their population within the country. Continuous monitoring of the desert locust dynamics in Eritrea, Somalia and Yemen is essential to prevent repeated losses in agricultural and pasture production.

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This report was released by Professor Wenjiang Huang's and Associate Professor Yingying Dong's research team in Aerospace Information Research Institute, Chinese Academy of Sciences.

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