



Report of Monitoring, Early Warning and Assessment of Desert Locust

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Desert Locust Monitoring and Loss Assessment in Somalia and Saudi Arabia (February 2024)

Integrated with multi-source Earth Observation data, e.g. meteorological data, field data, and remote sensing data (such as the MODIS in the US and SDGSAT-1 in China,), 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 Somalia and Saudi Arabia. The remote sensing monitoring results showed that, desert locusts were primarily distributed in the northwestern region of Somalia and along the northern coast of the Gulf of Aden, as well as along the western coast of the Red Sea in Saudi Arabia, with areas of vegetation affected reaching 13.6 thousand hectares and 15.4 thousand hectares respectively. It is expected that over the next two months, rainfall will decrease along the coastlines of the Red Sea and the Gulf of Aden, leading to drier vegetation conditions which are unfavorable for the survival and reproduction of desert locusts. As a result, the locust populations in Somalia and along the western coast of the Red Sea in Saudi Arabia are anticipated to decrease. Concurrently, increased rainfall in the inland regions of Saudi Arabia will prompt locust swarms from the western Red Sea coastal areas to migrate inland, where they will engage in minor reproductive activities. Consequently, the locust populations in the inland regions of Saudi Arabia are expected to increase. This period marks the main harvest and planting seasons for cereal crops in Somalia, as well as the primary growth and harvest seasons for cereal crops in Saudi Arabia. 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 Somalia

In February 2024, rainfall decreased in the northwestern region of Somalia, which was unfavorable for the breeding and reproduction of desert locusts. As a result, the number of desert locusts in that area decreased. The monitoring results showed that in February, the total damaged vegetation area was 13.6 thousand hectares in Somalia, including 5.5 thousand hectares of grassland and 8.1 thousand hectares of shrub (Figure 1), accounting for 0.02% and 0.04% of the total area of the grassland and shrub, respectively. North-West experienced the most significant impact, with 7.1 thousand hectares of vegetation affected, followed by Sanaag, with 3.3 thousand hectares. Additionally, the affected area of vegetation in Awdal was 3.2 thousand hectares.

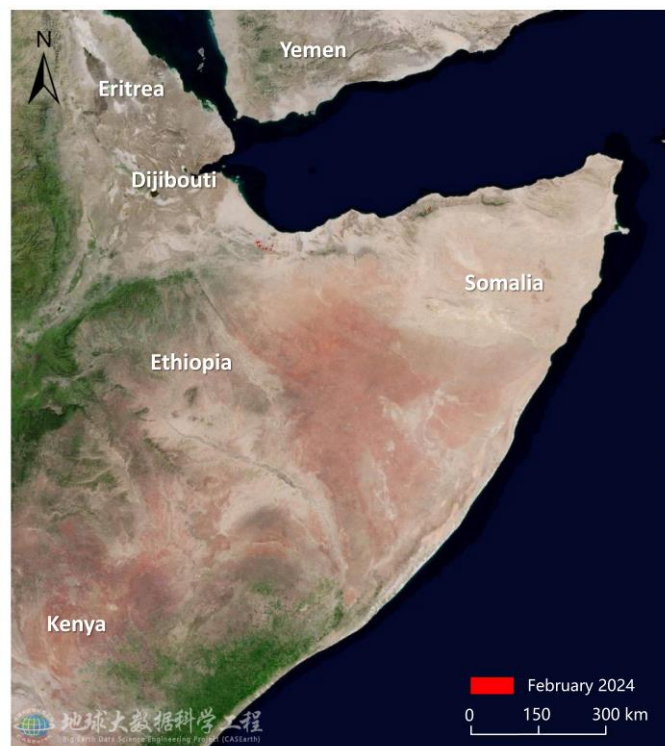


Fig.1 Monitoring of Desert Locust damage in Somalia (February 2024)

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

In February 2024, reduced rainfall along the western coast of the Red Sea in Saudi Arabia hindered the reproduction of desert locusts, leading to a decrease in their population in that region. The monitoring results showed that in February, the total damaged vegetation area was 15.4 thousand hectares in Saudi Arabia, including 1.8 thousand hectares of cropland, 3.2 thousand hectares of grassland, and 10.4 thousand hectares of shrub (Figure 2), accounting for 0.82%, 0.16%, and 0.25% of the total area of the cropland, grassland, and shrub, respectively. Makkah experienced the most extensive impact, with 6.7 thousand hectares of vegetation affected, followed by Al Bahah, with 3.6 thousand hectares. Additionally, the affected areas in Jizan and Asīr provinces were 2.7 and 2.4 thousand hectares, respectively.

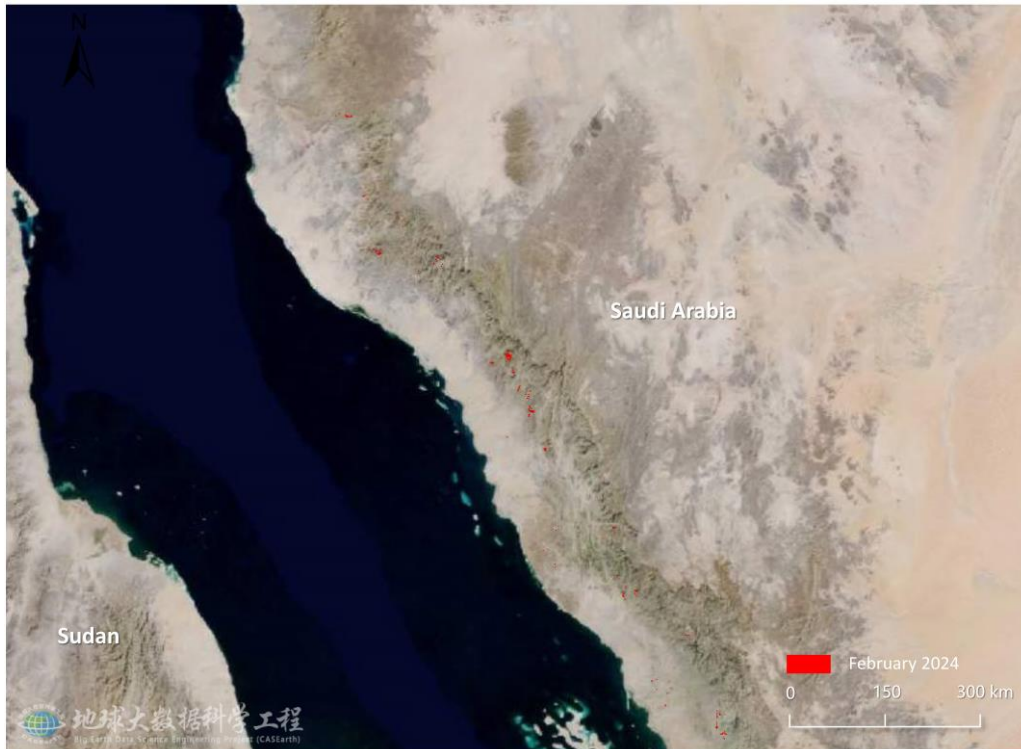


Fig.2 Monitoring of Desert Locust damage in Saudi Arabia (February 2024)

This study utilized SDGSAT-1 satellite remote sensing data to monitor the regions in western Saudi Arabia that were severely affected by disasters (Figure 3). Region 1 is located in the southern area of Asir, approximately 34.7 kilometers northeast of Abha and 18.2 kilometers south of Al Kadarah. Region 2 is situated in the central area of Jizan, about 23.5 kilometers north of Masliyah and 37.5 kilometers south of Jizan. The total vegetation area in Region 1 is 57.99 thousand hectares, with a disaster-affected area of 4.39 thousand hectares. Among these, the affected areas of grasslands and shrublands are 0.28 thousand hectares and 4.11 thousand hectares, respectively, accounting for 1.96% and 9.40% of the total grassland and shrubland areas in this region. The total vegetation area in Region 2 is 37.20 thousand hectares, with a disaster-affected area of 1.69 thousand hectares. Among these, the affected areas of farmland and shrublands are 1.51 thousand hectares and 0.18 thousand hectares, respectively, accounting for 7.23% and 1.08% of the total farmland and shrubland areas in this region.

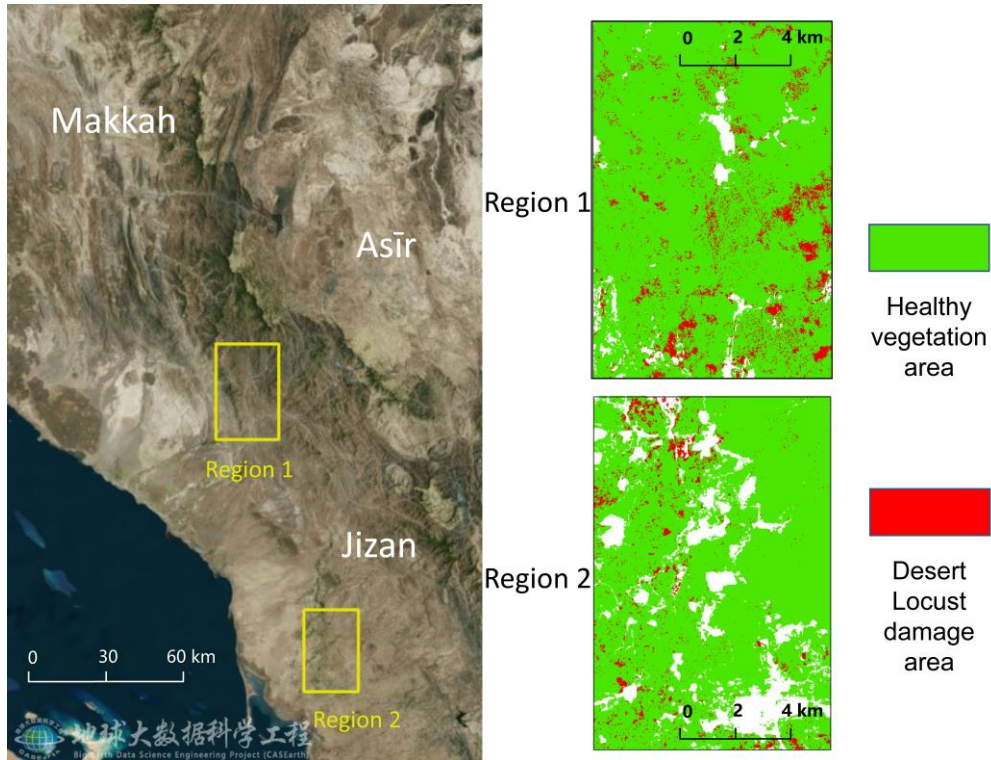


Fig.3 Monitoring of Key Desert Locust Infestation Areas in Saudi Arabia Based on SDGSAT-1 Imagery (February 2024)

The comprehensive analysis shows that, in the next two months, rainfall will decrease along the coastlines of the Red Sea and the Gulf of Aden, leading to drier vegetation conditions which are unfavorable for the survival and reproduction of desert locusts. As a result, the locust populations in Somalia and along the western coast of the Red Sea in Saudi Arabia are anticipated to decrease. Concurrently, increased rainfall in the inland regions of Saudi Arabia will prompt locust swarms from the western Red Sea coastal areas to migrate inland, where they will engage in minor reproductive activities. Consequently, the locust populations in the inland regions of Saudi Arabia are expected to increase. Continuous attention to the dynamics of the desert locust disaster in Somalia and Saudi Arabia remains necessary to prevent repeated losses in agricultural and pasture production.

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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