Report of Monitoring, Early Warning and Assessment of Desert Locust

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Desert Locust Monitoring and Loss Assessment in Somalia, Saudi Arabia and Yemen (September 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 September 2024, desert locusts were primarily distributed in the northwestern regions of Somalia and along the northern coastal areas of the Gulf of Aden, the western coastal areas of the Red Sea in Saudi Arabia, and the western inland and coastal areas of Yemen. These areas experienced significant threats to vegetation, impacting 13.8 thousand hectares, 15.6 thousand hectares, and 32.0 thousand hectares, respectively. It is anticipated that, over the next two months, rainfall in the Gulf of Aden coastal areas will decrease. The reduction in precipitation will lead to drier vegetation, creating conditions unsuitable for locust survival and reproduction. Consequently, locusts in Somalia are likely to migrate towards the northwestern inland areas. In contrast, increased rainfall in the Red Sea coastal areas will create favorable conditions for desert locust egg-laying and reproduction, prompting locusts in inland Yemen migrating towards the western coastal areas. This period marks the main planting and growing season for food crops in Somalia, the primary growing season in Saudi Arabia, and the peak harvest season in Yemen. Continuous monitoring of desert locust dynamics is essential to prevent recurrent losses in agricultural and pastoral production. The specific research results are as follows.

■ 1. Desert Locust Monitoring and Loss Assessment in Somalia

In September 2024, increased rainfall in the northwestern regions of Somalia and along the northern coastal areas of Gulf of Aden provided favorable conditions for desert locusts to lay eggs and reproduce, leading to a rise in their population. Monitoring results indicated that in September, desert locusts affected 13.8 thousand hectares of vegetation in Somalia, including 4.4 thousand hectares of grassland and 9.4 thousand hectares of shrubland (Figure 1), accounting for 0.01% and 0.04% of the total areas of grassland and shrubland, respectively. The Sanaag region experienced the most extensive damage, with 8.7 thousand hectares affected, followed by the Awdal region, with 3.7 thousand hectares impacted, and the North-West region, with 1.4 thousand hectares affected.

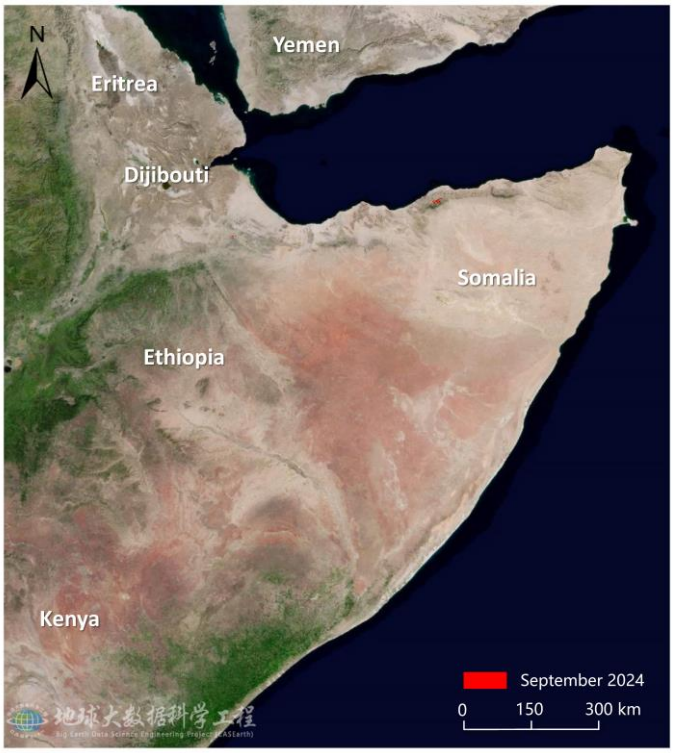

Fig.1 Monitoring of Desert Locust damage in Somalia (September 2024)

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

In September 2024, abundant rainfall along the southern coastal areas of Red Sea of Saudi Arabia provided favorable conditions for desert locusts to lay eggs and reproduce, resulting in an increase in their population. Monitoring results indicated that in September, desert locusts affected 15.6 thousand hectares of vegetation in Saudi Arabia, including 2.9 thousand hectares of farmland, 5.8 thousand hectares of grassland, and 6.9 thousand hectares of shrubland (Figure 2), accounting for 1.32%, 0.29%, and 0.17% of the total areas of farmland, grassland, and shrubland, respectively. The Asīr region experienced the most extensive damage, with 6.1 thousand hectares affected, followed by the Makkah region, with 5.2 thousand hectares impacted. The Jizan and Al Bahah regions had 3.3 thousand and 1.0 thousand hectares affected, respectively.

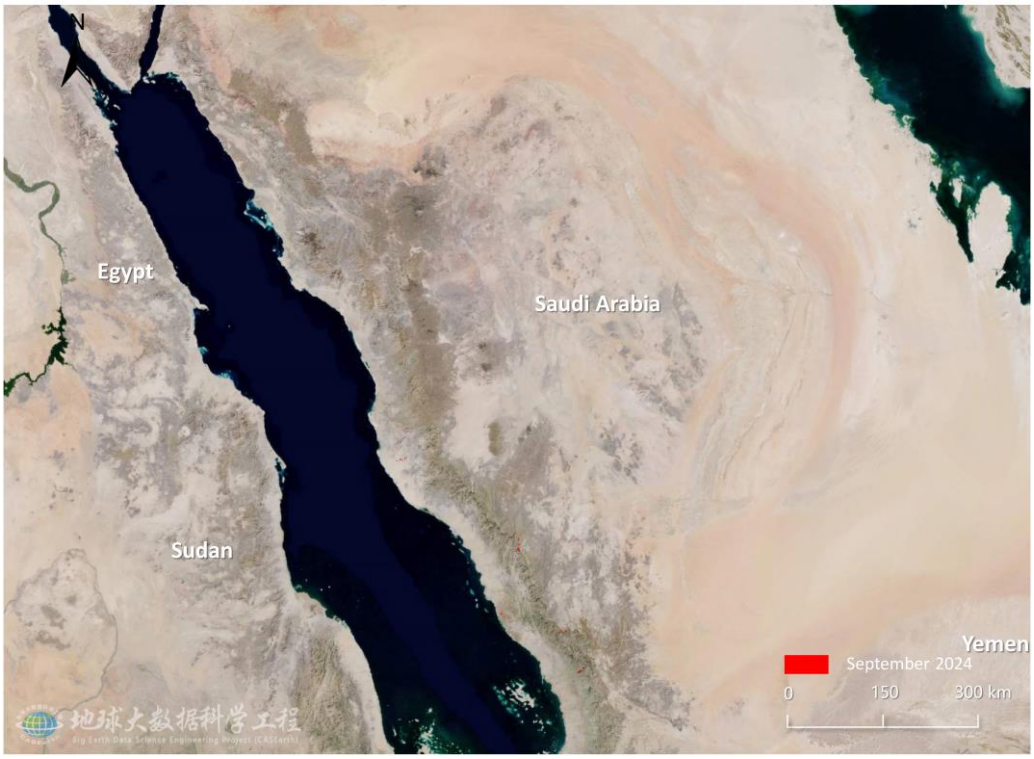

Fig.2 Monitoring of Desert Locust damage in Saudi Arabia (September 2024)

■ 3. Desert Locust Monitoring and Loss Assessment in Yemen

In September 2024, desert locusts were primarily distributed in the western inland and coastal regions of Yemen, where abundant rainfall and favorable vegetation growth, which provided conducive conditions for locust oviposition and reproduction. Monitoring results indicated that in September, desert locusts affected 32.0 thousand hectares of vegetation in Yemen, including 10.3 thousand hectares of cropland, 8.3 thousand hectares of grassland, and 13.4 thousand hectares of shrubland (Figure 3), accounting for 2.09%, 0.21%, and 0.25% of the total areas of cropland, grassland, and shrubland, respectively. Al Hudaydah province experienced the most significant impact, with 10.1 thousand hectares affected, followed by Dhamār province, with 7.2 thousand hectares. The affected areas in Ta'izz, San'ā, Al-Mahwīt, and Amrān were 5.5 thousand hectares, 3.9 thousand hectares, 3.1 thousand hectares, and 2.2 thousand hectares, respectively.

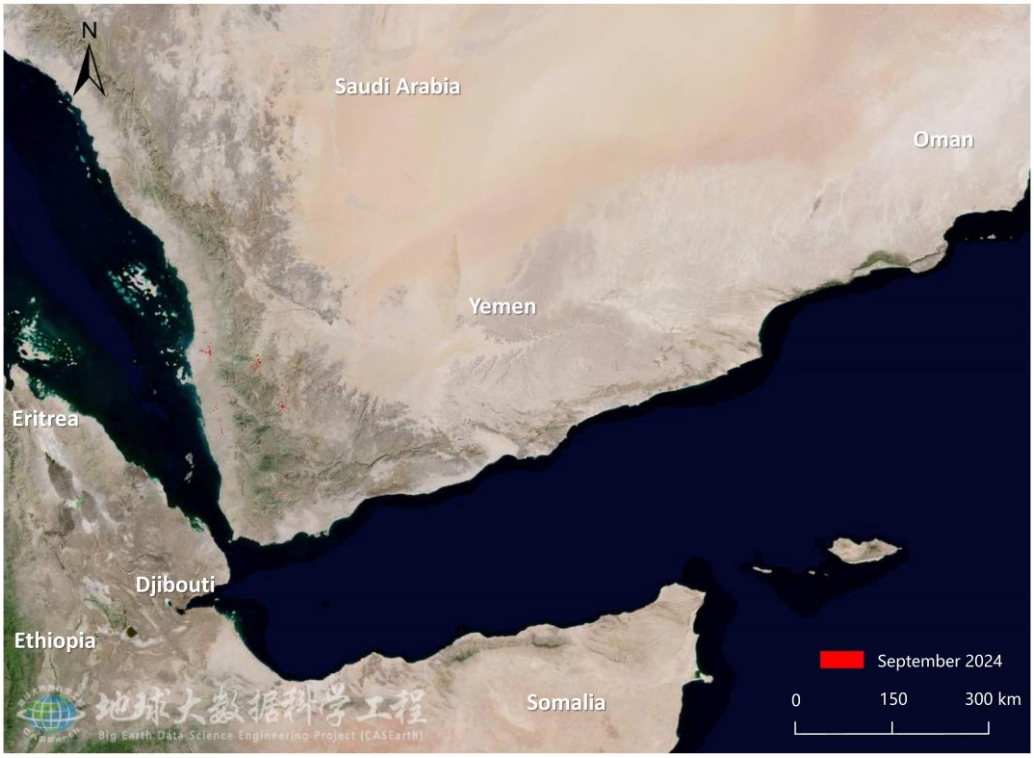

Fig.3 Monitoring of Desert Locust damage in Yemen (September 2024)

The comprehensive analysis suggests that, in the next two months, rainfall in the Gulf of Aden coastal areas will decrease. This will lead to drier vegetation, creating conditions unsuitable for locust survival and reproduction. Consequently, locusts in Somalia are likely to migrate towards the northwestern inland areas. In contrast, increased rainfall in the Red Sea coastal areas will favor desert locust egg-laying and reproduction, prompting locusts in inland Yemen migrating towards the western coastal areas. Continuous monitoring of desert locust dynamics in Eritrea, Saudi Arabia, and Yemen is essential to prevent repeated losses in crop growth and agricultural 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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