



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

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Desert Locust Monitoring and Loss Assessment in Ethiopia, Iran, and Pakistan

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 Ethiopia, Iran, and Pakistan. The remote sensing monitoring results showed that, from March to early May 2022, desert locusts in Ethiopia were mainly distributed in the southern Oromia state. The total damaged vegetation area in March and April was 36.8 thousand hectares, including 2.0 thousand hectares of cropland, 4.5 thousand hectares of grassland, and 30.3 thousand hectares of shrub. Desert locusts in Iran were mainly distributed along the southern coast of Sistan Va Baluchestan province. The total damaged vegetation area in April was 280.64 hectares (including 122.24 hectares of cropland, 67.52 hectares of grassland, and 90.88 hectares of shrub). Desert locusts in Pakistan were mainly distributed along the southern coast of Baluchistan, and the total damaged vegetation area in April was 65.60 hectares (including 2.04 hectares of cropland, 27.36 hectares of grassland, and 36.20 hectares of shrub). By mid-June, locusts from the Oromia region will migrate and breed in the eastern part of Somali region. In Iran and Pakistan, the dry weather conditions will limit locust reproduction. June and July will be the important planting and growing seasons for most crops in Ethiopia and Pakistan, and the important growing and harvest seasons for most crops in

Iran. It is still necessary to pay attention to the dynamics of the desert locust to prevent repeated losses to its agricultural and pasture production. The research results are as follows.

1. Desert Locust Monitoring and Loss Assessment in Ethiopia

In March 2022, desert locust in Ethiopia harmed about a total of 17.0 thousand hectares of vegetation area, including 0.7 thousand hectares of cropland, 1.8 thousand hectares of grassland, and 14.5 thousand hectares of shrub (Figure 1). From April to early May, affected by precipitation in the Rift Valley region of Oromia state, the locusts spread westward, lay eggs, and reproduce. The monitoring results show that, compared with March, the newly added vegetation damage area in April was 19.8 thousand hectares, including 1.3 thousand hectares of cropland, 2.7 thousand hectares of grassland, and 15.8 thousand hectares of shrub (Figure 2). Comprehensive analysis shows that, by mid-June 2022, locusts from the Oromia region will migrate to the eastern part of the Somali region and continue to lay eggs and breed to maturity. June and July will be the important planting and growing seasons for most crops in Ethiopia. It is still necessary to pay attention to the dynamics of the desert locust disasters and carry out timely ground investigations and control actions, preventing the desert locusts from repeatedly causing damage to Ethiopia's agricultural production and food security.

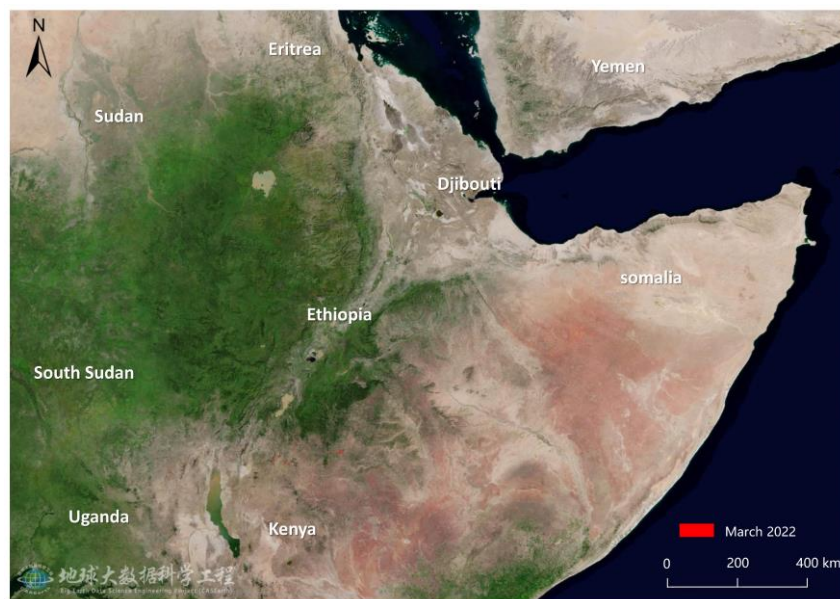


Fig. 1 Monitoring of Desert Locust damage in Ethiopia (March 2022)

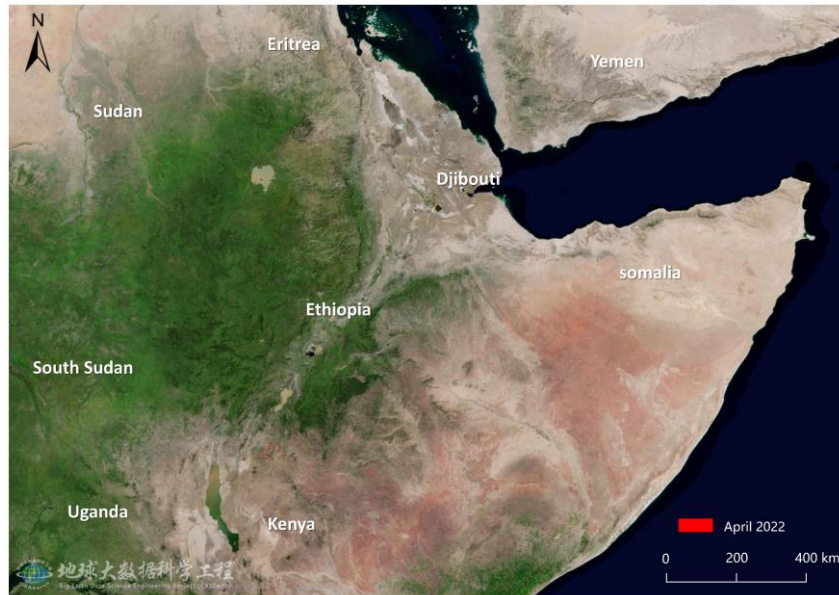


Fig. 2 Monitoring of Desert Locust damage in Ethiopia (April 2022)

2. Desert Locust Monitoring and Loss Assessment in Iran

From April to early May 2022, there were a small number of solitary adults and hoppers near Chabahar and Zarabad along the southern coast of Sistan Va Baluchestan Province, Iran. The monitoring results show that in April, desert locust in Iran harmed about a total of 280.64 hectares of vegetation area, including 122.24 hectares of cropland, 67.52 hectares of grassland, and 90.88 hectares of shrub. Among them, the damaged area near Chabahar was 190.52 hectares (including 56.88 hectares of cropland, 54.48 hectares of grassland, and 79.16 hectares of shrub) (Figure 3), and the damaged area near Zarabad was 90.12 hectares (including 65.36 hectares of cropland, 13.04 hectares of grassland, and 11.72 hectares of shrub) (Figure 4). Comprehensive analysis shows that, the dry meteorological conditions in June 2022 will limit locust reproduction. June and July will be the important growing and harvest seasons for most crops in Iran. It is necessary to pay attention to the dynamics of the desert locust, preventing them from causing repeated damage to Iran's agricultural production and food security.

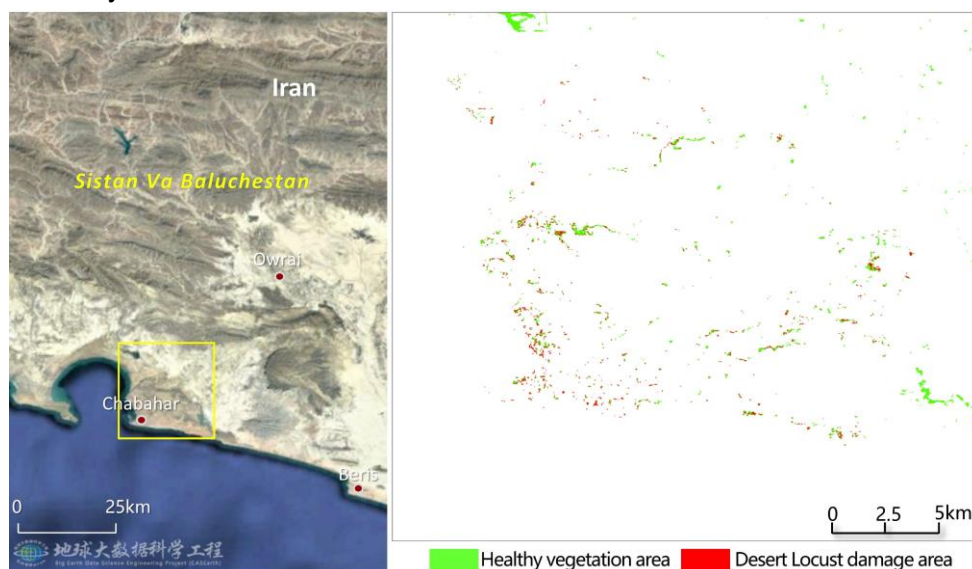


Fig. 3 Monitoring of Desert Locust damage near Chabahar, Iran (April 2022)

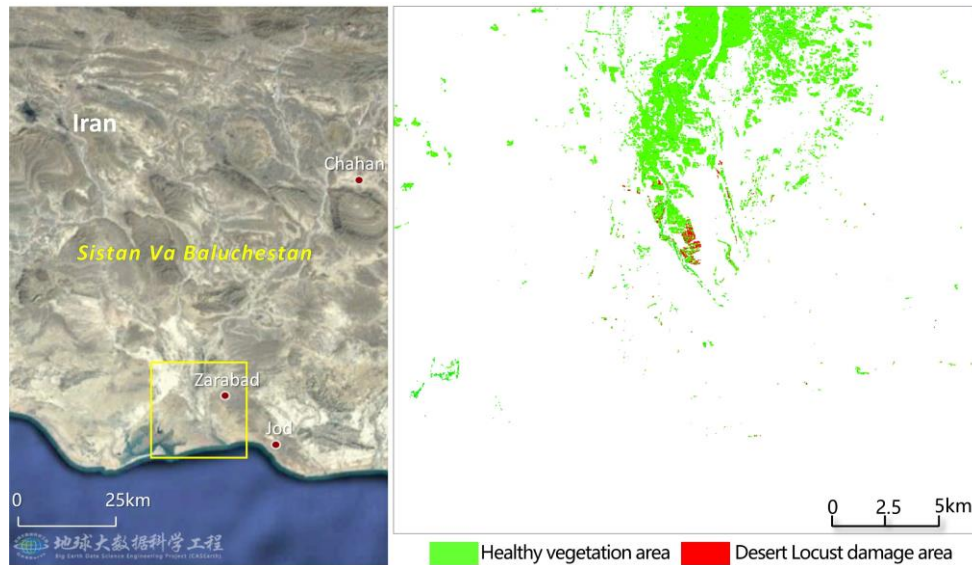


Fig. 4 Monitoring of Desert Locust damage near Zarabad, Iran (April 2022)

3. Desert Locust Monitoring and Loss Assessment in Pakistan

From April to early May 2022, there were a small number of solitary adults and hoppers near Jiwani along the southern coast of Baluchistan, Pakistan. The monitoring results show that in April, desert locust in Pakistan harmed about a total of 65.60 hectares of vegetation area, including 2.04 hectares of cropland, 27.36 hectares of grassland, and 36.20 hectares of shrub (Figure 5). Comprehensive analysis shows that, the dry meteorological conditions in June 2022 will limit locust reproduction. But June and July will be the important planting and growing seasons for most crops in Pakistan. It is necessary to pay continuous attention to the dynamics of the desert locust, preventing them from causing repeated damage to Pakistan's agricultural production and food security.

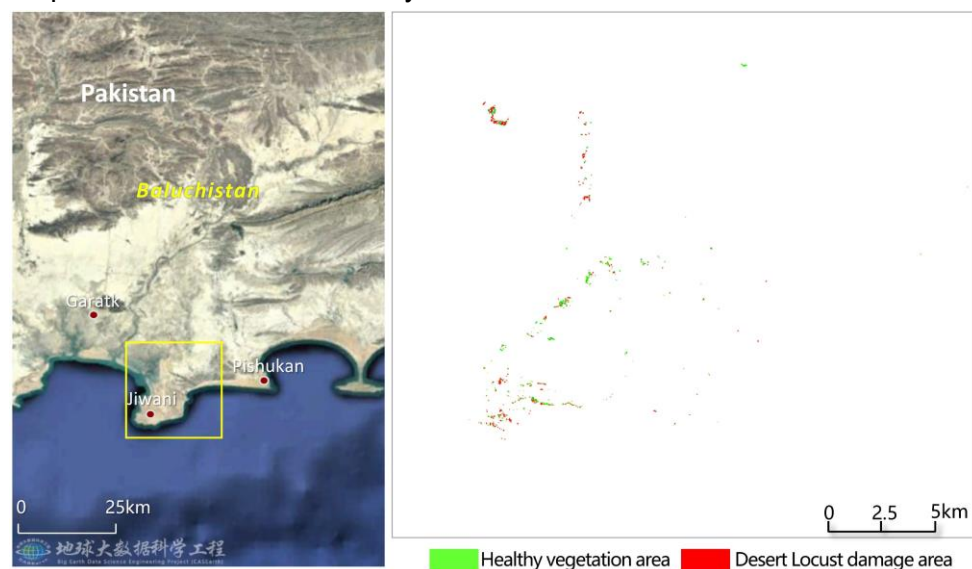


Fig. 5 Monitoring of Desert Locust damage near Jiwani, Pakistan (April 2022)

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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