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

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

Integrated with multi-source Earth Observation data, e.g. meteorological data, field data, and remote sensing data (such as MODIS in the US, and 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 dynamics of desert locust monitoring and loss assessment in Yemen, Ethiopia, and Pakistan. The remote sensing monitoring results showed that, the desert locusts were mainly distributed in western Yemen, eastern Ethiopia, and southeastern Pakistan. In July 2022, the total damaged vegetation areas in Yemen, Ethiopia, and Pakistan were 57100, 80700, and 2347.92 hectares, respectively. It is expected that from late August to September, affected by rainfall, locusts will continue to lay eggs and reproduce in inland areas of Yemen and northeastern Ethiopia, resulting in a further increase in the population of locusts; affected by the monsoon, most of the locusts in southeastern Pakistan will spread eastward to western India, resulting in an increase of locust population in India. This period is important growing and harvest seasons for crops in Yemen and Pakistan, and the main growing season for crops in Ethiopia. It is still necessary to pay continuous attention to the dynamics of the desert locust disaster to prevent repeated losses to its agricultural and pasture production. The specific research results are as follows.

■ 1. Desert Locust Monitoring and Loss Assessment in Yemen

In July 2022, affected by rainfall, locusts in western Yemen continued to lay eggs,

reproduce and mature, resulting in an increase of locust population. The vegetation damage area was 57.1 thousand hectares, including 10.1 thousand hectares of cropland, 5.7 thousand hectares of grassland, and 41.3 thousand hectares of shrub (Figure 1). The comprehensive analysis shows that it is expected that from late August to September, affected by rainfall, locusts in western Yemen will continue to lay eggs, reproduce and mature, resulting in a further increase in the number of locusts. This period is important growing and harvest seasons for crops in Yemen. It is still necessary to pay continuous attention to the dynamics of the desert locust disasters, and carry out timely ground investigations and control actions to prevent the desert locusts from repeatedly causing damage to Yemen's agricultural production and food security.

Fig. 1 Monitoring of Desert Locust damage in Yemen (July 2022)

■ 2. Desert Locust Monitoring and Loss Assessment in Ethiopia

In July 2022, locusts in Ethiopia were mainly found in Somali and Afar. The vegetation damage area was 80.7 thousand hectares, including 5.4 thousand hectares of cropland, 20.3 thousand hectares of grassland, and 55.0 thousand hectares of shrub (Figure 2). The comprehensive analysis shows that from late August to September, the eastern Afar state will be affected by rainfall, and the locusts will continue to lay eggs, reproduce and mature, resulting in an increase in the population of locusts. This period is the main growing season for crops in Ethiopia. It is still necessary to pay continuous attention to the dynamics of the desert locust disasters, and carry out timely ground investigations and control actions to prevent the desert locusts from repeatedly causing damage to Ethiopia's agricultural production and food security.

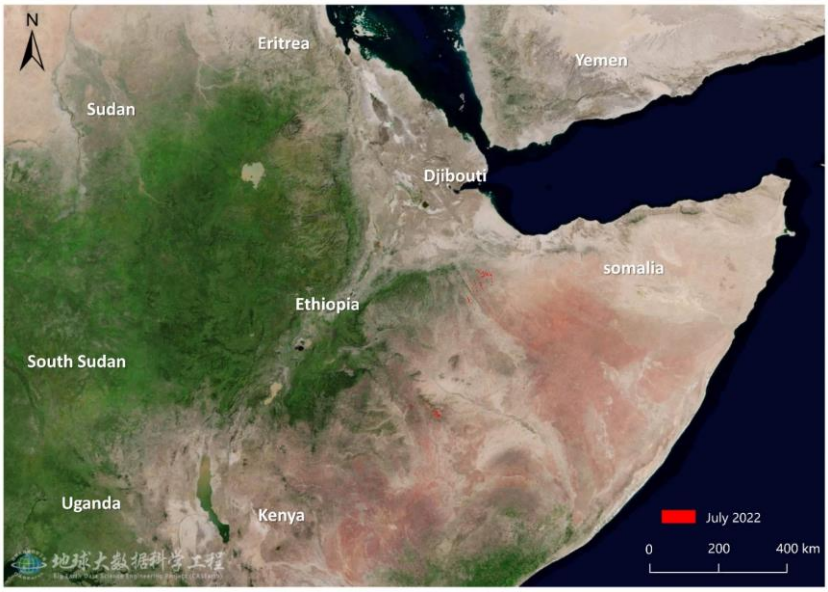

Fig. 2 Monitoring of Desert Locust damage in Ethiopia (July 2022)

■ 3. Desert Locust Monitoring and Loss Assessment in Pakistan

In July 2022, locusts in Pakistan were mainly distributed in the southeast, with damaged vegetation of 2347.92 hectares, including 1658.16 hectares of cropland, 534.24 hectares of grassland, and 155.52 hectares of shrub (Figure 3). The comprehensive analysis shows that from late August to September, local locusts in Pakistan will continue to lay eggs and breed, and the population of locusts will further increase. At the same time, affected by the monsoon, most locusts in southeastern Pakistan will spread eastward to India, resulting in the increase of locusts in India. This period is important growing and harvest seasons for crops in Pakistan, and continuous monitoring of locust dynamics is needed to ensure agricultural production and food security in Pakistan.

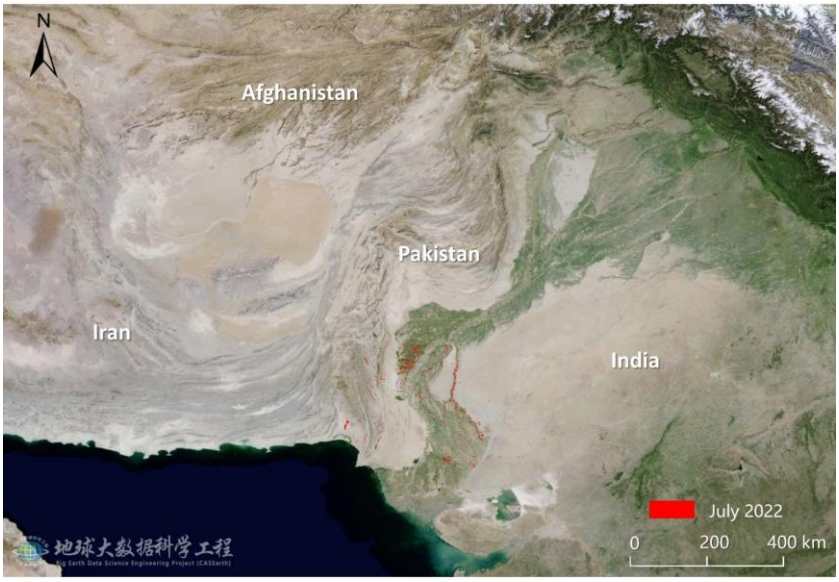

Fig. 3 Monitoring of Desert Locust damage in southeastern Pakistan (July 2022)

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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