



# Emergency Investigation and Assessment 2022 Pakistan Flood

## Investigation Briefing

China-Pakistan Joint Research  
Centre on Earth Sciences

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### RS Monitoring and Analysis of the 2022 Flood Impact on Agriculture in Pakistan

By utilizing the satellite data from European Space Agency (ESA) Sentinel series, US GPM-GSMAP and China GF with meteorological observation, field survey and flood monitoring and prediction model, the China-Pakistan Joint Research Center on Earth Sciences has made continuous efforts to the monitoring of agricultural losses in the 2022 Pakistan flood.

The precipitation monitoring showed that rainfall in September decreased significantly and most regions of the country did not rain (**Figure 1**). The sharp decrease in precipitation prevented the flooded area from further increasing. In addition, there is no indication of intensity rainfall in October, which is favorable for starting post-disaster reconstruction.

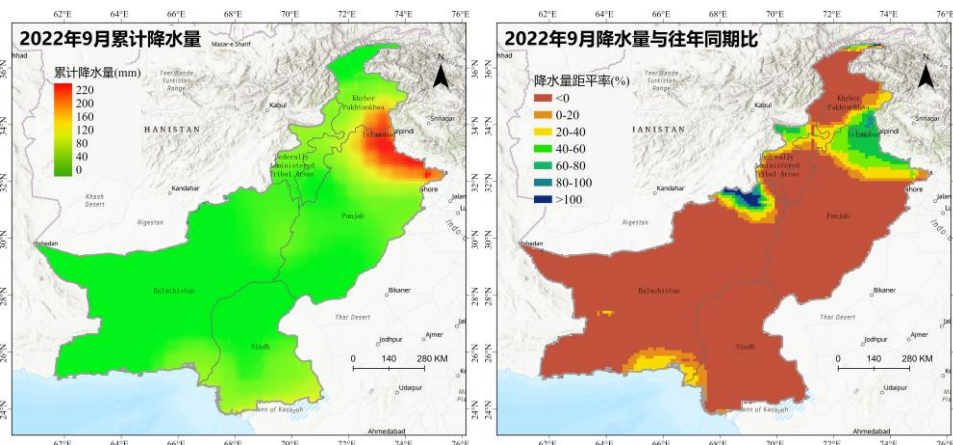
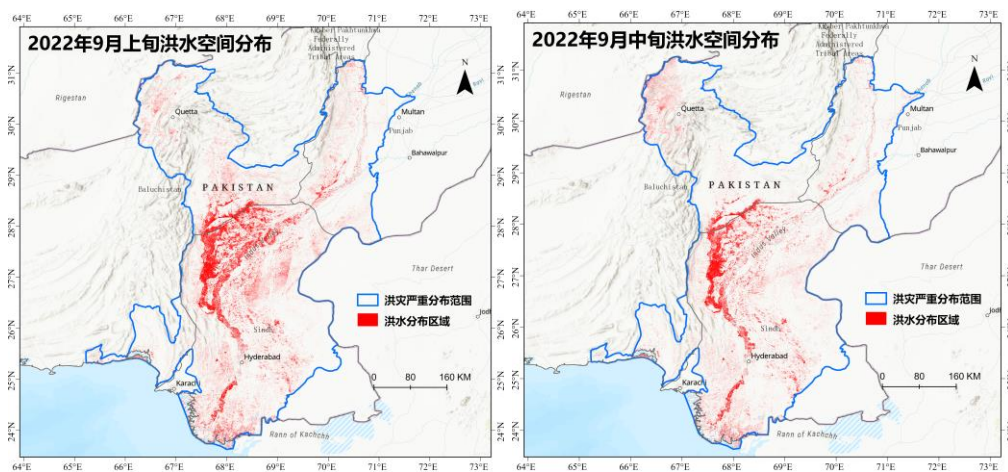


Figure 1 Spatial distribution of cumulative precipitation and anomaly rate in Sept.2022

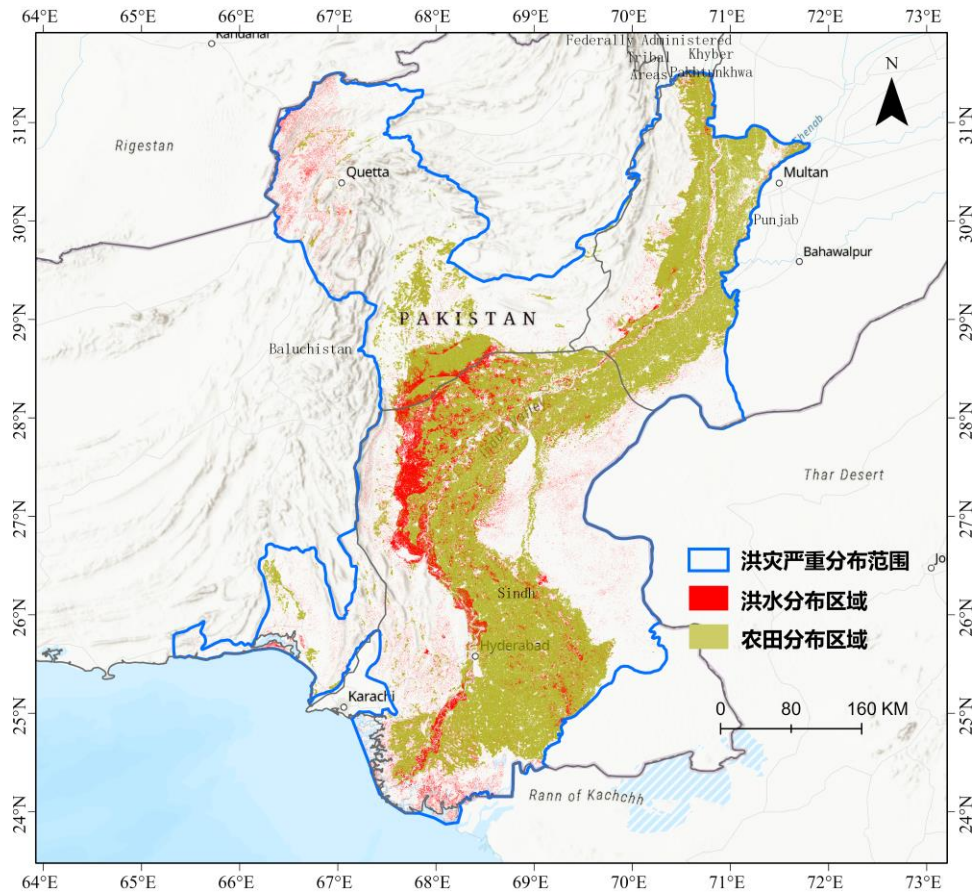
From June to early September 2022, the inundation area reached 42,000 km<sup>2</sup> due to heavy rainfall. The most severely-affected area was 23,000 km<sup>2</sup>, mainly in the southern Punjab, connection area of Balochistan and northern Sindh, northwest and southern Sindh. Due to the reduced rainfall in September, the flooded area starting to reduce. By mid-September, the flooded area was 32,000 km<sup>2</sup>, with the most severely-affected area reduced to 16,000 km<sup>2</sup>. Compared with early September, the flood in mid-September showed a receding trend. The inundated area of the whole country was reduced by about 23.8%, and the key flood-affected area was reduced by 30.4% (**Figure 2**), especially in the northern Sindh province and the Indus River basin.



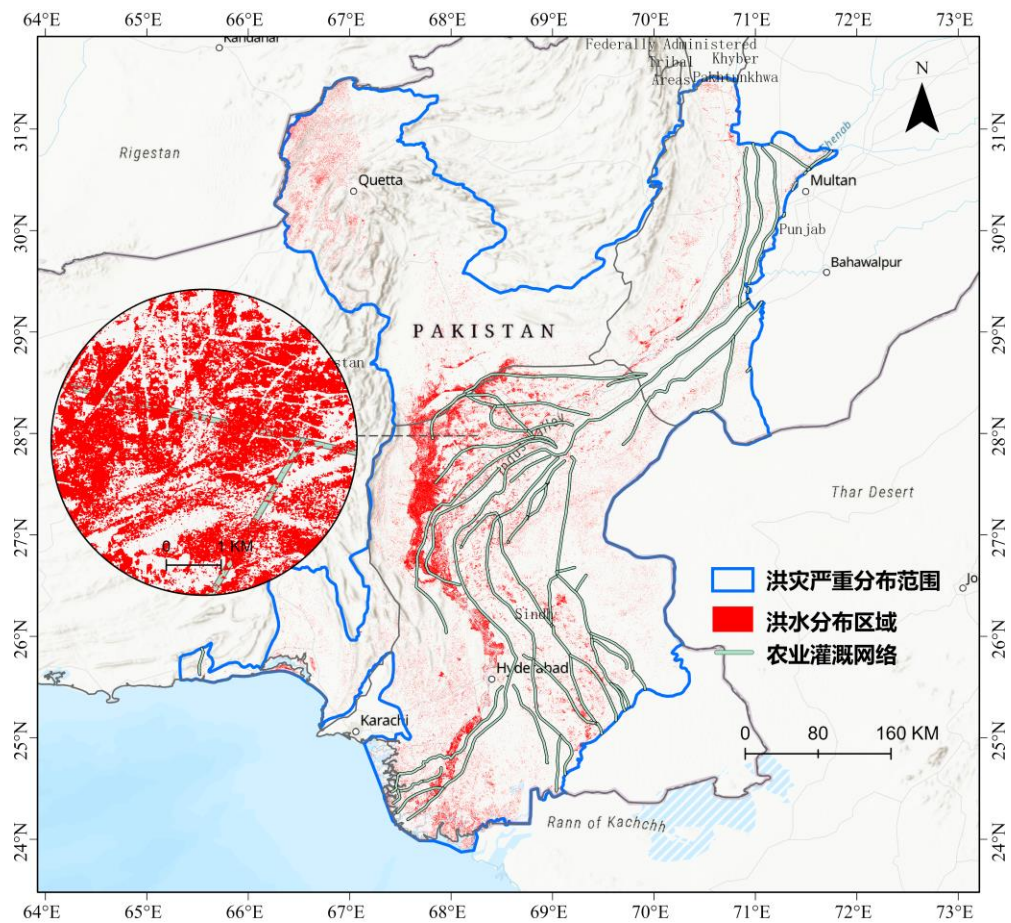
*Figure 2 Spatial distribution of most flood-affected areas in early and mid-September 2022*

According to the monitoring of farmland and agricultural facilities in the middle of September, the total damage area caused by floods in Pakistan was 0.73 million km<sup>2</sup>. **Figure 3** shows that 97.2% of the inundated farmland of the whole country farmlands was in Sindh, Baluchistan and Punjab provinces, which accounted for 75.5%, 10.9% and 10.8%, respectively. The key affected inundated farmland areas in the three provinces accounted for 89% of Pakistan's total inundated farmland area. In addition, the agricultural irrigation network was greatly affected by floods, especially the agricultural irrigation network distributed in key flood-affected areas, whose inundated area accounted for about 83.4% of the national agricultural irrigation network affected (**Figure 4**). Therefore, it is suggested that prevention measures to the major threats of national food crisis must be immediately initiated, because the large area of farmland been flooded and the impact to the agricultural facilities and irrigation network will result in

a huge reduction to crop yield and sowing, subsequently long term recovery of farming production process.



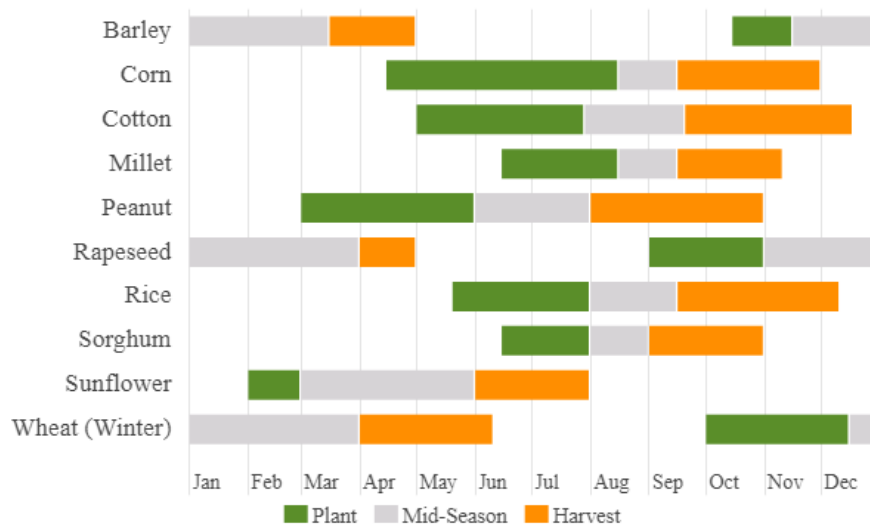
**Figure 3** Distribution of inundated agricultural land in Pakistan in mid-September 2022



**Figure 4** Distribution of flooded irrigation network in Pakistan in mid-September 2022

As the flood is receding, we recommend restoring the irrigation and drainage facilities to accelerate the flood discharge process at the best effort possible. At the same time, plant crops immediately on available farmland to reduce the impact on agriculture and prevent national food crises. According to the USDA crop planting calendar for the Pakistan region (**Figure 5**), it is recommended to planting rapeseed asap to reduce the subsequent impact to the wheat and barley planting season.

**Pakistan – Crop Calendar**



*Figure 5 Crop planting calendar in Pakistan (Data from : [https://ipad.fas.usda.gov/rssiws/al/crop\\_calendar/sasia.aspx](https://ipad.fas.usda.gov/rssiws/al/crop_calendar/sasia.aspx) )*

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