

Monsoon 2022 floods and its impacts on agriculture land using geospatial approaches: a case study of Khyber Pakhtunkhwa, Pakistan

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Pakistan is among the most vulnerable countries facing severe episodes of climate change-induced hydro-climatic extremes, including heatwaves, floods and droughts. These extreme events have significant implications on agriculture, soil health, groundwater and socioeconomic conditions. In 2022, Pakistan has experienced a biggest natural disaster in its history explained by a series of hydrometeorological anomalies. First extreme heatwave during May followed by a devastating flood disaster during August 2022. Such natural hazards have hampered national socioeconomic conditions. Floods affect the whole province of Khyber Pakhtunkhwa (KP) Pakistan; however, nine districts in the province were severely affected by the Monsoon-2022 Flood. In southern districts (especially DI Khan and Tank) were severely affected by the floods. In northern districts Swat, Dir Lower, Dir Upper and some areas of District Chitral were affected. In central parts of the province, District Nowshera, Charsadda and Peshawar were affected by the recent flood. Field data were collected and imported to geospatial format for further analysis and the damages were physically verified. The results disclosed that in DI Khan region, recent monsoon spell damaged 1377.544 km² crop area. While 270.146935 km² cropped area fully damaged or partially damaged in district Tank region. In Peshawar region, the crop lands in Charsadda were severely damaged where the sugarcane and maize crops were affected. In Charsadda, Nowshera and Peshawar 117.555 km², 467.745 Km² and 30.081 km² area was damaged, respectively. In Malakand region, Swat was much affected by the current spell of Monsoon damaging 122. Km² area. Similarly, 63.603 km² area of Dir Lower, 15.147 km² of Dir Upper and 575.678 km² agricultural land of Chitral were hit by the flood 2022.

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