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## Extreme and compounding events in Pakistan

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Globally, climate change is a vital issue which exacerbates many severe consequences and causes the increasing frequency and severity of extreme weather events. Extreme climatic events, such as flash flooding, heatwaves, and droughts, pose severe impacts on societies and ecosystems, due to their large spatial coverage and high intensity. These extreme climatic events often occur simultaneously or sequentially as so-called compound events (CEs), causing high economic and societal losses as compared to the losses due to individual climatic extreme events. In the last two decades, Pakistan was ranked among the top ten countries which are most vulnerable to climate change and disasters, such as intense flooding, extreme heat, and droughts, among others. This paper presents case studies of extreme and compounding events in the last two decades with severe devastating impacts on people, infrastructure, and ecosystems. Specifically, two worst-case studies have been focused such as a flood in 2010 followed by a drought and a flood in 2022 followed by the heatwave. The post-disaster analysis shows that major part of the country was severely affected by these two CEs as a result of damaging the standing crops, destroying land, and causing displacement of millions of people along with losses and damages in fatalities and monetary terms. Therefore, this study is very vital for decision-making authorities to perceive the expected risk for human life, environment, and infrastructure in the future. So that pre and post-disaster mitigation policies and strategies could be formulated at local and national levels. The paper concludes with a discussion of the implications for CE adaptation in Pakistan. Key recommendations are provided to mitigate the impacts of future CEs.