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Application of SWAT-MODFLOW Model to Understand How Groundwater Recharge in Sabarmati River Basin is Affected by Extreme Climate Events.

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The interrelation between ground water and surface water has a serious consequence on water management. Groundwater level depletion gradually occurs in high water stress areas when there is groundwater extraction. Here we study the spatial and temporal patterns of surface water and groundwater flow in the Sabarmati Basin. We analyze the effect of groundwater pumping for irrigation purposes on the depletion of groundwater. We also assess the influence of drought and flooding on groundwater recharge in the basin, by modelling the basin in SWAT-MODFLOW for a period of 1901 to 2019. Our results show that the groundwater recharge in Sabarmati basin, which is a part of semi-arid region of India, is significantly affected by hydrological extremes (floods and droughts) during the monsoon (June – September). The insights of our research will help to overcome the grand challenge of water management in a changing climate scenario.