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Environmental burdens of groundwater extraction for irrigation over an agricultural land in Northwest China

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Crop production in North China largely depends on irrigation, which is mainly from groundwater in Northwest China. Groundwater abstractions are decreasing the groundwater levels, and threatening the fragile ecological systems of arid regions. Here, we examine the dynamic relations between groundwater level and irrigation water for the last three decades in Heihe River basin in China. The average groundwater decline level, attributed to the irrigation water consumption for the farmland area over the past three decades, was calculated. Moreover, the future possible changes are estimated with different RCP scenarios. Effective water-saving measures and strategies are expected to adopt to maintain both groundwater levels and agricultural productivity for the coming decades.