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Intensification of groundwater use in the Mediterranean region observed at different scales.

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Over the last three decades an agricultural transformation has been taking place in many countries of the Mediterranean region. In semi-arid and arid basins this intensification of agricultural practices relies heavily on irrigation from groundwater resources. Here we used a combination of satellite data, observed at different spatial and temporal scales, to constrain the evolution of groundwater resources in heavily impacted regions. Data from the GRACE satellites provided a decade of observations in changes of terrestrial water storage. This information was complemented with other remotely sensed data that offered a longer archive and a higher spatial resolution. In-situ datasets from selected regions, such as the Tensift Basin in Morocco, offered an insight into some of the local water resource issues, as well as the agricultural and socio-economical drivers. This multi-scale and multi-source data reveals both the magnitude and extent of hydrological changes taking place in the Mediterranean region.