

Groundwater resources assessment based on satellite GRACE and hydrogeology in Western Australia

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Abstract Groundwater resources assessment in Western Australia has been made by using satellite GRACE (Gravity Recovery and Climate Experiment) and *in situ* hydrological, meteorological and hydrogeological data. Changes in land water storage analysed by satellite GRACE showed the decreasing trends at both northern Western Australia and southern Western Australia during 2002–2008, even though the values of precipitation minus evaporation remain the same. This is attributed to the depletion of groundwater storage which is confirmed by *in situ* data with the decrease in groundwater level. The degree of depletion of groundwater storage depends on the hydrogeology, which has higher permeability with higher depletion in northern Western Australia and lower permeability with lower depletion in southern Western Australia.

Key words satellite GRACE; hydrogeology; Western Australia; groundwater assessment