

Assessment of the groundwater flow system and water mixing processes in the Pantanal wetland, Brazil

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Abstract The mixing of surface water and groundwater in the southern part of the Pantanal wetland, Brazil, was examined by both field investigations and numerical modelling. Field surveys were conducted in April 2002 during the wet season, and in August 2001 and August 2002 during the dry season. Surface water and groundwater levels were determined by measurements of the land surface altitude, river and lake stages, and depth to groundwater in four observation wells. The groundwater flow system in each season was delineated using MODFLOW, a 3-D finite difference groundwater flow code. Mixing between surface water and groundwater, having different qualities, was simulated for each season using the MT3DMS transport code. Important findings are that the groundwater flow system and water mixing processes are strongly influenced by the presence of the paleo-river channel and saline deep groundwater.

Key words Pantanal wetland; groundwater flow system; mixing processes; dry and wet season