

Impact of the 2009 exceptional flood on the flood plain of the Solimões River

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Abstract This work provides a detailed analysis of the impact of the exceptional flood of the hydrological year 2008–2009 on the daily water balance of an Amazonian flood plain. Our approach is based on *in situ* data and a modelling approach. Three consecutive years were studied for a better understanding of inter-annual variations and the impact of exceptional flood in terms of flow of water exchanged with the river, stored volume and retention time. Each year, the flood plain begins to flood in early November, the period of high water falls in June and the descent of the water begins in July. During normal water-years, we have demonstrated that runoff from the local watershed contributes significantly to the mixture of lake water, constituting more than half of the total water intake until May, the period when river begins to overflow. However, during the exceptional flood of the Amazon overbank flow started about 2 months earlier and the residence time of water was divided by a factor of 2, with an average of a month.

Key words flood plain hydrology; Amazon River; modelling; 2009 exceptional flood