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The Origins of Tonle Sap Lake Floods — A Water Balance Study

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Tonle Sap Lake is the largest fresh water body in Southeast Asia. The lake and its floodplains are an integral part of the Mekong River system. The lake operates as a natural flood water reservoir for the lower Mekong Basin, offering flood protection and assuring the dry season flow to the Mekong Delta. Tonle Sap system's high productivity depends on the flood pulse from the Mekong which transfers terrestrial primary products into the aquatic phase during flooding. Livelihoods of people living in and around the Tonle Sap are strongly dependent on the lake's natural resources. However, the origin of flood water, i.e. the water balance, of the Tonle Sap system is not well understood due to its complex hydrology, and the limited amount and quality of hydrological data. This paper presents the recent study of the water balance of the Tonle Sap Lake based on extensive analysis of available data and basic water balance model applied to the system. Mekong is facing rapidly increasing development activities such as irrigation and construction of hydropower dams. The water balance calculations aim to better understand the present status of the lake's hydrology in order to facilitate the impact assessment of possible flow regime changes due to upstream development in the Mekong and in the lake's own tributaries. The results of the water balance study are further used as boundary conditions for EIA 3D hydrodynamic and water quality model applied for the Tonle Sap system.