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**Proof****CONTROL ID:** 1258318**TITLE:** Characterization of terrestrial water dynamics in the Congo Basin using GRACE and satellite radar altimetry**PRESENTATION TYPE:** Assigned by Committee**CURRENT CATEGORY:** Surface Water Storage**AUTHORS (FIRST NAME, LAST NAME):** Hyongki Lee<sup>1</sup>, R. Edward Beighley<sup>2</sup>, Douglas Alsdorf<sup>3</sup>, Hahn Chul Jung<sup>4</sup>, C. k. Shum<sup>3</sup>, Jianbin Duan<sup>3</sup>, Junyi Guo<sup>3</sup>, Dai Yamazaki<sup>5</sup>, Konstantinos Andreadis<sup>6</sup>**INSTITUTIONS (ALL):** 1. University of Houston, Houston, TX, United States.

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**ABSTRACT BODY:** The Congo Basin is the world's third largest in size (~3.7 million km<sup>2</sup>), and second only to the Amazon River in discharge (~40,200 cms annual average). However, the hydrological dynamics of seasonally flooded wetlands and floodplains remains poorly quantified. Here, we separate the Congo wetland into four 3° × 3° regions, and use remote sensing measurements (i.e., GRACE, satellite radar altimeter, GPCP, JERS-1, SRTM, and MODIS) to estimate the amounts of water filling and draining from the Congo wetland, and to determine the source of the water. We find that the amount of water annually filling and draining the Congo wetlands is 111 km<sup>3</sup>, which is about one-third the size of the water volumes found on the mainstem Amazon floodplain. Based on amplitude comparisons among the water volume changes and timing comparisons among their fluxes, we conclude that the local upland runoff is the main source of the Congo wetland water, not the fluvial process of river-floodplain water exchange as in the Amazon. Our hydraulic analysis using altimeter measurements also supports our conclusion by demonstrating that water surface elevations in the wetlands are consistently higher than the adjacent river water levels. Our research also highlights differences in the hydrology and hydrodynamics between the Congo wetland and the mainstem Amazon floodplain

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**Additional Details**

**Previously Presented Material:** Lee, H., et al., Characterization of terrestrial water dynamics in the Congo Basin using GRACE and satellite radar altimetry, Remote Sensing of Environment (2011), doi:10.1016/j.rse.2011.08.015, in press.