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Diffusion modeling of water flow in the Congo floodplains using geodetic and remote sensing measurements

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The Congo Basin is the third largest in size (~3.7 million km^2) and second only to Amazon in terms of discharge (~40, 200 m^{3}s^{-1} annual average). Hydrological flux in the Congo Basin is of great importance to local and global climate, biogeochemical cycling. Whether water in wetlands comes from upland runoff or fluvial exchange could make a difference in the sediment supplies, carbon and nutrient exchange. The remote location and vast size of the Congo Basin leaves remote sensing tool the only viable and effective tool to investigate its hydrology. In this study, we utilized water surface height from Envisat altimeter, precipitation from TRMM products and hill slope river routing (HRR) model derived upland runoff to estimate hydrological parameters including manning's coefficient *n* in 1-D diffusion model. Based on this 1-D diffusion model and multiple repeated Envisat altimetry measurements, we will quantify the temporal change in volume of water in Congo's floodplains received from and drained to its main stem along the Envisat ground passes.

Biography

Ting Yuan received the BS degree in Geomatics Engineering and MS degree in Geomatics and Geodesy both from Wuhan University, China in 2009 and 2011. She is now pursuing the PhD degree in Geo-sensing Engineering and Science at University of Houston. Her research includes SAR, InSAR and other remote sensing data processing for hydrologic applications.

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