ESTIMATING WATER/NUTRIENT RETENTION OF PAYMENT FOR WATER SERVICES PROGRAMS ON S. FLORIDA RANCHLANDS

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The Northern Everglades Payment for Environmental Services (NE-PES), a part of the SFWMD's Dispersed Water Management (DWM) program, commenced in 2011 as a multi-stakeholder solution to provide water retention and nutrient removal in the Northern Everglades Basin. In NE-PES water retention projects, water is held back on ranches by weirs kept at a predetermined height (service elevation) in culverts on major drainage ditches; the resulting back-flooding decreases grazing areas for which ranchers are compensated. Nutrient retention projects involved pumping water from regional canals into either reservoirs where nutrients were taken up by soil and growing vegetation, or into fallow fields to grow forage grasses that are then harvested for winter cattle use. This talk describes calculation methods and summarizes performance of these projects over the last 11 years. Water levels in the ditches are monitored at a 15-minute resolution. The amount of water retained annually on individual ranch basins was equated to the sum of rainfall (over the periods when the water level lay between baseline and service elevations) multiplied by basin area (acres) and divided by 12" to get volume in acre-ft. For 4 representative water retention projects over 2011-2021, we estimated an average annual storage above baseline at 1.47 acre-feet/acre. For the nutrient removal projects, a wetland flow-through project retained on average 75% of the phosphorus and 47% of the nitrogen pumped in or received via rainfall (2011-2021). The forage harvest project annually removed around 3200 lbs. of phosphorus and 15000 lbs. of nitrogen from 188 acres (2018-2021). These results point to the efficacy of such approaches, which would need to be scaled up to cover wider areas across the Northern Everglades watershed and monitored to effectively address downstream water quantity and quality issues.

PRESENTER BIO: Amartya Saha has worked with ecohydrology across South Florida since 2004, in the Everglades National Park (2004-2012), Loxahatchee National Wildlife Refuge (2012) and the Northern Everglades Basin (2016-present). Current areas of research include evapotranspiration estimation across different plant communities and plant-soil-nutrient-hydrology relations.