are so close to swamp water that 44-95% of it appears to be derived from swamp infiltration. The swamp contribution is on the order of 65–84% in the other two UFA samples away from the swamp (**Figure 2C, 2D**). The finding that much of the groundwater beneath the swamp consists of water that has passed through the swamp's surficial system directly refutes the notion of an impermeable separation. Instead, it confirms strong vertical connectivity: the swamp is actively recharging the Floridan Aquifer. Implementing the isotope mixing model using $\delta^{18}O$ results in more conservative estimates of swamp water contributions to UFA waters (0.60 ± 0.18) than when using $\delta^{2}H$ (0.82 ± 0.12). **Figure 2E** shows the estimated uncertainties in the computed swamp-water fractions. The symmetrical, concave-up shape of the curve indicates that the highest certainty in mixing fractions occurs when f_{swamp} and f_{UFA} are present in equal amounts. The triangular regions on the far left and right sides of the curve indicate areas where the uncertainty in the mixing fractions exceeds the value of the smaller fraction (with f_{UFA} on the left and f_{swamp} on the right) (Genereux 1998).

It is worth noting that the swamp water samples plot slightly to the right of the LMWL on a $\delta^{2}H$–$\delta^{18}O$ diagram (**Figure 2A**), consistent with evaporative enrichment. This is also shown in the LCE value of swamp (-42 ± 12) (**Figure 2C**). The groundwater beneath the swamp plots on a mixing line between the swamp water and the regional groundwaters, reinforcing the interpretation that it is a mixture of the two endmembers. We find no evidence of an isotopically distinct old groundwater component (i.e., LGM recharge expected to be lighter than Holocene after glacial-ocean correction and consistent with cooler recharge temperatures) in Floridan wells near the swamp; their δ-values are too heavy for ancient meteoric inputs and instead indicate modern, evaporatively enriched sources (Clark *et al* 1997). Thus, the stable isotope evidence indicates an active, relatively rapid exchange between the swamp and the aquifer in contemporary times.

As shown in **Figure 2F**, $\delta^{18}O$ values of deep wells (> 50 m) increase systematically toward the coast. Our data reproduce the isotopic enrichment pattern of the Upper Floridan Aquifer (UFA) first reported by (Clark *et al* 1997), but with nearly twice the slope: 1.1 ± 0.33 ‰ per 100 km, compared with their 0.6 ± 0.15 ‰ per 100 km. This steeper gradient indicates that evaporatively enriched water from the Okefenokee Swamp likely contributes to local recharge of the UFA, thereby amplifying the isotopic enrichment relative to the case of a fully disconnected system.