



¹⁵N-nitrogen retention in a Belgian tidal freshwater marsh

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We used the stable isotope ¹⁵N to directly quantify the temporal pattern of N retention and loss in a tidal freshwater marsh fringing the nutrient rich Scheldt river (Belgium). ¹⁵N-ammonium was line injected *in situ* into intact sediment underlying undisturbed vegetation in eight 0.64 m²plots. Duplicate plots were placed in areas colonised by each of the main marsh vegetation types (the common reed *Phragmites australis*, mixed herbs dominated by *Impatiens glandulifera* and *Epilobium hirsutum*, and willows (*Salix* sp.)), and in unvegetated creek banks. Both short- and long term patterns of N retention were determined by quantifying changes in ¹⁵N in dissolved ammonium and nitrate, above- and belowground biomass, and extractable and whole sediment pools over a 1 year period. 50-80% of the added ¹⁵N-ammonium was quickly (days) removed by tightly coupled nitrification-denitrification. 20-40% was incorporated into the sediment, where it remained for 1 yr. ¹⁵N incorporation into bacterial D-amino acids revealed that sediment microbial assimilation was due to bacteria. Once assimilated ¹⁵N was tightly recycled within the bacterial community. The temporal and spatial differences in marsh ¹⁵N retention will be discussed.