Figure S1: NO_2^- removal in samples from station 17-1 led to a sharp decrease in measured bulk nitrification rates, independently from the in situ light level and whether the incubation was performed under dark (i.e. night) or light (i.e. day) condition.
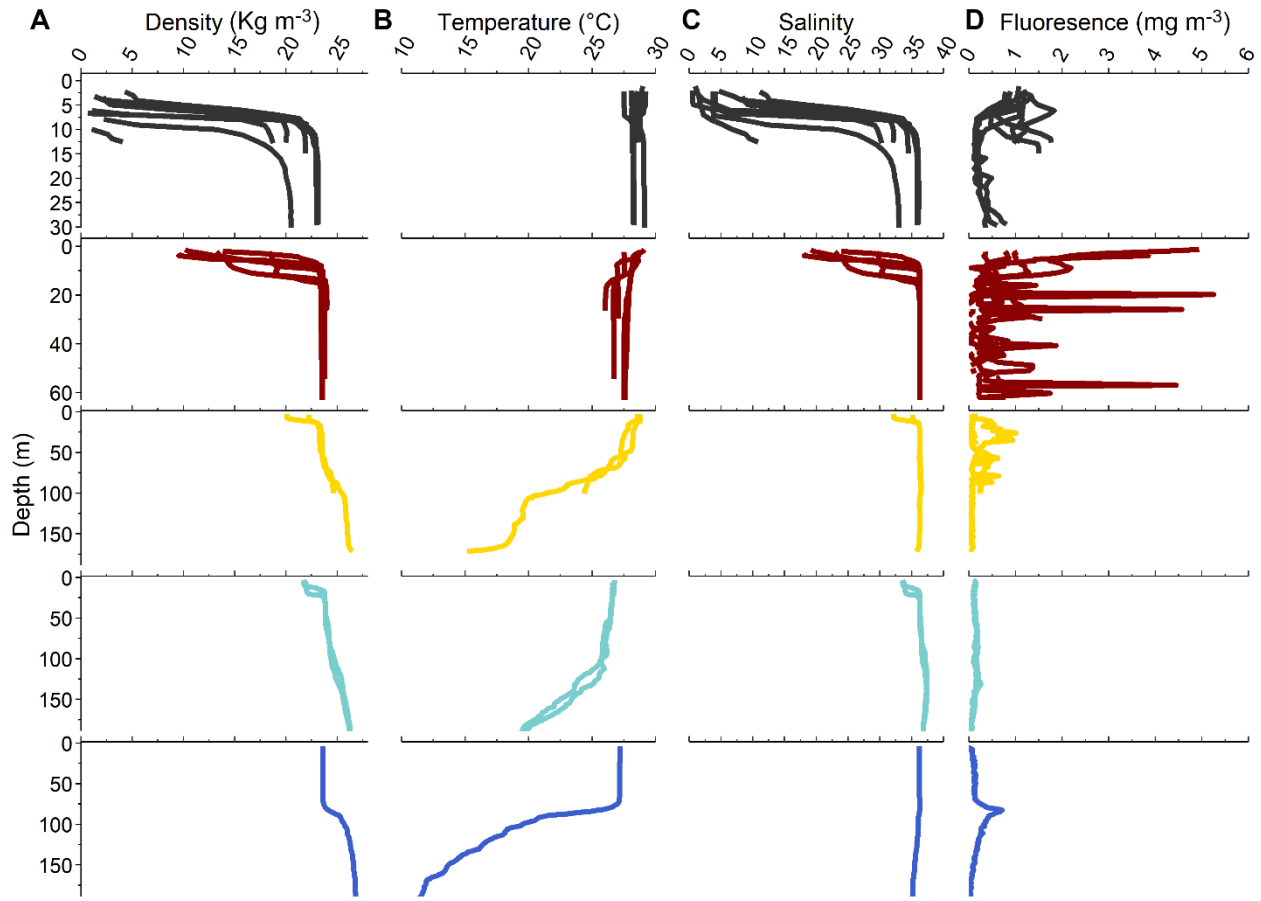
Figure S2: The diversity of different habitats along the plume is shown by the vertical profiles of (A) Density (sigma-theta, in kg m^{-3}), (B) Temperature (in °C), (C) Salinity and (D) fluorescence (in mg m^{-3}), at the RI (black), YPC (red), WPM (yellow), MOW (cyan) and OSW (blue) habitats. For simplification, only the first 30 to 200 m of the water column are presented here.
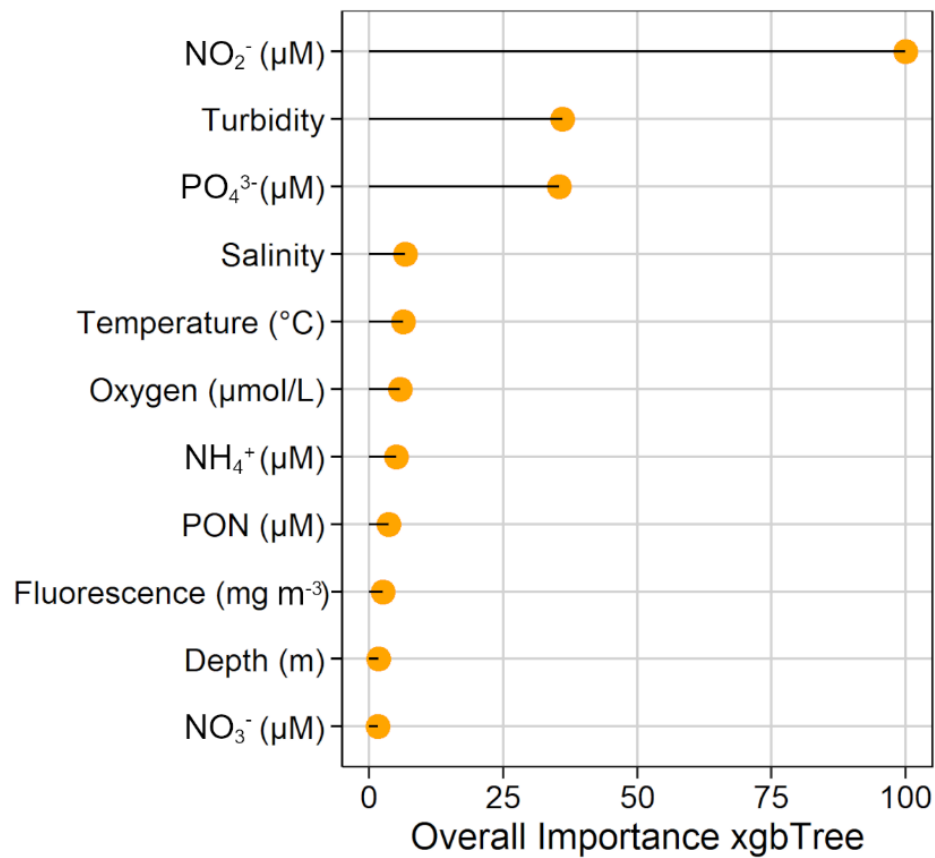
Figure S3: Ranking of variables obtained from the xgbTree model. Similarly to the one obtained via the Random Forest model (see Figure 4), the overall importance of each variable was determined by computing the relative influence of each variable on the error of all trees.
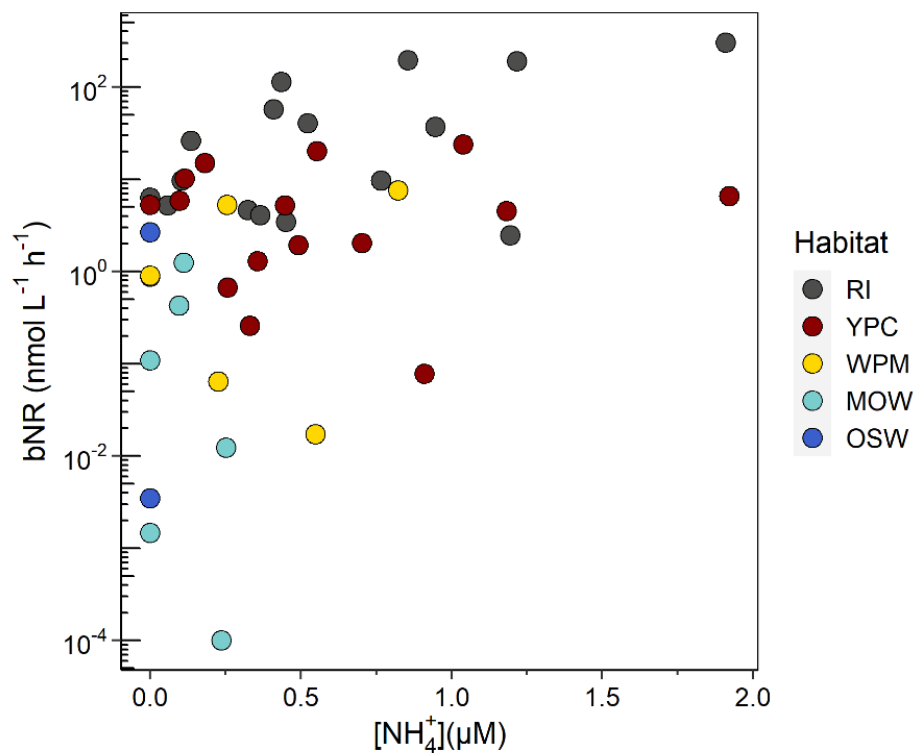
Figure S4: Nitrification rates versus NH_4^+ concentrations, at the different habitat encountered. The occurrence of rates differing by two to four orders of magnitude at a similar NH_4^+ concentrations, independently of the habitat, suggests that nitrifiers are not substrate limited in the Amazon River Plume, but that another process is at play.