

**Interannual variation in summer N₂O concentration in the hypoxic region
of the northern Gulf of Mexico, 1985–2007**

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- Supplementary Material -

Table S1. Summary of historical hurricane/storm events during July 1985–2007 in the nGOM (available at <http://csc.noaa.gov/hurricanes/>).

Cruise period		Hurricane/storm event
year	date	date
1985	July 15-20	July 21-26
1986	July 08-17	
1987	July 01-05	
1990	July 23-27	
1991	July 16-20	June 29-July 05
1992	July 24-28	
1993	July 24-29	
1994	July 24-29	June 30-July 07
1995	July 22-26	July 28-August 02
1996	July 23-27	
1997	July 23-27	
1998	July 21-25	
1999	July 24-29	July 02-03
2000	July 22-26	
2001	July 20-24	
2002	July 21-26	
2003	July 23-28	July 07-17
2004	July 21-26	
2005	July 24-29	July 03-18
2006	July 21-26	
2007	July 22-28	

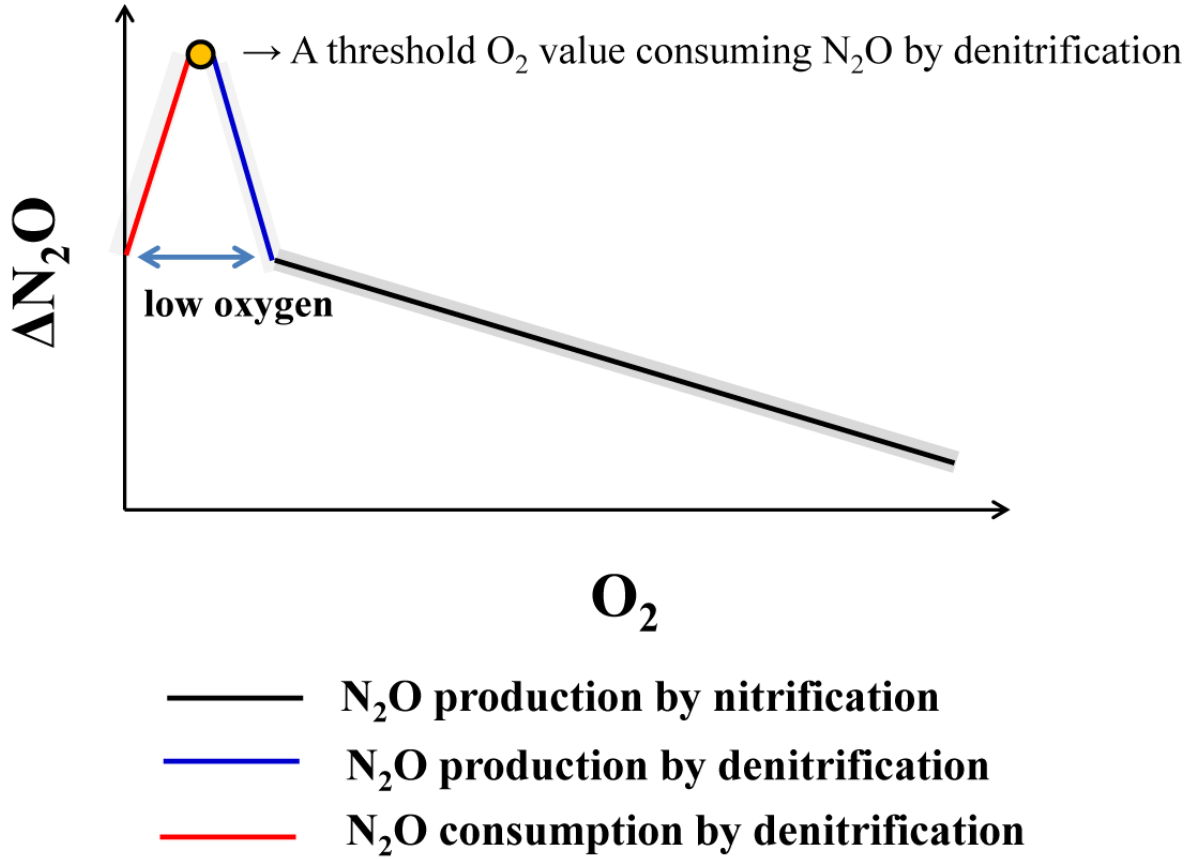


Figure S1. Conceptual illustration showing a tri-linear relationship between O_2 and ΔN_2O .

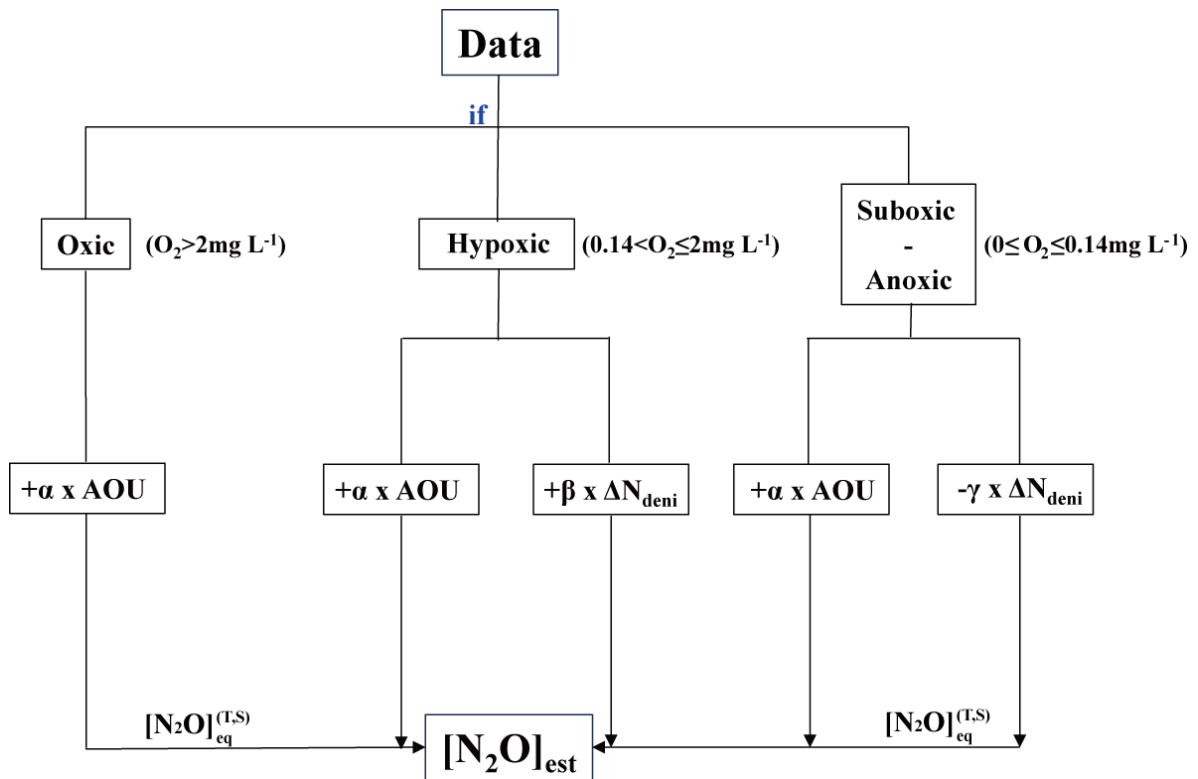


Figure S2. Schematic diagram showing the calculation of estimated bottom-water N_2O concentrations through a simple conceptual model based on N_2O production/consumption processes.

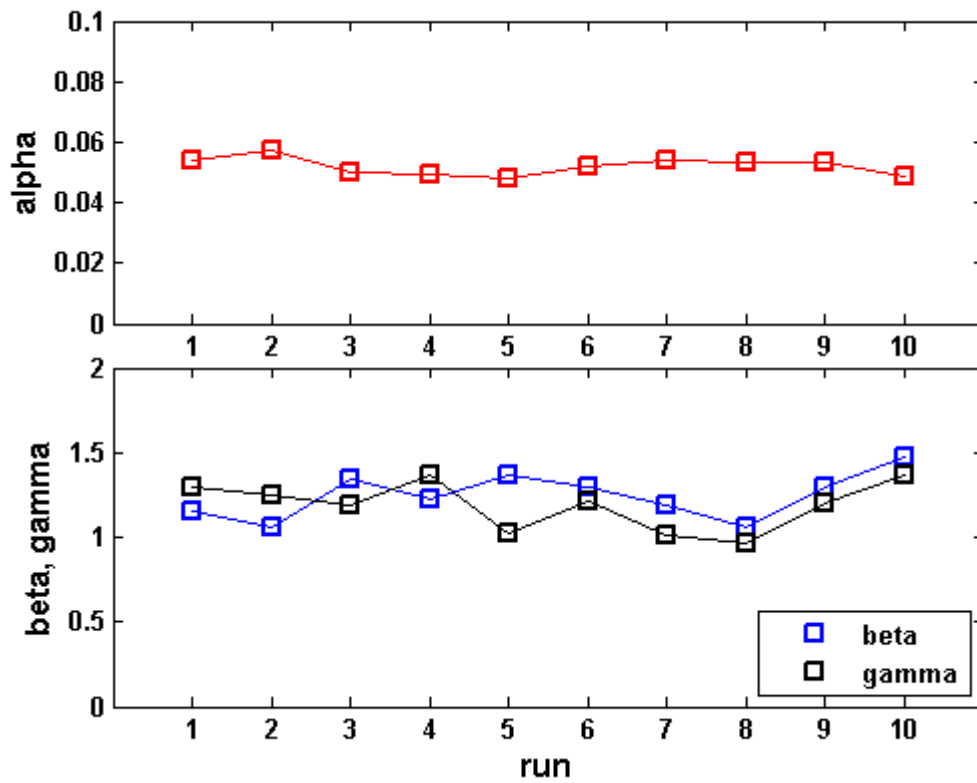


Figure S3 Simulation results of randomly generated α , β , and γ producing N_2O estimates in the acceptable range (i.e. $17 < \text{mean } [N_2O] < 18$).

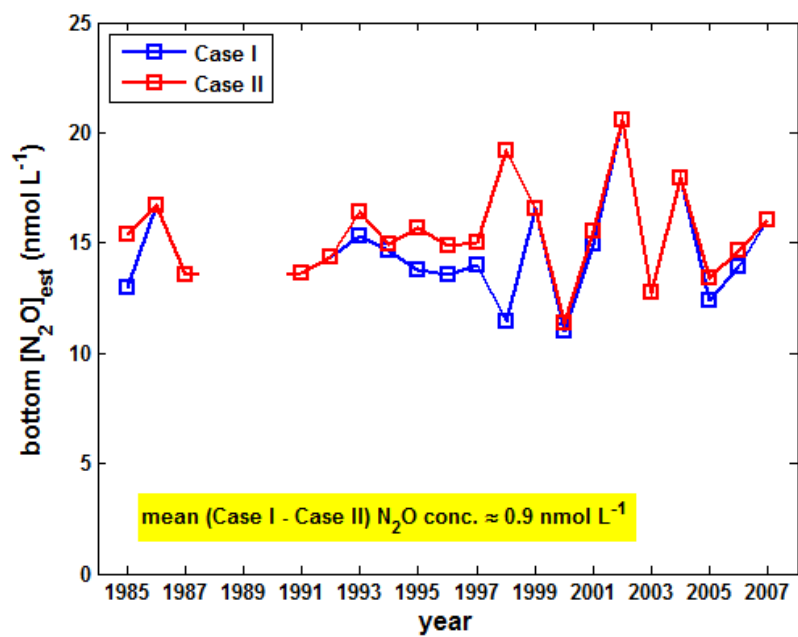


Figure S4 Interannual variation of estimated bottom-water N₂O concentrations according to Case I and II cases (Table 1).

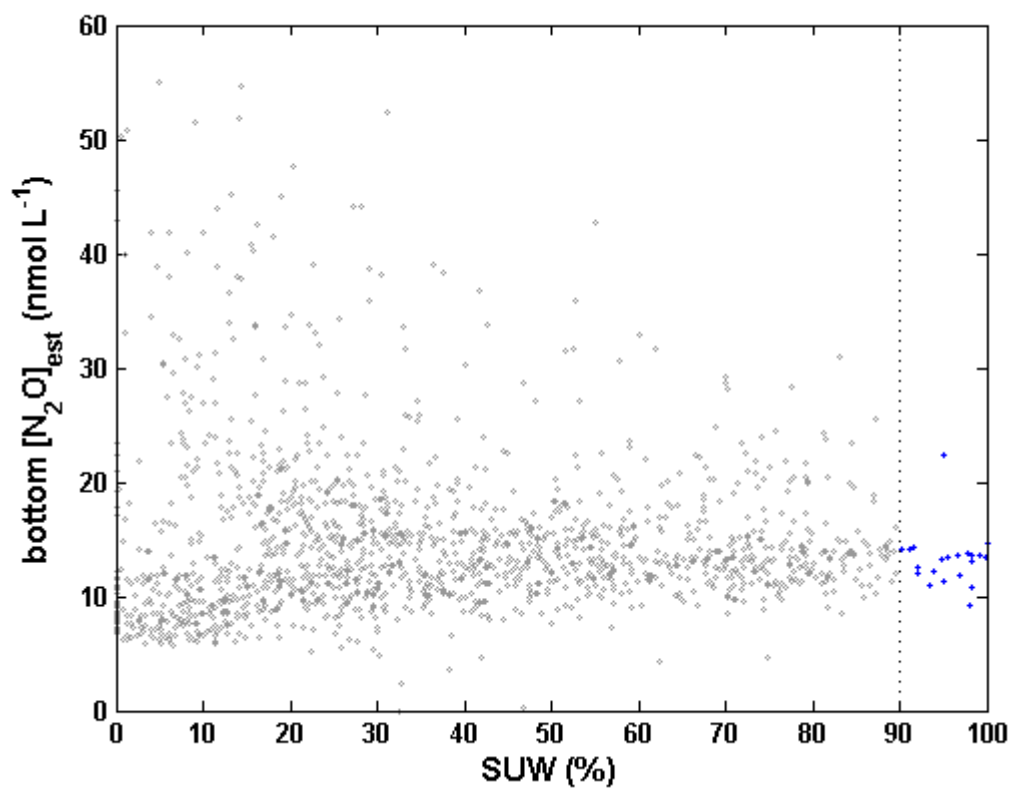


Figure S5 Plot of estimated bottom-water N₂O concentrations vs. SUW mixing ratios (%).

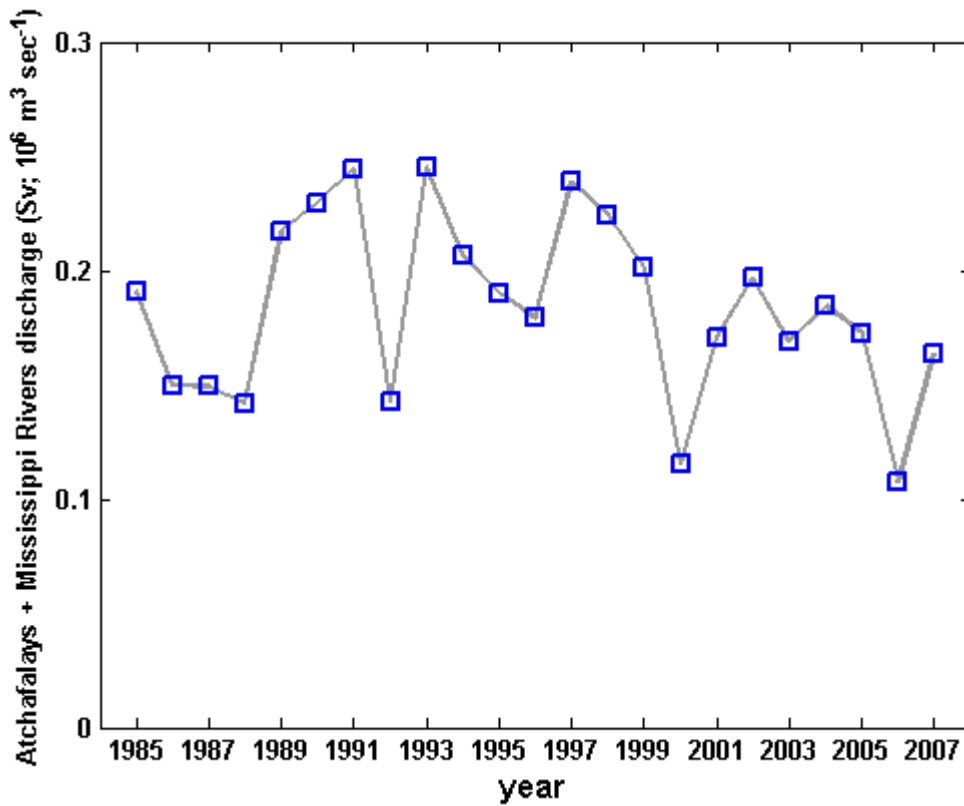


Figure S6 Interannual variation of total freshwater discharge (Sv; $10^6 \text{ m}^3 \text{ sec}^{-1}$) from the Atchafalaya and Mississippi Rivers during the periods of January–July 2000 (data source: www.usgs.gov).

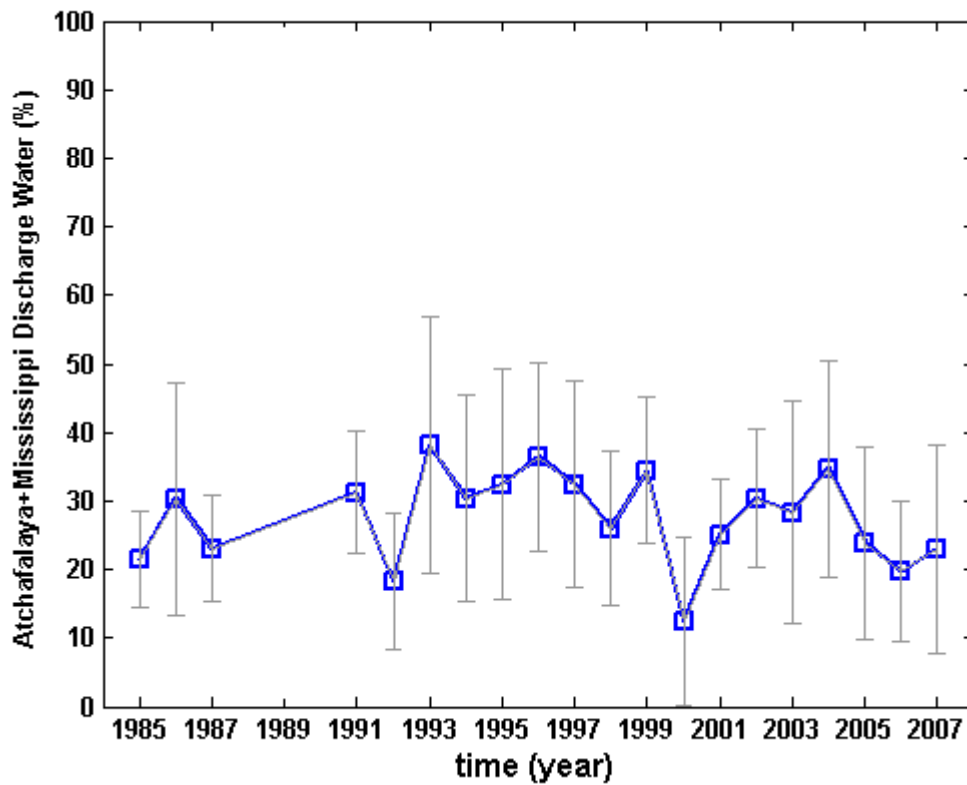


Figure S7 Interannual variation of mixing ratios (%) of Atchafalaya Discharge Water (ADW) and Mississippi Discharge Water (MDW) at the surface in the nGOM (Kim and Min, 2013).

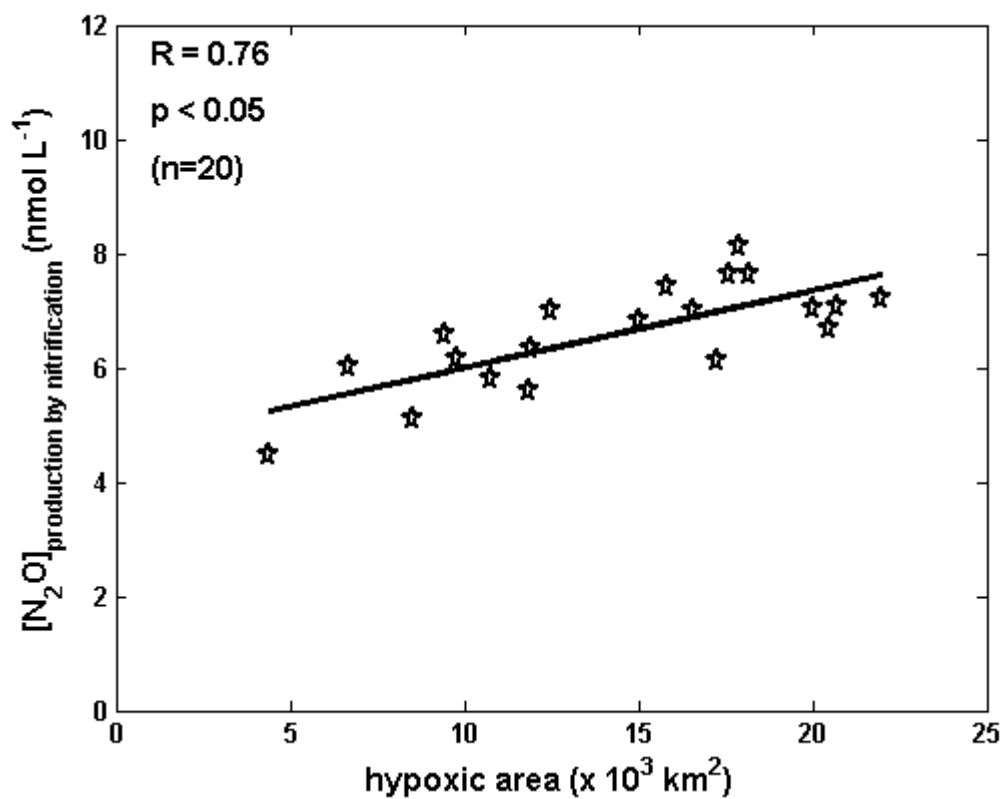


Figure S8 Correlation between the N_2O production by nitrification and the areal extent of hypoxia.

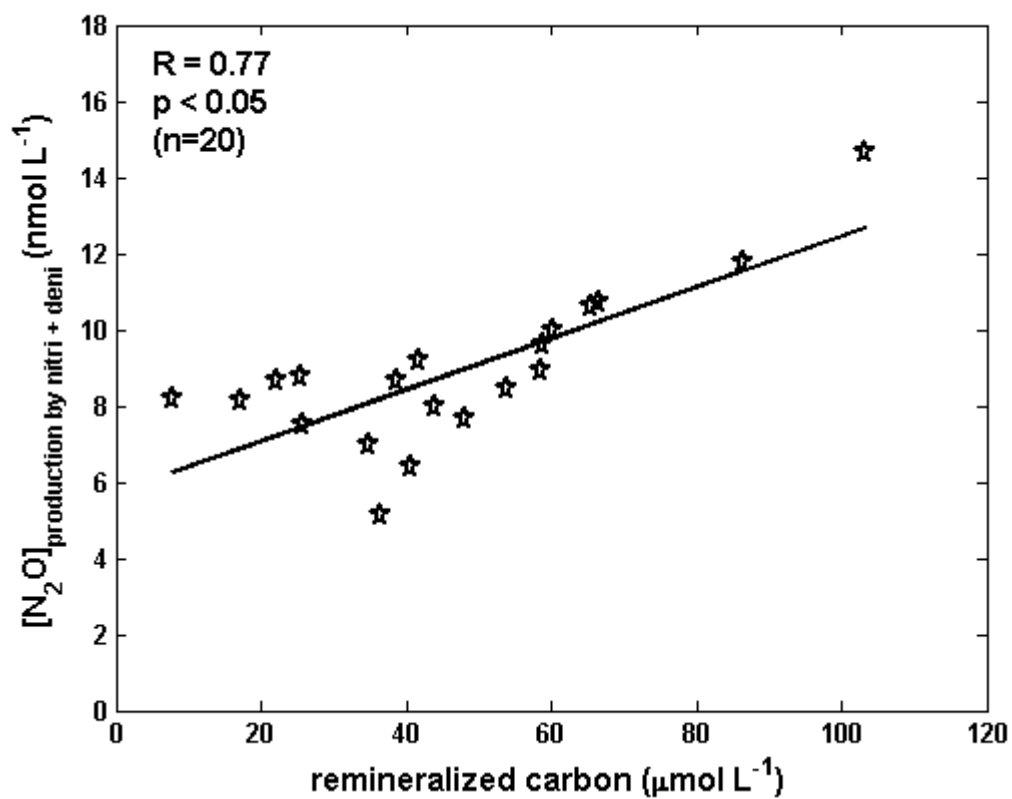


Figure S9 Correlation between the total N_2O production by nitrification and denitrification and the amount of remineralized carbon estimated by Kim and Min (2013).

- References -

Kim, I.-N., and Min D.-H.: Temporal variation of summertime denitrification rates in the Texas-Louisiana inner shelf region in the Gulf of Mexico: A modeling approach using the extended OMP analysis, *Cont. Shelf Res.*, 66, 49–57, 2013.