4- Possible contribution of chemo-heterotrophic activity to the SPOM pool besides chmo-autotrophy in the suboxic/anoxic transition layer.

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References

Altabet, M. A. and McCarthy, J.J., 1986. Vertical patterns in 15N natural abundance in PON from the surface waters of warm-core rings. *Journal of Marine Research*, 44, 185-201.

Altabet, M.A., 1996. Nitrogen and carbon isotopic tracers of the source and transformation of particles in the deep sea. In: V. Ittekot, P. Schafer, S. Honjo, P.J. Depetris (eds), Particle Flux In The Ocean. SCOPE, 57, John Wiley & Sons Ltd. pp. 155-184.

Coban-Yıldız, Y., Chiavari, G., Fabbri, D., Gaines, A.F., Galetti, G., Tuğrul, S., 2000a. The abundance and elemental composition of Black Sea seston: confirmation by pyrolysis-GC/MS. *Marine Chemistry*, 69 (1-2), 55-67.

Codispoti, L.A., Friederich, G.E., Murray, J.W. and Sakamoto, C.M., 1991. Chemical variability in the Black Sea: implications of continuous vertical profiles that penetrated the oxic-anoxic interface. *Deep-Sea Res.*, **38**, S691-S710.

Eadie, B.J. and Jeffrey, L.M., 1973. δ¹³C analyses of oceanic particulate organic matter. *Marine Chemistry*, 1, 199-209.

Fry, B., Jannasch, H.W., Molyneaux, S.J., Wirsen, C.O., Muramoto, J.A. and King, S., 1991. Stable isotope studies of the carbon, nitrogen and sulfur cycles in the Black Sea and the Cariaco Trench. *Deep-Sea Res.*, 38, S1003-S1019.

Konovalov S.K. and Murray J.W., 2001. Variations in the chemistry of the Black Sea on a time scale of decades (1960-1995). *Journal of Marine Systems*, <u>31</u>, 217-243.

Murray, J.W., Codispoti, L.A., Friederich, G.E., 1995. Oxidation – reduction environments: the suboxci zone in the Black Sea. In: Huang C.P., O'Melia C.R., Morgan J.J. (Eds) Aquatic Cheistry: Interfacial and Interspecies processes. ACS Advences in Chemistry Series. No.224. pp. 157-176.

Murray, J.W., Konovalov, S.K., Tebo, B., Oğuz, T., Beşiktepe, Ş., Tuğrul, S., Yakushev, E. (2003) 2001 KNOrr Cruise: New observations and variations in the structure of the suboxic zone. *This volume*.

Owens, N.J.P. and Rees, A.P., 1989. Determination of Nitrogen-15 at Sub-microgram Levels of Nitrogen Using Continuous-flow Isotope Ratio Mass Spectrometry, *Analyst*, 114, 1655-1657.

Saino T., and Hattori, A., 1980. ¹⁵N natural abundance in oceanic suspended particulate matter. *Nature*, **283**, 752-754.

Saino, T. and Hattori, A., 1987. Geographical variation in the water column distribution of suspended particulate organic nitrogen and its 15N natural abundance in the Pcific and its marginal seas.

Deep Sea Research, 34, 807 – 827.

Soydemir, N., Kıdeyş, A.E., Ekingen, G. 2002. Phytoplankton composition of the western Black Sea during May – June 2001. 2nd International Conference on Oceanography of the Eastern Mediterranean and Black Sea: Similarities and Differences of Two Interconnected Basins. 14-18 October, 2002. p. 360.

Tuğrul, S., Baştürk, Ö., Saydam, C. and Yılmaz, A., 1992. Changes in the hydrochemistry of the Black Sea inferred from water density profiles. Nature, 359, 137-139.

Nitrogen cycling Sea

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Abstract- Planktoni NH₄ on productivity 2001 period was ch spring. Concentratio were low and their source utilised by p which could not be of

Keywords- New p

Introduction

Due to the lo productivity at the nitrogen. Many of therefore, have ge cited therein). Ho limited to a couple study focuses on nitrogenous nutrie of new and regenerand Nitrogen Cybetween Museum Marine Sciences investigate the productivity in trates, NO₃ and N

Sampling a The experin

1998 and in Se KNORR, cover