

Supplementary data

Springtime contribution of dinitrogen fixation to primary production across the Mediterranean Sea

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Comparison between N₂ fixation rates incubated over 24 and 48 hours in duration:

Dinitrogen (N₂) fixation rates were measured along an east to west transect in the Mediterranean Sea (MS) during April 2011. According to our experience in the eastern MS (Bar-Zeev et al., 2008; Yogeve et al., 2011; Rahav et al., 2013), long incubations are needed to get detectable rates in this system due to low diazotrophic abundance. Thus we tested two incubation periods, each run in triplicates; 24 and 48 hours.

Measured N₂ fixation rates after 24 hours incubation revealed the same east-west gradient as observed for the 48 hours and are described in detail in the paper (see Table 2). The lowest rates were measured in the easternmost Station 294 (0.07 ± 0.03 nmol N L⁻¹ d⁻¹) and the Ionian Sea (Station 304, 0.05 ± 0.02 nmol N L⁻¹ d⁻¹), while somewhat higher rates were obtained in Station 290 (0.16 ± 0.02 nmol N L⁻¹ d⁻¹). The N₂ fixation rates increased westwards ranging from 0.29 ± 0.03 nmol N L⁻¹ d⁻¹ at the Tyrranean Sea (Station 316) to 0.62 ± 0.20 nmol N L⁻¹ d⁻¹ at the Alboran Sea (Station 333). The highest rate obtained after 24 hours incubation were measured at the Gibraltar Strait (Station 338); 1.99 ± 0.67 nmol N L⁻¹ d⁻¹. At the Gulf of Cadiz (Station 339) the N₂ fixation rates decreased to 0.58 ± 0.17 nmol N L⁻¹ d⁻¹.

Correlation between the rates obtained after 24 hours (described above) and the rates obtained after 48 hours (see Table 2 in the paper); show these rates were statistically similar and closely linked (Figure S1, t-test, P < 0.05).

References

Bar Zeev, E., T. Yogeve, D. Man-Aharonovich, N. Kress, B. Herut, O. Beja, and I. Berman-Frank: Seasonal dynamics of the endosymbiotic, nitrogen-fixing cyanobacterium *Richelia intracellularis* in the Eastern Mediterranean Sea, ISME J., 2, 911-92. 2008.

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Figure S1- Comparison between N₂ fixation rates obtained after 24 and 48 hours incubation. Incubations were conducted under ambient lighting and temperature.

