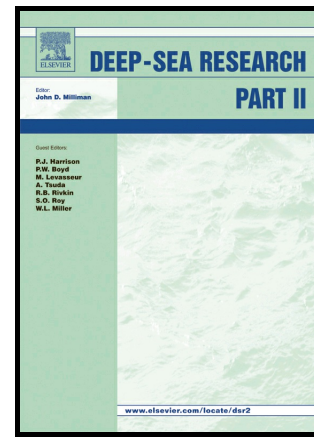


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Potential contribution of surface-dwelling *Sargassum* algae to deep-sea ecosystems in the southern North Atlantic

Philip Baker¹, Ulrike Minzlaff², Alexandra Schoenle¹, Enrico Schwabe³, Manon Hohlfeld¹, Alexandra Jeuck¹, Nils Brenke⁴, Dennis Prausse¹, Marcel Rothenbeck⁵, Saskia Brix⁶, Inmaculada Frutos², Katharina M. Jörger⁷, Timea P. Neusser⁷, Rolf Koppelman⁸, Colin Devey⁵, Angelika Brandt², Hartmut Arndt^{1*}

¹ University of Cologne, Institute for Zoology, General Ecology, Zùlpicher Str. 47b, 50674 Cologne, Germany

² Zoological Museum Hamburg, Center of Natural History, Martin-Luther-King-Platz 3, 20146 Hamburg, Germany

³ Bavarian State Collection of Zoology, Münchhausenstrasse 21, 81247 Munich, Germany

⁴ German Centre for Marine Biodiversity Research, Senckenberg Research Institute, Südstrand 44, 26382 Wilhelmshaven, Germany

⁵ GEOMAR, Helmholtz Centre for Ocean Research Kiel, Wischhofstr. 1-3, 24148 Kiel, Germany

⁶ German Centre for Marine Biodiversity Research, Senckenberg Research Institute, c/o CeNak, Martin-Luther-King-Platz 3, 20146 Hamburg, Germany

⁷ Ludwig-Maximilian University Munich, Biocenter, Department Biology II, Großhaderner Str. 2, 82152 Planegg-Martinsried, Germany

⁸ Institute for Hydrobiology and Fisheries Research, Olbersweg 24, 22767 Hamburg, Germany

*corresponding author: hartmut.arndt@uni-koeln.de

Abstract

Deep-sea ecosystems, limited by their inability to use primary production as a source of carbon, rely on other sources to maintain life. Sedimentation of organic carbon into the deep sea has been previously studied, however, the high biomass of sedimented *Sargassum* algae discovered during the VEMA Transit expedition in 2014/2015 to the southern North Atlantic, and its potential as a regular carbon input, has been an underestimated phenomenon. To determine the potential for this carbon flux, a literature survey of previous studies that estimated the abundance of surface water *Sargassum* was conducted. We compared these estimates with quantitative analyses of sedimented *Sargassum* appearing on photos taken with an autonomous underwater vehicle (AUV) directly above the abyssal sediment during the expedition. Organismal communities associated to *Sargassum fluitans* from surface waters were investigated and *Sargassum* samples collected from surface waters and the deep sea were biochemically analyzed (fatty acids, stable isotopes, C:N ratios) to determine degradation potential and the trophic significance within deep-sea communities. The estimated *Sargassum* biomass (fresh weight) in the deep sea (0.07 - 3.75 g/m²) was several times higher than that

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