



[Program/Agenda](#) [Presenters](#) [Registration](#) [Students/Early Career](#) [Travel/Hotels](#) [Organizers/Exhibits](#) [Press](#) [Login](#) [Search](#)

Program and Agenda

[Keynote](#) [Plenaries](#) [Awards](#) [Agenda](#) [Sessions](#) [Town Halls/Workshops](#) [Meetings](#) [Social Events](#) [App/Planner](#) [Program Book](#)

Abstract

UPWELLING VELOCITIES INFERRED FROM HELIUM ISOTOPE DISEQUILIBRIUM

Oceanic upwelling velocities are too small (in the order of 10-5 m/s) to be measured directly. Here we apply the recently developed helium method to indirectly infer these velocities by means of the mixed layer disequilibrium of the helium-3/helium-4 ratio. Study areas are the eastern equatorial Atlantic as well as the coastal upwelling regions off Mauritania and Peru. These locations have been investigated in the framework of the German project 'SOPRAN' with respect to air-sea fluxes of climate relevant trace gases, and the transport of dissolved substances into the mixed layer. Near the coast, the helium derived upwelling velocities are in good agreement with Ekman theory. At some locations in the open ocean, however, the helium method results in much higher vertical velocities compared to the wind derived Ekman divergence. This enhanced upwelling is attributed to eddy activity. Both advective and turbulent (derived from microstructure measurements) fluxes of heat and nutrients into the mixed layer are determined. These are in qualitative agreement with the distribution of surface temperature and primary productivity, respectively.

ePoster:

Authors

Steinfeldt, R., University of Bremen, Germany, rsteinf@physik.uni-bremen.de

Sültenfuß, J., University of Bremen, Germany, suelten@uni-bremen.de

Dengler, M., GEOMAR Kiel, Germany, mdengler@geomar.de

Fischer, T., GEOMAR Kiel, Germany, tfischer@geomar.de

Rhein, M., University of Bremen, Germany, mrhein@physik.uni-bremen.de

Details

Poster presentation

Session #:110

Date: 2/24/2014

Time: 16:00 - 18:00

Location: Poster/Exhibit Hall

Presentation is given by student: No

PosterID: 431