



# SOLAS Open Science Conference 2009

## Barcelona, 16<sup>th</sup>-19<sup>th</sup> November 2009

### Discussion Session

	Convener	Co-convener (if any)	Rapporteur
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<b>Institution address:</b>	Toulouse, France	Barcelona, Spain	Kiel, Germany
<b>Session title</b>	Air-sea gas fluxes at Eastern Boundary upwelling systems		
<b>Background and motivation, e.g. research question (max. 150 words, no figures/ tables)</b>	<p>Oxygen Minimum Zones (OMZs), known as suboxic layers, play a crucial role in climate evolution (greenhouse gas production) and in marine ecosystems (respiratory barrier, nitrogen loss through denitrification and anammox). However feedbacks effects of OMZs are complex and remain to be quantified. The project will focus in the OMZ of the East Pacific, namely in the East Tropical North Pacific.</p> <ul style="list-style-type: none"> <li>- Are emissions of the most important long-lived radiatively active gases N<sub>2</sub>O, CO<sub>2</sub> and CH<sub>4</sub> coupled or decoupled during upwelling events, and which is the net greenhouse effect of the OMZs?</li> <li>- Have the OMZs a significant role on the atmospheric cycle for the tropospheric and stratospheric ozone (O<sub>3</sub>) through halogen compounds and N<sub>2</sub>O, respectively?</li> <li>- Is it possible to determine and assess the full influence of OMZs on climatic change considering their impact on greenhouse gases, clouds formation (DMS consumption) and control of O<sub>3</sub> and O<sub>2</sub>?</li> <li>- What is the role, in the greenhouse gases production, of the shift between an O<sub>2</sub>-respiration (aerobic remineralization) towards a NO<sub>3</sub><sup>-</sup>, NO<sub>2</sub><sup>-</sup>, N<sub>2</sub>O<sup>-</sup> and SO<sub>4</sub><sup>-</sup> "respiration", even to methanogenesis and to anaerobic mechanisms using other electrons acceptors (e.g. IO<sub>3</sub>, Mn, Fe)?</li> </ul>		
<b>Intended outcome, action or product following the discussion session (max. 50 words)</b>	It is hoped that this white paper for SOLAS mid-term strategy planning will yield an enthusiastic response from our community and will develop into an articulated international project combining <i>in situ</i> data acquisition, laboratory experimentations, and coupled biogeochemical/physical modeling. The overarching outcome being a complete understanding of the OMZs role in the present ocean.		