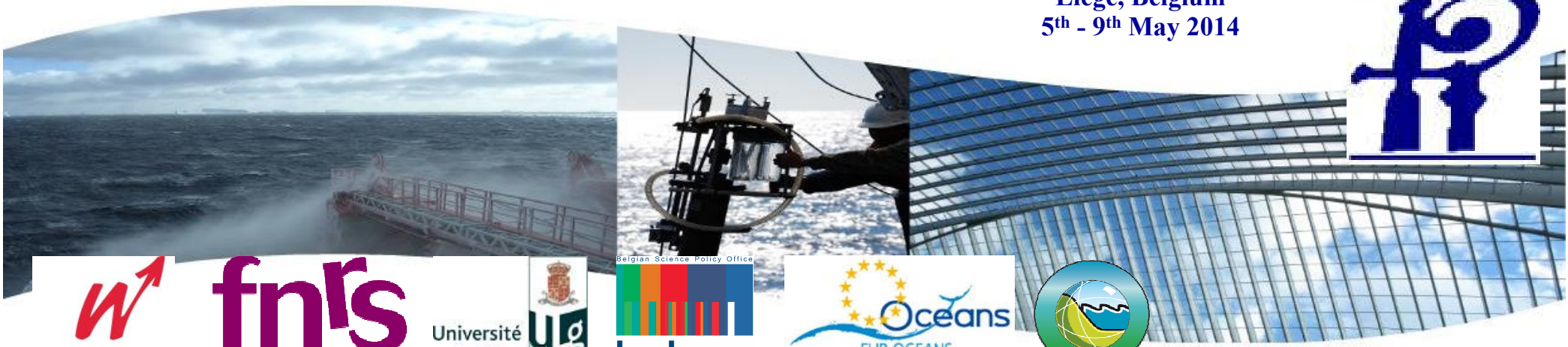


# Low oxygen environments in marine, estuarine and fresh waters

The 46<sup>th</sup> International Liege colloquium

Liège, Belgium  
5<sup>th</sup> - 9<sup>th</sup> May 2014



# Timing of Sessions

| Monday (5/05)  | Tuesday (6/05)   | Wednesday (7/05)  | Thursday (8/05)   | Friday (9/05)   |
|--|--|---|---|---|
| 8:30 Registration  |  |   |   |   |
| 9:30 Opening of the colloquium and Keynote by Lisa Levin   | <b>9:00 Modelling Session</b><br><u>Conveners:</u> Temel Oguz & Marilaure Grégoire | <b>9:00 Foodweb Session</b><br><u>Conveners:</u> Lisa Levin & Carol Robinson<br><u>Keynote:</u> Karen Wishner | <b>9:00 Life Session</b><br><u>Conveners:</u> Sean Crowe & Steven Hallam<br><u>Keynote:</u> Klaus Jürgens             | <b>9:00 EBUS Session</b>  |
| <b>10:15 Paleo Session</b><br><b>Conveners: Caroline Slomp &amp; Daniel Conley</b><br><u>Keynote:</u> Silke Severmann    | <u>Keynotes:</u> Eugene Turner & Dubravko Justic & Nancy Rabalais                  |   |   |   |
| <b>Coffee break</b>  |  |   |   |   |
|  | 11:00  | 10:50   | 10:50   | 10:40   |
| <b>Break</b>   |  |   |   |   |
| <b>13:30 Biogeochemical Session</b><br><u>Conveners:</u> Wajih Naqvi & Jean-Pierre Descy<br><u>Keynote:</u> James Murray | <b>14:00 Modelling Session</b>   | <b>14:00 Foodweb Session</b>  | <b>14:00 EBUS Session</b><br><u>Conveners:</u> Véronique Garçon & Francisco Chavez<br><u>Keynote:</u> Zouhair Lachkar | <b>14:00 Instrumental Session</b><br><u>Conveners:</u> Allan Devol & Alberto Borges<br><u>Keynote:</u> Niels-Peter Revsbech |
|  | <b>Global Change Session</b><br><u>Conveners:</u> Jing Zhang & Andreas Oschlies    |   |   |   |
| <b>Coffee break</b>  |  |   |   |   |
| 16:00  | 15:50  | 15:40   |   | 16:00   |
|  | <u>Keynote:</u> Lothar Stramma<br><u>Keynote:</u> Nancy Rabalais                   |   | <b>16:00 Social event</b><br>Guided Visit of the Liege centre   |   |
| End 18:00  | End 18:20  | End 17:00   |   | End 17:00   |
| <b>18:00 Ice Breaker party</b>   | <b>18:20 Poster session - Cheese and wine reception</b>                            |   |   |   |
|  |  | <b>19:00 - 19:30 Colloquium dinner at the Crown Plaza Hotel</b>   |   |   |

**Monday**

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| 08:15 - 9:30 | <b>Registration</b>                            |
| 09:30 - 9:45 | Welcome by Marilaure Grégoire & Alberto Borges |
| 9:45 - 10:15 | Opening Keynote: Lisa Levin                    |

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| <b>Session 1 – Paleoproxies of hypoxia</b> | <b>Conveners: Caroline Slomp &amp; Daniel Conley</b> |
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| 10:15 - 10:45 | <b>Keynote: Silke Severmann</b>   |  | Institute of Marine and Coastal Sciences, USA                      |
| 10:45 - 11:05 | Nardelli M. P., Barras C., Metzger E., Mouret A., Filipsson H. L., Jorissen F., Geslin E. | Benthic foraminifera can calcify under anoxia: Experimental evidences on three species | UMR CNRS 6112 LPG-BIAF, Université d'Angers, France                |
| 11:05 - 11:25 | Conley D., Gustafsson B., Andersen J., Carstensen J.                                      | Drivers of deoxygenation of the Baltic Sea during the last century                     | Dept. of Geology, Lund University, Sweden                          |
| 11:25 - 11:45 | Jaccard S.L., Galbraith E.D., Froelicher T.L., Gruber N.                                  | Ocean (de)oxygenation across the last deglaciation – Insights for the future           | University of Bern, Switzerland                                    |
| 11:45 - 12:05 | Hoogakker B., Schmiel G., Elderfield H., McCave N., Rickaby R.                            | Past deep water oxygen reconstructions   | Department of Earth Sciences, University of Oxford, United Kingdom |
| 12:05 - 12:25 | Slomp C.  | Sediments as recorders of spatial and temporal variability in Baltic Sea hypoxia       | Faculty of Geosciences, Utrecht University, The Netherlands        |

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| 12:25 - 13:30 | <b>Break</b> |
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| <b>Session 2 – Deoxygenation and biogeochemical cycles</b> | <b>Conveners: Wajih Naqvi &amp; Jean-Pierre Descy</b> |
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| 13:30 - 14:00 | <b>Keynote: James Murray</b>   | <b>Nitrogen Cycling under marine variable oxygen and sulfidic conditions: Lessons from the Black Sea</b>                                     | School of Oceanography, University of Washington, USA                   |
| 14:00 - 14:20 | Meysman F. J. R., Seita D., Malkin S., Vasquez D., Boschker E.   | A novel way of life emerges from hypoxic sediments: microbial sulphur oxidation via long-distance electron transport                         | Royal Netherlands Institute of Sea Research (NIOZ), The Netherlands     |
| 14:20 - 14:40 | Morana C., Darchambeau F., Roland F., Muvundja F., Kelemen Z., Commarieu M-V, Leporcq B., Alunga G., Masilya P., Descy J-P, Borges A.V., Bouillon S. | Biogeochemistry of a large, meromictic tropical lake (Lake Kivu, East Africa): insights from a stable isotope study covering an annual cycle | KU Leuven, Belgium  |
| 14:40 - 15:00 | Rabouille C., W.F. Chen B.Y. He P.H. Cai B. Bombléd F. Toussaint M.H. Dai  | Combining sediment and water column investigations to study the processes generating hypoxia in the Pearl River Estuary (China)              | UMR CEA-CNRS-UVSQ, France   |
| 15:00 - 15:20 | Zilius M., Bartoli M., Bresciani M., Petkuvienė J, Lubiene I and Bukaveckas P  | Feedback mechanisms between cyanobacterial blooms, transient hypoxia and benthic phosphorus regeneration in shallow coastal environments     | Coastal Research and Planning Institute, Klaipėda University, Lithuania |
| 15:20 - 15:40 | Fuessel J., Nowka B., Luecker S., Lam P., Spieck E., Daims H., Hach P., Litman S., Kuypers M.M.M.  | Metabolic versatility of a globally distributed nitrite oxidizer, Nitrococcus sp.  | Max Planck Institute for Marine Microbiology, Germany                   |

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| 15:40 - 16:00 | <b>Coffee</b> |
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| 16:00 - 16:20 | Naqvi S.W.A., Shenoy D.M., Kurian S., Naik H., Gauns M., Pratihary A.K., Yasar N.K., Sarkar A., Narvenkar G. | Seasonal Anoxia in Indian Reservoirs   | CSIR-National Institute of Oceanography, India      |
| 16:20 - 16:40 | Barnes J., Upstill-Goddard R.  | Oxygen and the denitrification paradox: are sediments a source or a sink of N2O?   | Newcastle University, United Kingdom.               |
| 16:40 - 17:00 | Sulu-Gambari F., Seitaj D., Meysman F., Slomp C. P.  | Sediment phosphorus dynamics in a marine coastal lake: Response to seasonal variations in bottom water redox conditions            | Utrecht University, The Netherlands                 |
| 17:00 - 17:20 | Kriest I., <u>Oschlies A.</u>  | Simulating remineralization processes in oxygen minimum zones: uncertainties and consequences for global biogeochemical cycles     | GEOMAR Helmholtz Centre for Ocean Research, Germany |
| 17:20 - 17:40 | Lennartz S.T., Kock A., Bange H.W.   | Time Series and Box Model Simulation of Nitrous Oxide (N2O) and Methane (CH4) at the Time Series Station Boknis Eck, SW Baltic Sea | GEOMAR Helmholtz Centre for Ocean Research, Germany |
| 17:40 - 18:00 | Kostyleva A.V., <u>Yakushev E.V.</u> , Pakhomova S.V., Podymov O.I.  | Typical features of dissolved organic carbon distribution in redox zone of the north-eastern Black Sea                             | Norwegian Institute for Water Research, Norway      |

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| 18:00 - 20:30 | <b>Ice Breaker party</b> |
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**Tuesday**

| <b>Session 3 – Modelling hypoxia</b>                        |  | <b>Conveners: Temel Oguz &amp; Marilaure Grégoire</b>  |  |
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| 09:00 - 9:40  | <b>Keynotes: Eugene Turner &amp; Dubravko Justic &amp; Nancy Rabalais</b>  | <b>Modeling Coastal Hypoxia: Lessons Learned and Perspectives for the Future</b>   | School of the Coast and Environment (SCE) - Louisiana State University - USA |
| 09:40 - 10:00   | Oschlies A., Koeve W., Schmidtko S.  | Global patterns of deoxygenation deduced from observations and CMIP5 models  | GEOMAR Helmholtz Centre for Ocean Research, Germany                          |
| 10:00 - 10:20   | Meier H.E.M., Almroth-Rosell E., Andersson H.C., Eilola K., Gustafsson B.G., Gustafsson E., Kuznetsov I., Müller-Karulis B., Neumann T., and Savchuk O. P. | Modeling hypoxia in past and future climates of the Baltic Sea   | Swedish Meteorological and Hydrological Institute - Sweden                   |
| 10:20 - 10:40   | Stanev E., Y. He J. Staneva E. Yakushev  | The Black Sea biogeochemistry: focus on temporal and spatial variability of oxygen   | GEOMAR Helmholtz Centre for Ocean Research, Germany                          |
| 10:40 - 11:00   | <b>Coffee</b>  |  |  |
| 11:00 - 11:20   | Testa J., Lee Younjoo Li M., Kemp W. M.  | Quantifying biological and physical controls on dissolved oxygen in Chesapeake Bay using a coupled hydrodynamic biogeochemical model                     | University of Maryland Center for Environmental Science - USA                |
| 11:20 - 11:40   | Grosse F., Lenhart H.-J., Brockmann U.   | Looking beyond stratification: A model-based analysis of the biological drivers of oxygen depletion in the North Sea                                     | University of Hamburg - Germany  |
| 11:40 - 12:00   | Koeve W., Kähler P., Oschlies A.   | The puzzle of oceanic oxygen utilization   | GEOMAR Helmholtz Centre for Ocean Research, Germany                          |
| 12:00 - 12:20   | Zhou Y., Obenour D.R., Scavia D., Michalak A.M.  | Advances in hypoxic extent estimation through geostatistical modeling  | Carnegie Institution for Science - USA                                       |
| 12:20 - 14:00   | <b>Break</b>   |  |  |
| 14:00 - 14:20   | Geerts L., Soetaert K., Meiere P.  | Oxygen deficiencies in the Schelde and Elbe estuary: same difficulties, different causes   | University of Antwerp - Belgium  |
| 14:20 - 14:40   | Laurent A., Fennel K.  | Phosphorus limitation reduces hypoxia in the northern Gulf of Mexico: results from a physical-biogeochemical model                                       | Dalhousie University - Canada  |
| <b>Session 4 – Deoxygenation in a global change context</b> |  | <b>Conveners: Jing Zhang &amp; Andreas Oschlies</b>  |  |
| 14:40 - 15:10   | <b>Keynote: Lothar Stramma</b>   | <b>Global oxygen changes and oxygen variability in the eastern Pacific off Peru</b>  | GEOMAR Helmholtz Centre for Ocean Research, Germany                          |
| 15:10 - 15:30   | Frölicher T.L., Jaccard S.L., Galbraith E., Gruber N.  | Transient and equilibrium responses of oceanic dissolved oxygen to global warming  | Environmental Physics ETH Zurich - Switzerland                               |
| 15:30 - 15:50   | <b>Coffee</b>  |  |  |
| 15:50 - 16:20   | <b>Keynote: Rabalais N.</b>  | <b>Deoxygenation in a global change context – coastal conditions</b>   | Louisiana Universities Marine Consortium - USA                               |
| 16:20 - 16:40   | Hetland R., Scully M.  | Physical controls of the variability and predictability of hypoxia   | Texas A&M University - USA   |
| 16:40 - 17:00   | Capet A., Beckers J.-M., Grégoire M.   | Hypoxia in the Black Sea northwestern shelf : from eutrophication to climate drivers   | GHER, University of Liège - Belgium  |
| 17:00 - 17:20   | Li Ming  | Impacts of Interannual Climate Variability and Extreme Weather Events on Plankton Productivity and Hypoxia in Chesapeake Bay                             | University of Maryland Center for Environmental Science, USA                 |
| 17:20 - 17:40   | Hagens M., Slomp C.P., Meysman F.J.R., Seitaj D., Borges A.V., Middelburg J. J.  | Hypoxia and biogeochemical processes concomitantly influence acidification in the seasonally stratified coastal marine Lake Grevelingen, the Netherlands | Utrecht University - The Netherlands   |
| 17:40 - 18:00   | Jenny J.P., P. Francus M.E. Perga  | Recent spreading of hypoxia in continental zones: a meta-analysis from lake sediment archives  | ETE - INRS - Université du Québec - Canada                                   |
| 18:00 - 18:20   | Naqvi S.W.A., Shenoy D.M., Kurian S., Naik H., Gauns M., Pratihary A.K., Yasar N.K., Sarkar A., Narvenkar G.   | Time series observations in the seasonally anoxic Tillari Reservoir, India   | CSIR-National Institute of Oceanography - India                              |
| 18:20 - 20:30   | <b>Poster session - Cheese and wine reception</b>  |  |  |

**Wednesday**

| <b>Session 5 – Deoxygenation, marine resources, ecosystem functioning and structure of the foodweb</b> |  | <b>Conveners: Lisa Levin &amp; Carol Robinson</b>   |   |
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| 09:00 - 09:30  | <b>Keynote: Wishner K.</b>   | <b>Zooplankton ecology in oceanic oxygen minimum zones: Structure, trophic webs, and global change (Keynote)</b>  | University of Rhode Island - USA  |
| 09:30 - 09:50  | Jessen G., Ramette A., Lichtschlag A., Wenzhöfer F., Schubert C.J., Pantoja S., Donis D., Boetius A.   | Evidence for a typical microbial community signature associated with hypoxia  | Max Planck Institute for Marine Microbiology - Germany                                    |
| 09:50 - 10:10  | Haiyan J., Jianfang C., Hongliang L., Wang K. and Zhuang Y.  | The Effects of Nutrient Ratios on Phytoplankton in the East China Sea: Based on Field Observation and Sediment Record   | Laboratory of Marine Ecosystem and Biogeochemistry, Second Institute of Oceanography, SOA |
| 10:10 - 10:30  | Goes J.I., Rosario Gomes H.D., Prabhu Matondkar S., Basu S., Buskey E.J., Parab S.G., Thoppil P.   | Ecosystem disruption in the Arabian Sea with potential links to the spread of hypoxia   | Lamont Doherty Earth Observatory at Columbia University - Usa                             |
| <b>Coffee</b>  |  |   |   |
| 10:50 - 11:10  | Langlet D., Geslin E., Baal C., Metzger E., Lejzerowicz F., Riedel B., Zuschin M., Pawlowski J., Risgaard-Petersens N., Stachowitsch M., Jorissen F. | Foraminiferal survival and community response to 10 months of experimentally induced anoxia   | Université d'Angers, UMR CNRS 6112 LPG-BIAF - France                                      |
| 11:10 - 11:30  | Roman M., Elliott D and Pierson J  | Effects of coastal hypoxia on pelagic zooplankton spatial ecology   | University of Maryland Center for Environmental Science - USA                             |
| 11:30 - 11:50  | Davies S., Sanchez L., Beier E.  | Vertical distribution of fish larvae habitats and its relationship with dissolved oxygen gradients in the Tropical-Subtropical Convergence region in the Pacific off Mexico | IPN - CICIMAR - Mexico  |
| <b>Break</b>   |  |   |   |
| 14:00 - 14:20  | Brennan C.E., Blanchard H., Fennel K.  | Putting oxygen and temperature thresholds of marine animals in context of environmental change: a regional perspective for the Scotian Shelf and Gulf of St. Lawrence       | Dalhousie University - Canada   |
| 14:20 - 14:40  | Currie B.  | Namibia's "dead zone": ecosystem functioning in an extreme environment  | Ministry of Fisheries and Marine Resources - Namibia                                      |
| 14:40 - 15:00  | Prince E.D., J. P. Hoolihan Jiangang Luo Carlos Palma Lothar Stramma, and Sunke Schmidtke  | Expanding Oxygen Minimum Zones, Tropical Pelagic Predators, and Atlantic Fisheries That Exploit Them  | Southeast Fisheries Science Center - NOAA - Usa   |
| 15:00 - 15:20  | Maximov A.A.   | Benthic diversity and consequences of hypoxia – introduction of alien polychaetes to the eastern Gulf of Finland enhances the resistance of ecosystem                       | Zoological Institute Russian academy of sciences - Russia                                 |
| <b>Coffee</b>  |  |   |   |
| 15:40 - 16:00  | Berezina N., Razinkovas-Baziukas A.  | Littoral food web in the eastern Baltic Sea lagoons with seasonal hypoxic events  | Zoological Institute Russian academy of sciences - Russia                                 |
| 16:00 - 16:20  | Bonsdorff E., Weigel B., Andersson H.C., Meier H.E.M., Nordström M.C., Snickars M., Törnroos A.  | Climate change promotes risk of hypoxia in coastal zones threatening zoobenthic communities and their functions   | Åbo Akademi University - Finland  |
| 16:20 - 16:40  | Breitburg D., Targett T., Rose K., Keppel A., Clark V., Bogue K., Dixon R., Neilan R., Creekmore S.  | Breathless nights- diel cycling hypoxia and acidification effects in shallow estuarine waters   | Smithsonian Environmental Research Center - USA   |
| <b>19:30 - 23:00 Colloquium Dinner: "Crowne Plaza Hotel"</b>   |  |   |   |

**Thursday**

| <b>Session 6 - Life and processes in redox gradients</b>                                   |   | <b>Conveners: Sean Crowe &amp; Steven Hallam</b>  |  |
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| 09:00 - 09:30  | <b>Keynote: Klaus Jürgens</b>   | <b>Globally distributed microorganisms as biogeochemical key players in marine oxygen-deficient systems</b>                   | Leibniz Institute of Baltic Sea Research - Germany                   |
| 09:30 - 09:50  | Jayakumar A., Ward B.   | Abundance distribution of Nitrogen transforming microbes along oxygen gradients in two major oxygen minimum zones             | Princeton University - USA   |
| 09:50 - 10:10  | Borrego C.M., Noguerola I., Picazo A., Llirós M., Camacho A.  | Activity and seasonal dynamics of freshwater epsilonproteobacteria in a sulfidic redoxcline of a meromictic karstic lake      | ICRA - University of Girona - Spain                                  |
| 10:10 - 10:30  | Kalvelage T., Lavik G, Jensen M., Revsbech N P, Schunck H., Loescher C, Desai D., Laroche J., Schmitz-Streit R, Kuypers M.      | Aerobic Microbial Respiration in Oceanic Oxygen Minimum Zones   | Dalhousie University - Canada  |
| <b>Coffee</b>  |   |   |  |
| 10:50 - 11:10  | Geelhoed J., Boschker E. and Meysman F.   | Filamentous bacteria involved in long-distance electron transport in marine sediments.  | Royal Netherlands Institute of Sea Research (NIOZ) - The Netherlands |
| 11:10 - 11:30  | Seitaj D., Malkin S., Schauer R., Meysman F.  | Efficient sulfide detoxification in seasonally hypoxic sediments by competing S-oxidizing bacteria                            | Royal Netherlands Institute of Sea Research (NIOZ) - The Netherlands |
| 11:30 - 11:50  | Keil R., Neibauer J., Devol A.  | In Situ Incubations and Targeted Proteomics as tools to evaluate carbon cycling in low oxygen marine waters                   | School of Oceanography - University of Washington - Usa              |
| 11:50 - 12:10  | Morana C., Borges A.V., Darchambeau F., Roland F., Montante L., Descy J.-P., Bouillon S.  | Methanotrophy and chemoautotrophy within the redox gradient of a large and deep tropical lake (Lake Kivu, East Africa)        | KU Leuven - Belgium  |
| 12:10 - 12:30  | Peura S., L. Sinclair, A. Eiler   | Microbial processes at the oxycline of humic lakes  | Evolutionary Biology Centre, EBC - Sweden                            |
| <b>Break</b>   |   |   |  |
| <b>Session 7 - Eastern Boundary upwelling systems (EBUS) as natural SOLAS laboratories</b> |   | <b>Conveners: Véronique Garçon &amp; Francisco Chavez</b>   |  |
| 14:00 - 14:30  | <b>Keynote: Zouhair Lachkar</b>   | <b>Hypoxia in Eastern Boundary Upwelling Systems under modern and future climate</b>  | Environmental Physics ETH Zurich - Switzerland                       |
| 14:30 - 14:50  | Montes I., Dewitte B., Gutknecht E., Paulmier A., Dadou I., Oschlies A., Garçon V.  | High-resolution modeling of the Eastern Tropical Pacific Oxygen Minimum Zone: Sensitivity to the tropical oceanic circulation | OMP/LEGOS - France   |
| 14:50 - 15:10  | Garçon V., Sudre J., Hernandez-Carrasco I., Dewitte B., Illig S., Dadou I., Paulmier A., Montes I., Yahia H., Garbe C., Butz A. | Inference of super-resolution ocean pCO2 and air-sea CO2 fluxes from non-linear and multiscale processing methods             | CNRS/LEGOS - France  |
| 15:10 - 15:30  | Bange H., Team of M91   | M91: Surface Ocean – Lower Atmosphere Study in the upwelling region off Peru  | GEOMAR Helmholtz Centre for Ocean Research, Germany                  |
| <b>Coffee</b>  |   |   |  |
| <b>Social Event: Guided Visit of the Liège Center</b>                                      |   |   |  |

**Friday**

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| <b>Session 7 - Eastern Boundary upwelling systems (EBUS) as natural SOLAS laboratories</b> | <b>Conveners: Véronique Garçon &amp; Francisco Chavez</b> |
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| 09:00 - 09:20 | Tim N., E. Zorita, B Hünicke   | Influence of atmospheric circulation on the Namibian upwelling system and the oxygen minimum zone               | GEOMAR Helmholtz Centre for Ocean Research, Germany   |
| 09:20 - 09:40 | Eggert A., Muller A.A., Mohrholz V., Schmidt M.                      | Seasonal dynamics of the oxygen budget on the Namibian shelf: a model perspective                               | Leibniz Institute for Baltic Sea Research - Germany   |
| 09:40 - 10:00 | Pitcher G.C., Probyn T.A., Pfaff M.C., Rybicki E. and Schroeder D.C. | Red tide and anoxia in a coastal embayment of the southern Benguela upwelling system                            | Fisheries Research and Development - Department of Agriculture, Forestry and Fisheries - South Africa |
| 10:00 - 10:20 | Chavez F., Friederich G., Messié M., Sevadjian J.                    | The roles of physical and biological processes in determining oxygen and pH levels in the eastern Pacific Ocean | MBARI - Usa   |
| 10:20 - 10:40 | <b>Coffee</b>  |   |   |
| 10:40 - 11:00 | Bianchi D., Galbraith E.   | Oxygen minimum zones in an eddy-resolving coupled climate model   | McGill University - Canada  |
| 11:00 - 11:20 | Cavan E.   | Sinking Particulate Organic Carbon in the Equatorial Tropical North Pacific Oxygen Minimum Zone                 | National Oceanography Centre Southampton - UK   |
| 11:20 - 11:40 | Franco A. C., Lachkar Z., Gruber N., Münnich M.                      | Changes in habitat availability under increased upwelling in the Humboldt Current System                        | ETH Zürich - IBP - Austria  |
| 11:40 - 12:00 | Cornejo M., Bravo L., Ramos M., Gallegos M., Pizarro O.              | Oceanic anaerobic zone driven by a long-lived mesoscale eddy in the South Pacific                               | Universidad de Concepción - Chile   |
| 12:00 - 13:30 | <b>Break</b>   |   |   |

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| <b>Session 8 – Oxygen time series and instrumental developments</b> | <b>Conveners Allan Devol &amp; Alberto Borges</b> |
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| 13:30 - 14:00 | Keynote: Niels-Peter Revsbech  | <b>Oxygen, respiration and photosynthesis in the OMZ</b>  | Aarhus University - Denmark   |
| 14:00 - 14:20 | Tengberg A.  | Improve your oxygen optode measurements - user examples, practical handling and calibrations  | Göteborg University - Sweden  |
| 14:20 - 14:40 | Jost G., Labrenz M.  | Low Oxygen Environments - a Challenge for New Instruments Ensuring Unbiased Downstream Analysis   | Leibniz Institute for Baltic Sea Research (IOW) - Germany                       |
| 14:40 - 15:00 | Devol A., Horak R., Ward B   | Expansion of the oxygen minimum zone and the denitrification regime in the Eastern Tropical North Pacific from 1972-2012                          | University of Washington - USA  |
| 15:20 - 15:40 | Queste B., Fernand L., Jickells T., Heywood K., Hind A.                                      | Multi-scale drivers of oxygen depletion in the North Sea: insights from glider observations   | Centre for Ocean and Atmospheric Sciences - University of East Anglia - UK      |
| 15:40 - 16:00 | <b>Coffee</b>  |   |   |
| 16:00 - 16:20 | Friedrich J., Janssen F., He Y., Holtappels M., Konovalov S., Prien R., Rehder G., Stanev E. | Monitoring hypoxia: approaches to addressing a complex phenomenon in the Black Sea  | Helmholtz Center Geesthacht - Germany   |
| 16:40 - 17:00 | Le H.M., Anrys O., Brion N., Verbanck M.A.   | Data mining and knowledge discovery based on dissolved oxygen concentrations recorded continuously: the Zenne river case study in Central Belgium | Universite Libre de Bruxelles - Department of Water Pollution Control - Belgium |

Session 11 – Posters

Paleoproxies of hypoxia

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| 01 | 210Pb-derived ages for the reconstruction of terrestrial contaminant history into a coastal lagoon.  | Guerra R., Righi S.   | University of Bologna - Italy  |
| 02 | Development of redox proxies based on benthic foraminifera and its application on the sediment record of upwelling regions: a SIMS and FT-ICP-OES approach | McKay C.L., Filipsson H.L., Groeneveld J., Gallego-Torres D., Romero O.E.             | Lund University - Sweden   |
| 03 | Heterocyst glycolipids as tracers of cyanobacterial blooms in the Baltic Sea. A proxy to reconstruct a possible trigger of anoxic events                   | Sollai M., Warden L., Bale N.J., Hopmans E.C., Mets A., Moros M., Sinnigh Damsté J.S. | Royal Netherlands Institute of Sea Research (NIOZ) - The Netherlands |
| 04 | The potential of Mn/Ca in benthic foraminifera as a low oxygen indicator   | Filipsson H.L., Groeneveld J.   | Lund University - Sweden   |
| 05 | Using fish ear bones as proxies for tracing hypoxic events.  | Gilmore K., Gillanders B.M. and Doubleday Z.A.  | University of Adelaide - Australia                                   |

Deoxygenation and biogeochemical cycles

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| 06 | Artificially induced migration of redox layers in Adriatic sediment: fate of some trace metals  | Metzger E., Langlet D., Viollier E., Riedel B., Zuschin M., Stachowitsch M., Tharaud M., Geslin E., Jorissen F. | Université d'Angers - France  |
| 07 | CO CH4 and N2O dynamics and fluxes in the brackish Lake Grevelingen (The Netherlands)   | Borges A.V., Meysman F., Darchambeau, Beulen A., Roland F., Harlay J.   | University of Liège - Chemical Oceanography Unit (AGO) - Belgium  |
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| 09 | Hypoxia in the central Arabian Gulf (Eez of Qatar)  | Al-Ansari E.M., Rowe G.T., Abdel-Moati M.A.R., Yigiterhan O., Al-Ansi Al-Yafei M.A.A.A., Upstill-Goddard R.     | Environmental Studies Center - University Qatar - Qatar   |
| 10 | Modern state of the Caspian oxygen minimum zone   | Serebrennikova E., Dukhova L., Sapazhnikov V.   | Department of Hydrochemistry, Russian Federal - Research Institute of Fisheries and Oceanography (VNIRO) - Russia |
| 11 | Nitric Oxide in the Oxygen Minimum Zone off Peru  | Lutterbeck H.E., Arévalo-Martínez D., Bange H.W.  | GEOMAR - Germany  |
| 12 | Occurrence of hypoxic events in the northern Adriatic Sea   | Djakovac T., Supic N., Degobbi D and Giani M.   | Center for Marine Research, Rudjer Boskovic - Croatia   |
| 13 | On climatic and anthropogenic forcing in the Black Sea biogeochemistry interannual changes  | Pakhomova S.V., Yakushev E.V., Shtereva G., Zatsepin A.G.   | Norwegian Institute for Water Research - Norway   |
| 14 | On definitions of redox conditions using biochemical thresholds   | Yakushev E.V.   | Norwegian Institute for Water Research - Norway   |
| 15 | Oxygenic primary production in the hypolimnion: a main driver for biogeochemical cycling at the oxic-anoxic interface in shallow lakes? | Brand A., Bruderer H., Schubert C., Wehrli B.   | Surface Water Group - Eawag - Switzerland   |
| 16 | Sediment oxygen uptake in Lake Geneva   | Schwefel R., Bouffard D., Bryant L.D., Wüest A.   | EPFL-ENAC-APHYS - Switzerland   |

Modelling hypoxia

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| 17 | Context between phytoplankton development in the river and hypoxia in the Elbe estuary (Germany)                                | Schöl A., Hein B., Vieregutz C., Kirchesch V.  | Federal Institute of Hydrology - Germany                                    |
| 18 | Coupled dynamics of manganese, iron and phosphorus in the water column of the Black Sea and implications for phosphorus burial. | Dijkstra N., Kraal P., Rijkenberg M.J.A., Slomp C.P.   | Utrecht University - The Netherlands  |
| 19 | Effects of bioturbation in the oxygen regime of the sediment-water interface: modeling study.                                   | Protsenko E.A., Yakushev E.V.  | P.P. Shirshov Institute of Oceanology - Russian Academy of Science - Russia |
| 20 | Exploring a microbial ecosystem approach to modeling marine oxygen minimum zone biogeochemistry                                 | Zakem E., Follows M.   | Massachusetts Institute of Technology - Usa                                 |
| 21 | Intercomparison of Hypoxia Models for the Northern Gulf of Mexico   | Fennel K., Aikman F., Hetland R., Justic D., Ko D.-S., Laurent A., Lehrter J., Murrell M., Wang L., Xu J., Yu L., Zhang W. | Dalhousie University - Canada   |
| 22 | Modeling Bottom Boundary Layer biogeochemistry changes forced by episodic anoxia  | Yakushev E.V., Protsenko E.A.  | Norwegian Institute for Water Research - Norway                             |
| 23 | Oxygen dynamics in the Gulf of St. Lawrence and on the Scotian Shelf  | Bianucci L., Fennel K.   | Dalhousie University - Canada   |
| 24 | Decadal and Interannual Variability of Oxycline along the Indian West Coast   | Parvati V., Suresh I., Neetu S., Lengaigne M., Levy M., Resplandy L., Ethé C., Vialard J., Naqvi S.W.A.                    | CSIR-National Institute of Oceanography - India                             |



## Deoxygenation in a global change context

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| 25   | Climate controls hypoxia dynamic in low phosphorus conditions: Paleolimnological retro-analysis from 3 large perialpine lakes                              | Jenny JP., Arnaud F., Dorioz JM., Sabatier P., Alric B., Perga ME   | ETE - INRS - Université du Québec - Canada   |
| <b>Deoxygenation, marine resources, ecosystem functioning and structure of the foodweb</b> |  |   |  |
| 26   | Early stages of dominant pelagic copepods at Humboldt Current System: effects of hypoxia over physiological responses                                      | Ruz P., Hidalgo P., Cornejo M.  | Universidad de Concepción - Chile  |
| 27   | Effects of hypoxia on the fish and crustacean fauna in the Gironde Estuary (France)  | Lanoux A., Lepage M., De Watteville J., Jatteau P., Schmidt S., Sottolichio A.  | IRSTEA - Centre de Bordeaux - France   |
| 28   | Egg production rate and survival of dominant pelagic copepods associated with the Oxygen Minimum Zone off northern Chile in the Humboldt Current ecosystem | Hidalgo P., Ruz P., Cornejo M.  | Universidad de Concepción - Chile  |
| 29   | Foraminiferal capacities to survive anoxia: comparison of two species developing various anaerobic strategies  | Geslin E., Langlet D., Risgaard-Petersen N., Le Kieffre C., Barras C., Mabilieu G., Metzger E., Jorissen F.                                     | Université d'Angers - France   |
| 30   | Functional traits of the nematofauna from the Indian western continental margin in relation to habitat heterogeneity.                                      | Singh R., Ingole B., Kaiser S.  | DZMB - Germany   |
| 31   | Has low oxygen condition an impact on nutrients dynamics and macrofauna in a coastal macrophytodetritius accumulation?                                     | Remy F., T. Mascart P. Dauby S. Gobert G. Lepoint   | University of Liège - Laboratory of Oceanology - Belgium                                     |
| 32   | Hypoxia as One of Multiple Stressors Influencing Benthic Community and Trophic Structure Across OMZ Margins  | Levin L.A., Sperling E.A., Frieder C.A.   | Center for Marine Biodiversity and Conservation - Scripps Institution of Oceanography - Usa  |
| 33   | Hypoxia in macrophytodetritius accumulation: Species specific harpacticoid copepod adaptation?   | Mascart T., M. De Troch S. Gobert R. Biondo F. Remy G. Lepoint  | University of Liège, Dept. of Environmental - Sciences and management, Laboratory of Belgium |
| 34   | Impact of Low Oxygen Layers on Phytoplankton Composition and Fish Kill   | Al-Azri A., Al-Hashmi K., Piontkovski S., Al-Habsi H.   | Sultan Qaboos University - Oman  |
| 35   | Influence of acid-volatile sulfides on metals bioavailability in sediments of a coastal lagoon   | Guerra R Borgognoni L   | University of Bologna - Italy  |
| 36   | Redoxcline sediments of haloclines associated with Deep Hypersaline Anoxic Lakes support protist and fungal populations                                    | Bernhard J.M., Kormas K., Pachiadaki M., Rocke E., Beaudoin D., Visscher P.T., Edgcomb V.P.   | Woods Hole Oceanographic Institution - Usa   |
| 37   | Two-dimensional distribution of living benthic foraminifera in an anoxic estuarine mudflat (Loire River)   | Thibault De Chanvalon A., Metzger E., Mouret A., Cesbron F., Knoery J., Rozuel E., Launeau P., Geslin E.  | Université de Nantes, Observatoire des Sciences de l'Univers Nantes Atlantique - France      |
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| 39   | Anoxic conditions in fast ice and ice cover of lakes in Antarctica: concentration of particulate matter and composition features of organic compounds      | Kravchishina M.D., Nemirovskaya I.A., Artemév V.A.  | P.P. Shirshov Institute of Oceanology of the Russian - Academy of Sciences (IO RAS) - Russia |
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| 43   | Segregation patterns of MCG subgroups in stratified karstic lakes  | Fillol M., Gich F., Sanchez À., Cuesta I., Borrego C. M.  | University of Girona - Spain   |
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| <b>Eastern Boundary upwelling systems (EBUS) as natural SOLAS laboratories</b>             |  |   |  |
| 45   | Differential denitrification in the oxygen minimum zone in Eastern Tropical North Pacific: Medieval Warming and Little Ice Age.                            | Juarez M., A. Sanchez, O. Gonzalez-Yajimovich   | Interdisciplinary Center of Marine Sciences, National Polytechnic Institute - México         |
| 46   | Impact of low oxygen concentrations on scallop culture in the upwelling-influenced Bay of Paracas, Peru  | Aguirre A., Flye-Sainte Marie J., Thouzeau G., Jean F.  | Université de Brest - France   |

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| 49  | The Benguela Upwelling System within an Oxygen Minimum Zone: Potential changes over a warmer climate   | Dadou I., Machu E., Le Vu B., Goubanova K., Garçon V.  | OMP/LEGOS - France  |
| 50  | Effects of hypoxia on physical rates of zooplankton in the oxygen minimum zone of the eastern South Pacific  | Cornejo M., Hidalgo P., Ruz P., Contreras G., Franco B. and Fierro P.                                  | Universidad de Concepcion - Chile   |
| 51  | The Oxygen Supply Tracer Release Experiment in the tropical North East Atlantic Oxygen Minimum Zone  | Koellner M., Banyte D., Tanhua T., Visbeck M.  | GEOMAR Helmholtz Centre for Ocean Research - Germany                                  |
| <b>Oxygen time series and instrumental developments</b> |  |  |   |
| 52  | Seasonal, inter-annual and decadal changes of oxygen (O <sub>2</sub> ), carbon dioxide CO <sub>2</sub> (CO <sub>2</sub> ), methane (CH <sub>4</sub> ) and nitrous oxide (N <sub>2</sub> O) in the Scheldt estuary (Belgium, The Netherlands) | Borges AV Middelburg J.J.B., Chou L., Kromkamp J., Houtekamer M., Harlay J.                            | University of Liège - Chemical Oceanography Unit (AGO) - Belgium                      |
| 53  | Seasonal and inter-annual variations of community metabolism rates of a Posidonia oceanica seagrass meadow based on continuous oxygen measurements with optodes  | Champenois W., Borges A.V.   | University of Liège - Chemical Oceanography Unit (AGO) - Belgium                      |
| 54  | Eastern Pacific oxygen time series from the Stratus mooring and from floats  | Czeschel R., Weller R.A., Stramma L., Bigorre S.   | Helmholtz-Zentrum für Ozeanforschung Kiel Germany                                     |
| 55  | Correlation between the acoustic noise field measured in a Posidonia oceanica bed and the photosynthetic activity.   | Felisberto P., Zabel F., Rodriguez O., Santos P., Jesus S.M., Champenois W., Borges A.V., Santos R.    | University of Liège - Chemical Oceanography Unit (AGO) - Belgium                      |
| 56  | Oxygenation trends in the coastal waters of Gulf of Trieste (Northern Adriatic Sea)  | Giani M., Celio M., Comici C., Lipizer M., De Vittor C.  | Istituto Nazionale di Oceanografia e Geofisica, Sperimentale - OGS, Italy             |
| 57  | Kinetics of oxygen uptake in pure cultures of marine bacteria  | Gong X., E. Garcia Robledo, A. Schramm, N.P. Revsbech  | Aarhus University -Department of Bioscience, Microbiology - Denmark                   |
| 58  | Application of FerryBox measurements to oxygen flux estimates in European Coastal waters   | Haller M., Petersen W., Callies U.   | Institute of Coastal Research - Helmholtz-Zentrum, Geesthacht - Germany               |
| 59  | Long Term Variability of Hypoxia/Anoxia and Eutrophication in a semi-enclosed area of the Aegean Sea (East Mediterranean)  | Pavlidou A., Rousselaki E., Kontoyiannis H., Michalopoulos P., Pagou P.                                | Hellenic Center for Marine Research (HCMR) - Greece                                   |
| 60  | New insights for the oxygen dynamics in the Black Sea revealed by Argo floats measurements   | Peneva E., Slabakova V., Stanev E.   | Helmholtz-Zentrum für Ozeanforschung Kiel Germany                                     |
| 61  | Investigating dissolved oxygen in the Gironde estuary based on continuous in situ monitoring: merits and drawback  | Schmit S., Lanoux A., Diallo P-Y Lepage M., Etcheber H.  | IRSTEA - Centre de Bordeaux - France  |
| 62  | Oxygen of nanomolar concentration is not found in the Black Sea  | Stunzhas P.A., Yakushev E.V.   | Norwegian Institute for Water Research - Norway                                       |
| 63  | Multi parameters observatories and their contribution to a better knowledge of the ocean   | Tengberg A.  | Göteborg University - Sweden  |
| 64  | Oxygen time series at the Scotian Shelf, NW Atlantic Ocean   | Thomas H., Craig S.E.  | Dalhousie University - Canada   |
| 65  | International Group for Marine Ecological Time-Series – IGMETS   | Isensee K. and Valdés L.   | Unesco - France   |
| 66  | The seasonal and spatial variations of phytoplankton community and their correlation with environmental factors in Oualidia lagoon (Moroccan Atlantic)   | Elkalay K., Natij L., Damsiri Z., Khalil K., Nakhcha C.  | Université Cadi Ayyad Essaouira Al Jadida - Morocco                                   |
| 67  | Organic matter oxidation in temperate estuarine sediments: experiments and modelling   | Khalil K., Jamali H., Rabouille C., Raimonet M., Andrieux-Loyer F., Ragueneau O., Elkalay K.           | Université Cadi Ayyad Essaouira Al Jadida - Morocco                                   |