

30th International Liège Colloquium on Ocean Hydrodynamics
Liège, May 4-8, 1998

" *Hydrodynamical and ecosystem processes in ice covered seas of the Southern and Northern Hemispheres* "

MONDAY, May 4th, 1998

9.00 - 10.00 : Registration, Coffee, Display of posters

10.00 - 12.30

Introduction - J.C.J. Nihoul. - Université de Liège. Belgium

Session 1 Chairman L. Legendre - General hydrodynamical processes in ice covered seas

10h30.- *Intensive current disturbance in the Northern-East Norwegian Sea.*

V. M. Kushnir - Marine Hydrophysical Institute. Sevastopol. Ukraine

11h00.- *Deep water ventilation by gravity currents forming on polar shelves - a numerical investigation -*

J. Kämpf¹, H. Fohrmann², and J. O. Backhaus¹

1: Institut für Meereskunde, Hamburg, Germany

2: Sonderforschungsbereich, Kiel, Germany

11h30.- *Modeling of the large-scale water circulation and transport of pollutants in the Arctic Ocean*

V.K. Pavlov. - Arctic and Antarctic Research Institute, St.-Petersburg, Russia

12h00.- *Two-dimensional vortex motions of fluid in harbour-like basins at large Reynolds numbers*

V. Goncharov¹ and V. Pavlov²

1: Institute of Atmospheric Physics, Moscow, Russia

2: UFR de Mathématiques Pures et Appliquées, Lille, France

MONDAY, May 4th, 1998 14.00 - 18.30

Session 2 Chairman A. Kostianoy - Specific Hydrodynamical processes in ice covered seas

14h00.- *Vertical turbulent structure of ice-covered flows in coastal areas of tidal seas*

E.I. Debol'skaya - Institute of Russian Academy of Science, Moscow, Russia

14h30.- *Modelling contaminant transport in Arctic Ocean*

I.H. Harms¹ and M.J. Karcher²

1: Institut fuer Meereskunde, Hamburg, Germany

2: Bundesamt fuer Seeschifffahrt und Hydrographie Hamburg, Germany

15h00.- *General characteristics of density-turbidity currents in the Ross Sea (Antarctica)*

E. Salusti - Universita la Sapienza. Roma, Italy

15h30.- *First Numerical Investigations of the Ross Sea (Antarctic) General Circulation*

A. Bergamasco and S. Carniel - CNR-ISDGM, Venice, Italy

(16.00 - 16.30 Coffee Break and Poster Display)

Session 3 Chairman - Front and polynya processes in ice covered seas

16h30.- *Oceanic fronts of the Nordic Seas*

A.G.Kostianoy and V.B.Rodionov - P.P.Shirshov Institute of Oceanology, Moscow, Russia

17h00.- *On the formation of the Ross Sea polynya in a large-scale ice-ocean model*

H. Goosse and Th. Fichefet - Institut d'Astronomie de Géophysique G. Lemaitre, Louvain, Belgium

17h30.- *Convective processes in the Ross Sea Shelf (Antarctica)*

G. Buffoni, A. Cappelletti, G. M.R. Manzella and P. Picco - ENEA, La Spezzia, Italy

18h00.- *Antarctic Coastal Polynyas and katabatic winds*

H. Gallée - Université Catholique de Louvain, Louvain la Neuve, Belgium - Université de Grenoble, France

18.30 Reception by J.C.J. Nihoul, Chairman of the Scientific Organizing Committee

TUESDAY, May 5th, a.m. 9.00 - 12.30

Session 4 Chairman Ch Gerday - Ice and snow processes in ice covered seas

09h00.- *Influence of Ice Deformation on Water Column in the Weddell Sea*

B. Petit - Management Unit of the North Sea Mathematical Models (MUMM), Brussel, Belgium

Session 5. Chairman R.F. Matagne - Ecophysiological processes in ice covered seas

09h30.- *Enzymes from cold adapted organisms: a thermodynamic challenge*

Charles Gerday. - University de Liège, Belgium

10h00. - *Salinity and temperature tolerance of sea ice organisms from pack ice of the Greenland Sea*

C. Friedrich & R. Gradinger - Institute for Polar Ecology, Kiel Germany

(Coffee Break and Poster Display : 10.30 - 11.00)

11h00. - *Life style and biochemical adaptation in Antarctic fishes*

Guido di Prisco - Institute of Protein Biochemistry and Enzymology, C.N.R., Naples, Italy

Special Session Chairman R. Azzolini - International Collaboration at the Italian Arctic Base at Ny-Alesund (Svalbard)

11h30. *General Introduction* R. Azzolini, CNR, Rome, Italy

Project Presentation. I. Allegrini, CNR, Rome Italy

Relations with NY-Smac. G. Diprisco, CNR, Naples, Italy

TUESDAY, May 5th, p.m. 14.00 - 18.30

Session 6 Chairman L. Anderson - Physical/ecological interactions in ice covered seas

14h00.- *Ecological and physical processes in the Marginal Ice Zone of the northern Barents Sea during the summer melt period.*

S. Falk-Petersen¹, H. Hop¹, W. P. Budgell¹, R. Korsnes¹ and E. Nøst Hegseth², - 1: Norwegian Polar Institute, Tromsø, Norway - 2: University of Tromsø, Norway

14h45.- *Dynamics and downward export of first-year ice algae and under-ice phytoplankton on the Canadian Arctic Shelf*

L. Legendre, M. Fortier, C. Michel et B. LeBlanc - GIROQ, Université Laval, Québec, Canada

15h30.- *Meso-scale features of co-occurrence of diatom blooms and copepod abundance along the Antarctic Polar Front: The role of hydrodynamics and biology.*

U. Bathmann - Institut für Polar und Meeresforschung, Bremerhaven, Germany

(16.15 - 16.45 Coffee Break and Poster Display)

16h45.- *Modeling hydro- and thermodynamics, including sea ice, in the North Sea and the Baltic Sea on a decadal timescale.*

C. Schrum. - Institut fuer Meereskunde Universitaet Hamburg

17h15.- *Relationship between phytoplankton communities and water column structure in the Ross Sea*

A. Goffart¹, L. Guglielmo², G. Catalano³ and J.H. Hecq¹

1: Université de Liège, Belgium

2: Università di Messina, Italy

3: Istituto Talassografico di Trieste, Italy

17h45.- *Modeling the Ross Sea ecosystems in relation to hydrodynamical constraints.*

J.H. Hecq¹, A. Goffart¹, B. Petit², P. Brasseur³ - 1 Université de Liège, Belgium - 2 Management Unit of the North Sea Mathematical Models (MUMM), Brussel, Belgium - 3 Université de Grenoble, France

WEDNESDAY, May 6th, a.m. 9.00 - 12.30

Session 7 Chairman C. Lancelot - Ecosystem processes in ice covered seas

09h00.- *Lake Baikal ice properties and diatoms-picoplankton relationship in water ecosystem.*

S. V.Semovski¹, P. P.Sherstyankin¹ and N. P.Minko² - 1: Limnological Institute, Irkutsk, Russia - 2: Institute of Solar- Terrestrial Physics, Irkutsk, Russia

09h30.- *Structure of phytoplankton communities in the waters around Svalbard in summer 1991 (EPOS II project)*

G. Socal¹, and J. Wiktor² - 1: Istituto di Biologia del Mare C.N.R., Venice, Italy - 2: Arctic Ecology Group, Institute of Oceanology, PAN Sopot, Poland

10h00.- *An assessment of primary production at the Polar Front of Barents Sea: a region of the european Arctic shelf influenced by an inflow of Atlantic water and by retreating ice edge.*

A. Luchetta¹, M. Lipizer¹, G. Socal² and U. Schauer³

1- Istituto Talassografico C.N.R., Trieste, Italy - 2 - Istituto di Biologia del Mare C.N.R., Venice, Italy - 3 - Alfred Wegener Institute for Polar and Marine Research, Bremerhaven, Germany

(Coffee Break and Poster Display : 10.30 - 11.00)

11h00.- *Phytoplankton growth rates in the Ross Sea determined by independent methods: temporal variations*

W. O. Smith¹, S. Mathot¹, D. Nelson², D. Garrison³, E. Lessard⁴, G. DiTullio⁵, M. Gowing³, and L. Gordon²

1: University of Tennessee, Knoxville, USA - 2: Oregon State University, Corvallis, USA - 3: University of California, Santa Cruz, USA - 4: University of Washington, Seattle, USA - 5: University of Charleston, Charleston, USA

11h30.- *Estimate of Phaeocystis sp. carbon biomass: methodological problems related to the mucilaginous nature of the colonial matrix*

S. Mathot¹, W.O. Smith¹, D.L. Garrison², M.M. Gowing², C.A. Carlson³ - 1: University of Tennessee, Knoxville, USA. - 2: University of California, Santa Cruz, USA. - 3: Bermuda Biological Station for Research, USA

WEDNESDAY, May 6th, p.m. 14.00 - 18.30

Session 7 bis Chairman S. Falk Petersen - Ecosystem processes in ice covered seas

14h00.- *Significance of photo- and heterotrophic flagellates in Arctic sea ice*

R. Gradinger - Institute for Polar Ecology, University of Kiel, Germany

14h45.- *The comparative role of large grazers in the control of the silica cycle in ice-covered and in open-ocean zones of the polar seas*

J. Lefèvre and P. Treguer - Université de Bretagne Occidentale, Brest, France

15h30.- *Distribution and development of the microalgal community in the Laptev Sea kryo-pelagic system during autumnal freeze-up* - K. von. Juterzenka¹, K. Tuschling¹, A. Anoshkin², K. Knickmeier¹

1: Institut für Polarökologie, Kiel University, Germany

2: Krylov Shipbuilding Research Institute, St. Petersburg, Russia

(16.00 - 16.30 Coffee Break and Poster Display)

16h30.- *Photosynthetic pigment fingerprints as indicators of algae assemblages from the water column, first- and multi-year sea-ice in the high Arctic (Barents-/ Greenland-Sea).*

I. Peeken - Institut für Meereskunde, Kiel, Germany

17h00.- *Nutrients depletions in the Ross Sea and their relations with pigment stocks.*

L. Goeyens¹, A. Goffart² and G.Catalano³. - 1: University of Brussels, Belgium - 2: Université de Liège, Belgium - 3: Istituto Talassografico di Trieste, Italy

17h45.- *Annual changes in primary production and phytoplankton in relation to water mass, nutrients, and light, with emphasis on the sea ice zone (Austral Ocean)*

B. Griffiths, - Australia

19.30 COLLOQUIUM DINNER AT THE CHATEAU DE COLONSTER

THURSDAY, May 7th, a.m. 9.00 - 12.30

Session 8 Chairman P. Sedwick - Geochemical processes and vertical fluxes in ice covered seas

09h00.- *Particle fluxes and biogeochemical processes in an area influenced by seasonal retreat of the ice margin (Northwestern Ross Sea, Antarctica)*

L. Langone, M. Frignani, M. Ravaioli and C. Bianchi - *Istituto di Geologia Marina (CNR), Bologna, Italy*

09h15.- *Seasonality and Composition of particulate fluxes in the Southern Ross Sea (Antarctica)*

A. Accornero¹, D. Marino², A. Monaco³ and S. Razouls⁴

1: Istituto di Meteorologia ed Oceanografia, Istituto Universitario Navale, Napoli, Italy

2: Stazione Zoologica "A. Dohrn", Napoli, Italy

3: Laboratoire de Sedimentologie et Geochimie Marines, Université de Perpignan, France

4: Observatoire Oceanologique, Université Pierre et Marie Curie, Banyuls sur Mer, France

09h45 - *Vertical flux patterns of marine and terrigenous matter in the ice-covered Laptev Sea*

E.-M. Nöthig¹, K. Fahl¹, M. Gleitz¹, S. Grossmann¹ and V. Shevshenko² - 1: Alfred Wegener Institute for Polar and Marine Research, Bremerhaven, Germany - 2: Shirshov Institute of Oceanology, Moscow, Russia

(Coffee Break and Poster Display : 10.30 - 11.00)

11h00.- *Distribution of dissolved organic carbon in the central Arctic Ocean*

I. Bussmann and G. Kattner, - Institut für Polar und Meeresforschung, Bremerhaven, Germany

11h30.- *Using Nitrate-Phosphate Relationships to Trace Atlantic and Pacific Waters in the Upper Arctic Ocean.*

E P Jones 1, L G Anderson 2, J H Swift 3 - 1: Bedford Institute of Oceanography, Nova Scotia, Canada - 2:

Department of Analytical and Marine Chemistry, Göteborg University, Sweden - 3: Scripps Institution of Oceanography, University of California San Diego, USA

12h00.- *Sinks of carbon dioxide in the Greenland Sea and the Arctic Ocean*

Leif G. Anderson 1, Melissa Chierici 1, Agneta Fransson 1 and E. Peter Jones 2 - 1: Department of Analytical and Marine Chemistry, Göteborg University, Sweden - 2: Bedford Institute of Oceanography, Nova Scotia,

Canada

THURSDAY, May 7th, p.m. 14.00 - 18.30

Session 8 bis Chairman U. Bathmann - Geochemical processes and vertical fluxes in ice covered seas

14h00. *The Sub-Ice Boundary Layer: Ecosystem Properties of the Arctic Marginal Ice Zone.*

O. J. Haupt¹, R. Gradinger², T. Mock² - 1 Sonderforschungsbereich University of Kiel, Germany - 2 Institut für Polarökologie, University of Kiel, Germany

14h30.- *Arctic sea-ice communities - Sources of particulate matter for the pelagic ecosystem.*

I. Werner, R. Gradinger & C. Friedrich - Institute for Polar Ecology, Kiel, Germany

15h00.- *Pelagic production and export patterns as related to the ice regime in the Greenland Sea*

R. Peinert¹, O. Haupt¹, R. Ramseier², E. Bauerfeind¹ - 1: Institute for Marine Research, Kiel, Germany - 2: Microwave Group Ottawa-River, Dunrobin, Canada

15h30.- *Downward export of phytoplankton production in the Northeast Water Polynya: Influence of wind and hydrodynamic conditions.*

S. Pesant¹, E. Bauerfeind², M. Johnson³, L. Legendre¹, M. Gosselin⁴, O. Haupt² - 1: GIROQ, Université Laval, Québec, Canada - 2: University of Kiel, Germany - 3: University of Alaska, Fairbanks, Alaska, USA - 4: Université du Québec à Rimouski, Québec, Canada

(16.00 - 16.30 Coffee Break and Poster Display)

16h30.- *Benthic-pelagic coupling in the Northeast Water Polynya: A self-sustaining system vs. a potential export from a semi enclosed Arctic ecosystem.*

W. Ritzrau¹, S. Pesant², D. Piepenburg¹, G. Graf³, L. Legendre², R. Ramseier⁴ - 1: University of Kiel, Germany - 2: GIROQ, Université Laval, Québec, Canada - 3: University of Rostock, Germany - 4: Microwave Group-Ottawa River, Ontario, Canada

17h00.- *The release of iron from melting sea ice and ice-edge algal blooms in the Southern Ocean*

P. N. Sedwick¹ G. R. DiTullio² and P. R. Edwards³ - 1: Antarctic CRC, Hobart, Tasmania, Australia - 2: Grice Marine Biological Laboratory, Charleston, South Carolina, USA - 3: IASOS, University of Tasmania, Hobart, Tasmania, Australia

17h45.- *Iron and light are controlling phytoplankton bloom development and carbon exportation in the Southern Ocean : observational and mathematical evidence*

C. Lancelot¹, E. Hannon, S. Becquevort¹, H. de Baar² and C.Veth² - 1: GMMA, Université Libre de Bruxelles, Belgium - 2: NIOZ, Texel, The Netherlands

FRIDAY, May 8th, a.m. 9.00 - 12.30

Session 9 Chairman F. Faranda - Zooplankton, heterotrophy and Upper trophic levels

09h00.- *Meso- and bathypelagic copepods in the ice-covered Greenland Sea: water column partitioning and hydrographic influences*

H. Auel - Institute for Polar Ecology, University of Kiel, Germany

09h30.- *Life Cycle Strategies and the Lipid Diversity of Polar Zooplankton*

W. Hagen¹, G. Kattner², J.R. Sargent³ and S. Falk-Petersen⁴ - 1: Institut für Polarökologie, Universität Kiel, Kiel, Germany, - 2:-Institut für Polar- und Meeresforschung, Bremerhaven, Germany, - 3: NERC, University of Stirling, United Kingdom - 4: Norsk Polarinstitut, Tromsø, Norway

10h00.-*Mass occurrence of Pseudocalanus minutus in giant box corer samples*

Dan Seiler - Institute for Polar Ecology, Kiel, Germany

(Coffee Break and Poster Display : 10.30 - 11.00)

11h00.-*Zooplankton biodiversity in the Ross Sea (Antarctica)*

L. Guglielmo¹, A. Granata and J.H. Hecq² - 1: Università di Messina, Italy - 2: Université de Liège, Belgium

11h30. *At-sea distribution of seabirds and marine mammals in polar ecosystems reflect high production, low diversity in Weddell Sea pack-ice.*

Claude R. Joiris - Free University of Brussels, Belgium

12h00. *Modelling approach of the upper trophic levels of the Southern Ocean ecosystem*

Siegrid Jans, Khalid Elkhlahi and Nikos Skliris - Université de Liège, Belgium

12h15. *Ocean-Atmosphere Heat Fluxes in the Ross Sea - Preliminary Results*

G. Budillon, G. Fusco, G. Spezie - Istituto di Meteorologia e Oceanografia - IUN, Napoli - ITALY