
BÁRBARA CRISTIE FRANCO

Curriculum Vitae



PERSONAL INFORMATION

Current Position: Research Scientist (CONICET).

Office Address: Centro de Investigaciones del Mar y la Atmósfera (CIMA)/CONICET-UBA and Institut Franco-Argentin pour les Études du Climat et ses Impacts IFAECI (CNRS-CONICET-UBA-IRD).

Intendente Guiraldes 2160 - Ciudad Universitaria. Edificio Cero + Infinito, (2301).
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ACADEMIC DEGREES

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| 2007 – 2013 | Ph.D. in Physical Oceanography at Universidad de Buenos Aires – UBA. Capital Federal/BsAs, Argentina. |
| 2004 – 2006 | Master in Physical, Chemical and Geological Oceanography at Universidade Federal do Rio Grande – FURG, Rio Grande/RS, Brazil. |
| 1999 – 2004 | Bachelor in Oceanography at Universidade Federal do Rio Grande - FURG. Rio Grande/RS, Brazil. |

RESEARCH INTERESTS

Interaction between physical and biological processes in the ocean. Understand how the main physical processes of SW Atlantic Ocean and their variability can impact biological processes and the fishery. Lagrangian stochastic simulation applied to understand larval drift of distinct species of commercially important fishes and invertebrates. Simulation of how extreme climate events impacts on larval drift by using ocean numerical models and Lagrangian stochastic simulations. Climate change impacts on fisheries and conservation of marine species.

PUBLICATIONS

- FRANCO, B.C. and MUELBERT, J.H. (2003)** Distribuição e composição do icteoplâncton na quebra de plataforma do Sul do Brasil. *ATLÂNTICA*, 25(1), 75-86.
- FRANCO, B.C.; MUELBERT, J.H. and MATA, M.M. (2006)** Mesoscale physical processes and the distribution and composition of ichthyoplankton on the southern Brazilian shelf break. *FISHERIES OCEANOGRAPHY*, 15(1), 37-43.
- FRANCO, B.C.; MATA, M.M.; PIOLA, A.R. and GARCIA, C.A.E. (2007)** Northwestern Weddell Sea deep outflow into the Scotia Sea during the austral summers of 2000 and 2001 estimated by inverse methods. *DEEP-SEA RESEARCH I*, 54(10), 1815-1840.
- MAUNA, A.C.; ACHA, E.M.; LASTA, M.L.; BALDONI, A.; FRANCO, B.C. and IRIBARNE, O.O. (2007)** Cross-frontal variations in recruitment and biomass

of the Patagonian scallop (*Zygochlamys patagonica*) in the SW Atlantic shelf break front. *JOURNAL OF SHELLFISH RESEARCH*, 26(4), p.1326.

- FRANCO, B.C.; PIOLA, A.R.; RIVAS, A.L.; BALDONI, A. and PISONI, J.P. (2008)** Multiple thermal fronts near the Patagonian shelf break. *GEOPHYSICAL RESEARCH LETTERS*, 35, L02607, doi:10.1029/2007GL032066.
- MAUNA, A.C.; FRANCO, B.C.; BALDONI, A.; ACHA, E.M.; LASTA, M.L. and IRIBARNE, O.O. (2008)** Cross-front variations in adult abundance and recruitment of Patagonian scallop (*Zygochlamys patagonica*) at the SW Atlantic Shelf Break Front. *ICES JOURNAL OF MARINE SCIENCE*, 65(7), 1184-1190.
- MAUNA, A.C.; LOMOVASKY, B.J.; FRANCO, B.C.; SCHWARTZ, J.M.; BOTTO, F.; ACHA, E.M. and IRIBARNE, O.O. (2010)** Variations in the biological characteristics of the Patagonian Scallop (*Zygochlamys patagonica*) across the Argentine Shelf Break Front. *JOURNAL OF SHELLFISH RESEARCH*, 29(4), 819-825.
- FRANCO, B.C.; PIOLA, A.R.; RIVAS, A.L. y PALMA, E.D. (2010)** La corriente de Malvinas. Ramas y frentes oceánicos en el mar patagónico. *CIENCIA HOY*, 19(114), 27-31.
- MAUNA, A.C.; BOTTO, F.; FRANCO, B.C.; SCHWARTZ, J.M.; ACHA, E.M.; LASTA, M.L. and IRIBARNE, O.O. (2011)** Shifts in an epibenthic trophic web across a marine frontal area in the Southwestern Atlantic (Argentina). *JOURNAL OF SEA RESEARCH*, 66(3), 248-255.
- PIOLA, A.R.; FRANCO, B.C.; PALMA, E.D. and SARACENO, M. (2013)** Multiple jets in the Malvinas Current. *JOURNAL OF GEOPHYSICAL RESEARCH: OCEANS*, 118(4), 2107–2117, doi:10.1002/jgrc.20170.
- FRANCO, B.C.; PALMA, E.D. and TONINI, M.H. (2015)** Benthic-pelagic uncoupling between the Northern Patagonian Frontal System and Patagonian scallop beds. *ESTUARINE, COASTAL AND SHELF SCIENCE*, 153, 145-155.
- FRANCO, B.C.; PALMA, E.D.; COMBES, V. and LASTA, M.L. (2017)** Physical processes controlling passive larval transport at the Patagonian Shelf Break Front. *JOURNAL OF SEA RESEARCH*, 124, 17-25.
- FRANCO, B.C.; PALMA, E.D.; COMBES, V.; ACHA, E.M. and SARACENO, M. (2018)** Modeling the offshore export of Subantarctic Shelf Waters from the Patagonian shelf. *JOURNAL OF GEOPHYSICAL RESEARCH: OCEANS*, 123, 4491-4502. <https://doi.org/10.1029/2018JC013824>.
- FRANCO, B.C.; DEFEO, O.; PIOLA, A.R.; et al. (2020)** Climate change impacts on the atmospheric circulation, ocean, and fisheries in the southwest South Atlantic Ocean: a review. *CLIMATIC CHANGE*, 162, 2359–2377. <https://doi.org/10.1007/s10584-020-02783-6>.
- FRANCO, B.C.; COMBES, V. and GONZÁLEZ CARMAN, V. (2020)** Subsurface ocean warming hotspots and potential impacts on marine species: the southwest South Atlantic Ocean case study. *FRONTIERS IN MARINE SCIENCES*, 7, 824. <https://doi.org/10.3389/fmars.2020.563394>.
- MEERHOFF, E.; DEFEO, O.; COMBES, V.; FRANCO, B.C.; MATANO, R.; PIOLA, A.R.; HERNÁNDEZ, F. and CELENTANO, E. (2020)** Assessment of larval connectivity in a sandy beach mole crab through a coupled bio-oceanographic model. *ESTUARINE, COASTAL AND SHELF SCIENCE*, 246, 107035. <https://doi.org/10.1016/j.ecss.2020.107035>.

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- MEERHOFF, E.; COMBES, V.; MATANO, R.; BARRIER, N.; FRANCO, B.C.; PIOLA, A.; HERNÁNDEZ, F. and DEFEO, O. (2022)** Large-scale connectivity of the sandy beach clam *Mesodesma mactroides* along the Atlantic coast of South America, and climate change implications. *MARINE ENVIRONMENTAL RESEARCH*.
<https://doi.org/10.1016/j.marenvres.2022.105591>.
- FRANCO, B.C.; RUIZ-ETCHEVERRY, L.A.; MARRARI, M.; PIOLA, A.R. and MATANO, R.P. (2022)** Climate Change Impacts on the Patagonian Shelf Break Front. *GEOPHYSICAL RESEARCH LETTERS*, 49(4).
<https://doi.org/10.1029/2021GL096513>.
- GARCÍA ALONSO, V.A.; FRANCO, B.C.; PALMA, E.D.; PÁJARO, M. and CAPITANIO, F.L. (2023)** Integration of empirical and modelled data unravels spatiotemporal distribution and connectivity patterns of Fuegian sprat early life stages. *MARINE ECOLOGY PROGRESS SERIES*.
<https://doi.org/10.3354/meps14329>.
- MEERHOFF, E.; COMBES, V.; MATANO, R.; BARRIER, N.; FRANCO, B.C.; PIOLA, A.; HERNÁNDEZ, F. and DEFEO, O. (2024)** Effects of regional oceanography and climate variability on larval connectivity of the wedge clam *Donax hanleyanus* in South American beaches. *ECOLOGICAL MODELLING, in review*.
- FRANCO, B.C.; DEFEO, O.; PIOLA, A.R.; et al. (2024)** Facing with climate, biodiversity and governance hotspots: scientific evidence and policy implications from the SW Atlantic Ocean. *Preparing for MARINE POLICY*.
- PIOLA, A.R., BODNARIUK, N., COMBES, V., FRANCO, B.C., MATANO, R.P., PALMA, E.D., ROMERO, S.I., SARACENO, M., URRICARIET, M.M. (2024)** Anatomy and dynamics of the Patagonia shelf break front. *BOOK, in review*.

BOOK

- FRANCO, B.C.; MUELBERT, J.H. and MATA, M.M. (2005)** O ictioplâncton da quebra da plataforma da Região Sul do Brasil e sua relação com as condições ambientais. São Paulo: Instituto Oceanográfico – Universidade de São Paulo (EDUSP), v. 1, 40 pp. (ISBN 9788598729152).
- FRANCO, B.C.; PIOLA, A.R.; RIVAS, A.L. and PALMA, E.D. (2014)** La corriente de Malvinas. Ramas y frentes oceánicos en el mar patagónico. In: Ciencias del mar: 1988-2014. P.E. Penchaszadeh (Ed.), Asociación Ciencia Hoy, Volumen Temático 1, pp. 27-31. (ISBN 9789874558404).

CONFERENCES

- FRANCO, B.C.; MATA, M.M.; MUELBERT, J.H. (2002)** Combining *in situ* hydrography, satellite altimetry and NOAA/AVHRR images to study the influence of mesoscale variability in the ichthyoplankton distribution on the southern Brazilian shelf break. In: *INTERNATIONAL SYMPOSIUM 'EN ROUTE TO GODAE'*, Biarritz, v.1: 337-338.
- FRANCO, B.C.; FERREIRA, C.S.; MADUREIRA, L.A.S.; MATA, M.M.; WEIGERT, S.C. (2004)** A influência de processos físicos sobre a dinâmica de espécies pelágicas na região sudeste-sul do Brasil. In: *II SIMPÓSIO BRASILEIRO DE OCEANOGRAFIA*, São Paulo. Anais do II Simpósio Brasileiro de Oceanografia, v. 1, p. 32.

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- FRANCO, B.C.; MATA, M.M.; PIOLA, A.R.; GARCIA, C.A.E. (2006)** Northwestern Weddell Sea Deep outflow into the Scotia Sea estimated by inverse methods during the austral summers of 2000 and 2001. In: *2006 OCEAN SCIENCES MEETING*, Honolulu. Eos Trans., AGU, Ocean Sci. Meet. Suppl. OS25Q-06. v. 87.
- FRANCO, B.C.; PIOLA, A.R.; RIVAS, A.L.; PALMA, E.D.; BALDONI, A.; PISONI, J.P. (2007)** Variabilidade intra-sazonal de frentes térmicas sobre a região de quebra de plataforma patagônica no Oceano Atlântico sudoeste obtida por dados de satélite. In: *VII SIMPÓSIO DE ONDAS, MARÉS E OCEANOGRAFIA POR SATÉLITE (OMAR-SAT)*, Arraial do Cabo. CD-ROM do VII Simpósio de Ondas, Marés e Oceanografia por Satélite (OMAR-SAT) 2007.
- FRANCO, B.C.; PALMA, E.D.; PIOLA, A.R.; LASTA, M.; BALDONI, A.; IRIBARNE, O. (2007)** Drift of Patagonian scallop larvae (*Zygochlamys patagonica*) on the southwestern Atlantic Ocean: model studies of the influences of seasonal mean advection and spawning areas. In: *16th INTERNATIONAL PECTINID WORKSHOP*, Halifax. Proceedings of the 16th International Pectinid Workshop.
- FRANCO, B.C.; PIOLA, A.R.; RIVAS, A.L.; BALDONI, A.; PISONI, J.P. (2008)** Multiple cold branches and thermal fronts in the Patagonian shelf break derived from satellite data. In: *2008 OCEAN SCIENCES MEETING*, Orlando.
- FRANCO, B.C.; PALMA, E.D. (2011)** Particle Accumulation in Stratified Ocean. In: *2011 AMERICAN GEOPHYSICAL UNION - Fall Meeting*, San Francisco.
- FRANCO, B.C.; PALMA, E.D.; COMBES, V. (2015)** Coupled benthic-pelagic processes in the Patagonian shelf break. In: *26th GENERAL ASSEMBLY OF THE INTERNATIONAL UNION OF GEODESY AND GEOPHYSICS (IUGG)*. Prague, Czech Republic.
- FRANCO, B.C.; PALMA, E.D.; COMBES, V.; ACHA, E.M. (2018)** Exportación de aguas subantárticas de la plataforma continental Argentina. In: *X Jornadas Nacionales de Ciencias del Mar*. Buenos Aires, Argentina. (ISBN 978-987-42-9493-7).
- FRANCO, B.C.; PALMA, E.D.; COMBES, V.; ACHA, E.M. (2018)** On the Export of Subantarctic Shelf Waters from the Argentine Shelf Towards the Deep Ocean and its Impacts on the Fishery. In: *2018 OCEAN SCIENCES MEETING*, Portland, USA.
- GARCÍA ALONSO, V.A.; FRANCO, B.C.; COMBES, V.; PALMA, E.D.; PÁJARO, M.; CAPITANIO, F.L. (2021)** So close yet so far? Assessing distribution and connectivity of Fuegian sprat early life stages in the SWAO. In: (Virtual) *44th LARVAL FISH CONFERENCE*.

INVITED TALKS

- UMI-IFAECI WORKSHOP - Role of the Malvinas Current on the Patagonia Continental Shelf dynamics and biophysical environment.** Buenos Aires, 24-26 June 2013. Oral presentation: “*Coupled benthic-pelagic processes in the Patagonian shelf break*”.
- Coloquio del Departamento de Ciencias de la Atmósfera y los Océanos (DCAO)/Centro de Investigaciones del Mar y la Atmósfera (CIMA).** Buenos Aires, 30 April 2014. Oral presentation: “*Flujos zonales a través del Frente Subtropical de Plataforma y sus potenciales impactos biológicos*”.

TALLER FRENTE DEL TALUD CONTINENTAL - Proyecto Pampa Azul - Ministerio de Ciencia, Tecnología e Innovación Productiva (MINCyT). Mar del Plata, 15-17 July 2014. Oral presentation: “*Dinámica oceanográfica del frente del talud continental y los procesos bento-pelágicos acoplados relacionados*”.

Workshop for the intensification of cooperation between the Alfred Wegener Institute, Helmholtz Centre for Polar and Marine Research (AWI) and the Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET). Buenos Aires, 10-12 November 2014. Oral presentation: “*Coupled benthic-pelagic processes related with the establishment of the Patagonian scallop (*Zygochlamys patagonica*) in the Patagonian outer shelf and continental slope*”.

18º Simpósio Científico de la Comisión Técnica Mixta del Frente Marítimo (CTMFM). Tigre, 21-23 November 2017. Poster presentation: “*Exportación de aguas de la Plataforma Continental Argentina y sus potenciales impactos biológicos*”.

Taller Programa Costero Marino – Wildlife Conservation Society (WCS). Buenos Aires, 15-16 Junio, 2023. Project Oral presentation: “*Vulnerabilidad al cambio climático en el Mar Argentino y sus espacios de influencia. Información clave para el desarrollo de estrategias de conservación y manejo climáticamente inteligentes*”.

Workshop “MarineData4SouthAmerica” organized by Copernicus Marine Service. Webinar, 22-23 February 2024. Oral presentation: “*Climate change impacts on fisheries and conservation of marine species*”.

SCIENTIFIC COMMITTEE

Taller “Cambio Climático y Pesquerías”. X Jornadas Nacionales de Ciencias del Mar. Facultad de Ciencias Exactas y Naturales (FCEyN-UBA), Buenos Aires, 03 August 2018.

Workshop “Climate Change and Fisheries”. Buenos Aires, 03-04 August 2018. Organized by the French-Argentinean Institute for the Study of Climate and its Impacts (UMI-IFAECI/CNRS-CONICET-UBA). Co-sponsored by the Inter-American Institute for Global Change Research (IAI). (<http://climate-fishery.cima.fcen.uba.ar/>).

ORGANIZING COMMITTEE

Taller “Cambio Climático y Pesquerías”. X Jornadas Nacionales de Ciencias del Mar. Facultad de Ciencias Exactas y Naturales (FCEyN-UBA), Buenos Aires, 03 August 2018.

Workshop “Climate Change and Fisheries”. Buenos Aires, 03-04 August 2018. Organized by the French-Argentinean Institute for the Study of Climate and its Impacts (UMI-IFAECI/CNRS-CONICET-UBA). Co-sponsored by the Inter-American Institute for Global Change Research (IAI). (<http://climate-fishery.cima.fcen.uba.ar/>).

COORDINATION

2018 Coordinator of the Colloquium Group DCAO/CIMA

TEACHING EXPERIENCE

2005 Teaching Assistant: “*Ocean Dynamics*”, Universidad Federal do Rio Grande (FURG), Brazil.

LECTURER AT INTERNATIONAL SUMMER SCHOOL

- 2022 Lecturer at: “**TRIATLAS – TAPIOCA – CANEMS – UFPE Summer School and Workshop on the functioning of Tropical and South Atlantic marine ecosystems – from physics to top predators and fisheries**”. Brazil (<https://sites.ufpe.br/ceerma/triatlas-summer-school-2022/>).

ACTIVITIES OF ACADEMIC RELEVANCE

- 2001 Course of “**Environmental Applications of the NOAA and TRMM satellites**” supplied for the National Institute of Space Researches (INPE). In: *X Simpósio Brasileiro de Sensoriamento Remoto*, Foz do Iguaçu, Brazil.
- 2003 Participation in the **Antarctic Operation XXI**. The oceanographic cruise was carried out between 15 January and 26 February by research vessel “Ary Rongel” (Brazilian Navy).
- 2003 Vice-director of Human Resources of the **ECOSERVICE** (Empresa Júnior de Consultoria Ambiental e Oceanografia).
- 2003 Participation in the “**NICOP - PLATA winter cruise**” carried out between 20 August and 02 September by research vessel “Puerto Deseado” (Argentine Navy). Responsible researcher for the collection of radiometry and chlorophyll data.
- 2004 Participation in the “**NICOP - PLATA summer cruise**” carried out between 28 January and 29 February by research vessel “Antares” (Brazilian Navy). Responsible researcher for the collection of radiometry and chlorophyll data.
- 2004 Course of “**Numerical Modeling of Continental Shelves**” sponsored by the South Atlantic Climate Change Consortium, financed by the Inter-American Institute for Global Change Research (IAI). Fundação Universidade Federal do Rio Grande, FURG, Rio Grande, Brazil, 22 November – 3 December.
- 2006 Course of “**Physics of the Climate System**”, financed by the Utrecht University and partially by the Inter-American Institute for Global Change Research (IAI). Utrecht University, Utrecht, Holland, 15-25 August.
- 2007 **Workshop on the Interdisciplinary Science of Global Climate Change: Basic Elements**, Co-sponsored by: Geophysical Fluid Dynamics Laboratory/NOAA, NOAA Climate Program Office and Facultad de Ciencias Exactas de la Universidad de Buenos Aires. The Abdus Salam International Centre for Theoretical Physics, ICTP, Italy, 12 March – 4 April.
- 2007 Course of “**Physical and Biological Ocean Modeling: Biogeochemical (ROMS/NPZ/PISES) and Individual Based (IBM) Modeling**”, 5th. International SACC Course, financed partially by the Inter-American Institute for Global Change Research (IAI). Universidad de Concepción, UDEC, Chile, 3-14 July.
- 2009 Course of “**SOLAS (Surface Ocean Lower Atmosphere Study)**”, financed partially by the International Geosphere-Biosphere Programme (IGBP) and the Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET). Corse University, Cargèse, France, 3-15 August.
- 2014 **Workshop on South Atlantic circulation variability and change: integrating models and observations**, Co-sponsored by: The Abdus Salam International Centre for Theoretical Physics (ICTP), Universidad de Buenos Aires (UBA), Inter-American Institute for Global Change Research (IAI), US Climate Variability and Predictability Program (CLIVAR), National Scientific and Technical Research Council (CONICET), NOAA, U.S. Department of Energy. Poster Presentation:

“Benthic-pelagic uncoupling between the Northern Patagonian Frontal System and Patagonian scallop beds”. Buenos Aires, Argentina, 1-5 December.

2017 Training on *“Uso de Información de Radar de Apertura Sintética”*, sponsored by the Comisión Nacional de Actividades Espaciales (CONAE). CONAE, Buenos Aires, Argentina, 10 July.

INVITED POSITIONS

2020 – Editor (*Fisheries Oceanography*, John Wiley & Sons Inc: Hoboken, NJ, US)

2021 – Review Editor (*Frontiers in Marine Science - Global Change and the Future Ocean*, Frontiers Media AS, Switzerland)

REVIEWER

2016 – *Journal of Marine Systems*

2020 – *Progress in Oceanography*

2021 – *Journal of Environmental Management*

2021 – *Frontiers in Marine Science - Global Change and the Future Ocean (2)*

2021 – *Journal of Marine Systems*

2022 – *Environmental Biology of Fishes*

2022 – *Nature - Communications Earth & Environment*

2023 – *Fisheries Oceanography*

MEMBERSHIP

International Association for Physical Sciences of the Ocean (IAPSO) (CN-ARG)

American Geophysical Union (AGU)

RESEARCH PROJECTS

- “Proyecto de Convenio CONICET - WILDLIFE CONSERVATION SOCIETY ARGENTINA, (PR5890)”, \$ ARG 14.259.765, **2023-2024. Directora.**
- PIP-2021-2023 GI, “Mar Argentino: circulación, variaciones termohalinas e impacto biogeoquímico (MAR-VAR)”, \$ ARG 1.313.000, **2021-2023. Investigadora.**
- UE-CONICET, “Eventos meteorológicos y climáticos de alto impacto social”. Proyecto de Unidad Ejecutora, **2017-2021. Investigadora.**
- PICT-2015-0508, “Exportación de aguas de plataforma a través del Frente Subtropical de Plataforma y sus potenciales impactos biológicos”, PI: B. Franco \$ ARG 136.946, **2017-2019.**
- AO SAOCOM OCEANO, “Dedicado al Desarrollo de Aplicaciones y puesta a punto de Metodologías para el Área Oceanográfica Utilizando Imágenes SAR”, PIs: R. Ferrari, M. Saraceno, \$ ARG 1.062.000, **2016-2018.**

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- PIDDEF, "Dinámica y flujos de carbono en el Mar Argentino: variación estacional e intercambio con el océano profundo", PIs: V. Palastanga, A. Bianchi, \$ ARG 1.516.641, **2014-2017**.
 - MINCYT-ECOS-Sud, "Corrientes del Atlántico Sudoeste a partir de datos *in-situ* y de altimetría", A14U02, PI: M. Saraceno, **2015-2017**.
 - Inter-American Institute for Global Change Research (IAI), "The South American Climate Change (SACC) Consortium", (SACC SGP 2076), PI: A. Piola, US\$ 300.000, **2014-2017**.
 - CONICET-YPF, "El rol de la corriente de Malvinas en la dinámica de la plataforma continental patagónica", (PIO 13320130100242), PI: M. Saraceno, \$ ARG 641.667, **2014-2016**.
 - Agencia Nacional de Promoción Científica y Tecnológica, "Impacto de la Corriente de Malvinas sobre la plataforma y océano adyacente", (PICT 2012-0467), PI: E. Palma, \$ ARG 416.000, **2013-2016**.
 - Inter-American Institute for Global Change Research (IAI), "Export of shelf waters along the Subtropical Shelf Front: A one-way ticket?", (CRN2076 Follow-up Grant), PI: A. Piola, US\$ 299.989, **2012-2015**.
 - Conselho Nacional de Desenvolvimento Científico e Tecnológico – CNPq, Secretaria da Comissão Interministerial para os Recursos do Mar – SeCIRM e Ministério do Meio Ambiente e da Amazônia Legal (Brazil), "GOAL: Grupo de Oceanografia de Altas Latitudes", **2004 – 2006**.
 - Conselho Nacional de Desenvolvimento Científico e Tecnológico – CNPq (Brazil), "Variabilidades Temporal da estrutura Termohalina na Região da Confluência Weddell-Scotia", **2004 – 2006**.