



Third International Symposium
Effects of Climate Change
on the World's Oceans

Program

Santos City, Brazil
March 21–27, 2015

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Welcome

We are honoured to welcome you to the Third International Symposium on “*Effects of Climate Change on the World’s Oceans*”, which has established itself as a major and regular event for the oceanography and climate change scientific communities, following events in Gijon, Spain (May 2008) and Yeosu, Korea (May 2012). This time the Symposium takes place in Santos, Brazil, bringing the event to the lively, growing and exciting scientific community in South America.

The current pressures and impacts on our oceans are calling for blueprints of good management practice to secure the sustainability of ocean and coastal systems. These good practices must be scientifically underpinned and respond to political imperatives. In fact, the debate around climate change has relied heavily on excellent and innovative science, and on adequately communicating this science to stakeholders and policy makers, but blueprints of good practice are yet to emerge. While the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (2007) was criticized for lacking specificity on the impacts of climate change on ocean ecosystems, the 2014 Fifth Assessment Report included two chapters dedicated to marine ecosystems. The science of climate change is maturing, and this Symposium will demonstrate this further, showcasing the novel science that will influence the Sixth Assessment Report, as well as other global initiatives such as the United Nations Regular Process for Global Reporting and Assessment of the State of the Marine Environment. As such, it is a unique opportunity for researchers to engage in science issues of global importance and give science a voice and a mechanism to influence policy. Linking science to global assessments puts an immense responsibility on the scientific community to synthesize independent, impartial and excellent evidence. While climate change issues are high on the political agenda, we are still far from achieving a global commitment to reduce greenhouse gas emissions. The debate needs the continued input from science as one of the essential elements, and this Symposium in Santos is crucial to consolidate and share our understanding and knowledge.

This Symposium aims to review achievements in climate change research impacts on ocean and marine ecosystems, and intends to set the research agenda for the next few years. Our speakers include key players in different facets of this large and complex science, representing views from academia to policy making and covering a variety of temporal and spatial scales and geographical locations.

We would like to thank the Secretariats of the convening organizations PICES, IOC and ICES, and especially the Local Organizing Committee, for their efforts that ranged from operational preparations to fundraising for this event. They have worked hard to ensure that all arrangements for the large number of theme sessions and workshops will run smoothly. The Symposium gathers more than 300 participants from approximately 40 countries, and confirms the breadth, richness and vitality of scientific interests of the South American community, which is represented by about 80 experts.

We want to thank all the institutions for the trust they placed in us when we asked for support for this Symposium. Without their commitment and decisive support, our aims would have been impossible to achieve. Our sincere thanks and congratulations must also go to the Scientific Steering Committee for their work in mobilizing a wide representation of scientific teams attending the meeting.

Not only will this Symposium give us an opportunity to discuss our ongoing research, progress and plans, it will also give us a chance to deliberate on the institutional challenges that we face in our various responsibilities and capacities. We are sure that all of you will have a scientifically productive meeting and that you will also enjoy the social events, sights, foods, and hospitality of Brazil.

*Jacquelynn King, Manuel Barange, Luis Valdés, Alexander Turra,
Alexander Bychkov, Adolf Kellermann, Michel M. de Mahiques and Julia Yazvenko*

Symposium convenors and coordinators

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For convenience all presentations (oral and posters) include the presenter's name only.
Please refer to the Book of Abstracts for the full list of co-authors.

Notes for Guidance

Registration

The registration desk will be located at the entrance to the Diamante complex from March 20 (3 p.m.) to March 27.

Location for the Sessions and Workshops

All sessions and workshops will be convened at the Diamante complex. Some Workshop Breakout Groups will meet in the Pérola complex (see floor plan).

Presentations

In order to allow the sessions to run smoothly, and in fairness to other speakers, all presentations are expected to adhere strictly to the time allocated. All authors should designate at least 3 minutes for questions.

Authors can download their presentations straight to the computers where the session/workshop will be held.

Important: Please rename your files: time-name.ppt (e.g. 0900-Smith.ppt, 1530-Kim.ppt).

If complications occur due to incompatibilities between PCs and Macs, Macintosh owners may use their own computers to make presentations.

Posters

All posters will be on display during the entire Symposium, from March 23-27; workshop posters can be viewed starting March 21. An evening Poster Session (with appetizers and drinks) will be held from 18:30-20:30 on March 24, when poster presenters are expected to be available to answer questions.

Social activities

Welcome Reception (all participants)

March 23, 19:00-22:30

Location: Point 44 chopperia (within walking distance from Mendes Plaza)

<http://www.point44.com.br>

Symposium Dinner (all participants)

March 25, 18:30-22:00

Location: Churrascaria Tertulia

<http://www.churrascariatertulia.com.br/>

Transportation will be provided.

Free afternoon

March 26, starting at 12:40

A tourism agent will be available on site from March 23.

- Santos City Tour (Beach, Historic Centre and a tour by streetcar, 4 hours)
- Boat tour and visit to the Fisheries Museum and Aquarium (4 hours)
- Visit to the Coffee Museum and Pelé Museum (includes a tour by streetcar, 4 hours)
- Tour to Guarujá City (famous for its beaches, 4 hours)

Contacts and reservations also can be made via phone 55 13 33075254 or email contato@valongotour.com.br

Useful information

- A Food Court is available on the second floor of Miramar Shopping Centre, located beside the Mendes Hotel. Other options are available around the hotel.
- A foreign currency exchange office is located on the first floor of the Miramar Shopping Centre.
- The beach is located two blocks from the venue. Participants should be careful with safety and note the Green/Red flags indicating water quality.
- Dehydration can be a problem, especially for people who are not accustomed to high (average around 30°C) daily air temperatures. Coconut water is a natural remedy.

List of Sessions and Workshops

- S1 Role of advection and mixing in ocean biogeochemistry and marine ecosystems
- S2 Ocean acidification
- S3 Changing ocean chemistry: From trace elements and isotopes to radiochemistry and organic chemicals of environmental concern
- S4 Regional models for predictions of climate change impacts: Methods, uncertainties and challenges
- S5 Coastal blue carbon and other ocean carbon sinks
- S6 Climate change in the seasonal domain: Impacts on the phenology of marine ecosystems and their consequences
- S7 Evolutionary response of marine organisms to climate change
- S8 Climate change impacts on marine biodiversity and resilience
- S9 Impact of climate change on ecosystem carrying capacity via food-web spatial relocations
- S10 Forecasting climate change impacts on fish populations and fisheries
- S11 Impacts on coastal communities
- S12 Linking climate change to marine management objectives
- W1 Addressing uncertainty in projecting climate change impacts in marine ecosystems
- W2/W6 Joint Brazilian Ocean Acidification Research and Surface Ocean-Lower Atmosphere Study (SOLAS) Workshop: Biogeochemical-physical interactions and feedbacks between the ocean and atmosphere
- W3 Effects of climate change on the biologically-driven ocean carbon pumps
- W4 Upwelling systems under future climate change
- W5 Moving towards climate-ready fishery systems: Regional comparisons of climate adaptation in marine fisheries

Program at a Glance

Saturday, March 21					
08:55 18:00	W2/W6 Workshop [Diamante 6-7]	W3 Workshop [Diamante 2]	W4 Workshop [Diamante 1]	W5 Workshop [Diamante 3]	
Sunday, March 22					
08:55 18:00	W1 Workshop [Diamante 5]	W2/W6 Workshop [Diamante 6-7]	W3 Workshop [Diamante 2]	W4 Workshop [Diamante 1]	W5 Workshop [Diamante 3]
Monday, March 23					
08:45	Opening Ceremony, Plenary Session [Diamante 1-3]				
13:55 18:00	Session 4 [Diamante 1-3]		Session 6 [Diamante 5-6]		
19:00 22:30	Welcome Reception [Point 44 chopperia]				
Tuesday, March 24					
09:00	Plenary Session [Diamante 1-3]				
11:15 18:10	Session 1 [Diamante 5]	Session 10 (Day 1) [Diamante 1-3]		Session 12 [Diamante 6-7]	
18:30 20:30	Poster Session / Reception [Diamante complex]				
Wednesday, March 25					
09:00	Plenary Session [Diamante 1-3]				
11:15 18:10	Session 2 (Day 1) [Diamante 6-7]	Session 8 (Day 1) [Diamante 1-3]		Session 11 [Diamante 5]	
18:30 22:00	Symposium Dinner [Churrascaria Tertulia]				
Thursday, March 26					
08:55	Session 2 (Day 2) [Diamante 6-7]	Session 8 (Day 2) [Diamante 1-2]		Session 10 (Day 2) [Diamante 3]	
12:40	Free time				
Friday, March 27					
09:00	Plenary Session [Diamante 2-3]				
11:15	Session 3 [Diamante 5]	Session 7 [Diamante 1]	Session 8 (Day 3) [Diamante 2-3]	Session 9 [Diamante 6-7]	
16:10	General Plenary and Closing Ceremony				
17:30	Symposium ends				

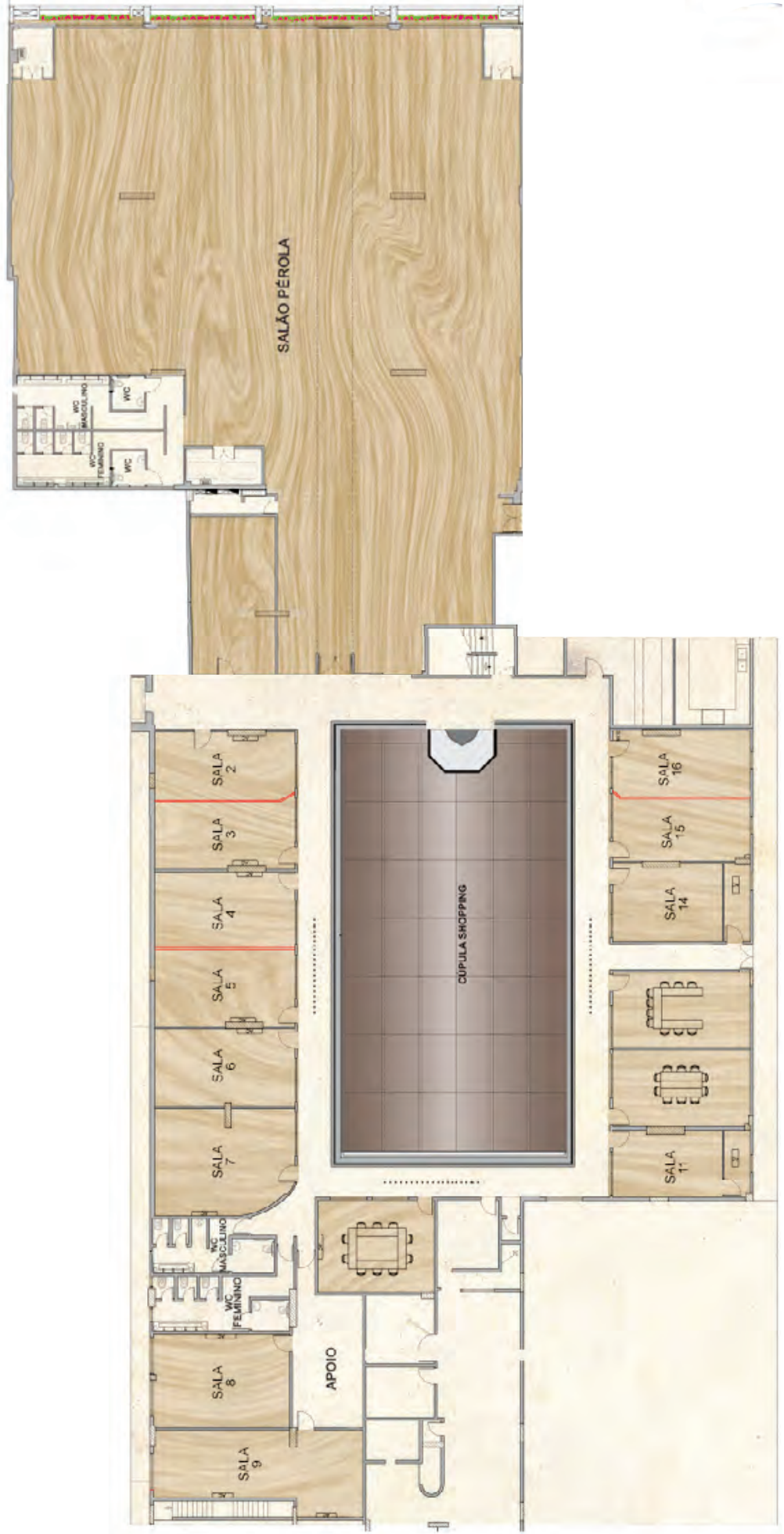
Coffee/Tea Breaks will take place every day in the morning and afternoon.
Lunch breaks are scheduled approximately from 12:30-14:00.

Workshop breakouts will use additional rooms in the Pérola complex.
Please check the *Schedule at Glance* for more information.

DIAMANTE complex floor plan



PÉROLA complex floor plan (rooms for workshops only)



Schedule at a Glance

Saturday, March 21					
Workshop 2/6 (Day 1) [Room Diamante 6-7]		Workshop 3 (Day 1) [Room Diamante 2]	Workshop 4 (Day 1) [Room Diamante 1]	Workshop 5 (Day 1) [Room Diamante 3]	
	Joint Brazilian Ocean Acidification Research and Surface Ocean-Lower Atmosphere Study (SOLAS) Workshop	Effects of climate change on the biologically-driven ocean carbon pumps	Upwelling systems under future climate change	Moving towards climate-ready fishery systems: Regional comparisons of climate adaptation in marine fisheries	
	Convenors: Leticia C. da Cunha, Michelle Graco, Rodrigo Kerr, Ruy Kikuchi	Convenors: Curtis Deutsch, Nianzhi Jiao, Louis Legendre, Uta Passow	Convenors: Kenneth Drinkwater, Shoshiro Minobe	Convenors: Roger Griffis, Alan Haynie, Katherine Mills, Gretta Pecl, Andrew Pershing	
08:55	<i>Introduction by Convenors</i>			<i>Introduction by Convenors</i>	
09:00	Rosane Gonçalves Ito (Invited) Ocean acidification studies: The Brazilian contribution	Phoebe J. Lam (Invited) Observational approaches to the biologically-driven ocean carbon pumps	<i>Introduction by Convenors</i>	<i>Introduction of participants</i>	
09:15				Katherine E. Mills Cross-scale interactions in coupled social-ecological systems: An organizing framework for assessing climate impacts and adaptation in marine fisheries	
09:30	Cristián Vargas (Invited) Toward the establishment of a Latin-American Ocean Acidification Network (LAOCA): The Chilean experience in OA research	DanLing Tang (Discussion Leader) Discussion: Scientific issues following from the Introductory talk	Enrique Curchitser, (Invited) Regional and global ramifications of eastern boundary upwelling	Manuel Barange (Invited) Combining cause and effect: Impacts of climate change on global fisheries and consequences for the dependency of nations on fisheries	
09:50				Marcus Haward Governance and climate adaptation in marine fisheries: Social and institutional dimensions	
10:00	Silvana Birchenough (Invited) Understanding ocean acidification: What will be the consequences for commercial species?	Group 1 Poster Session New achievements in observational research	Shoshiro Minobe Spatio-temporal structure of upwelling in an eddy resolving quasi-global GCM		
10:05				Gretta Pecl Developing adaptation pathways for climate-impacted and at risk fisheries in south-east Australia	
10:20			Discussion	Wendy Morrison Managing United States fisheries in a changing climate	
10:30	<i>Coffee/Tea Break</i>				
10:35	<i>Coffee/Tea Break</i>			<i>Coffee/Tea Break</i>	

Schedule at a Glance

Saturday, March 21 (continued)						
Workshop 2/6 (Day 1) [Room Diamante 6-7]		Workshop 3 (Day 1) [Room Diamante 2]		Workshop 4 (Day 1) [Room Diamante 1]	Workshop 5 (Day 1) [Room Diamante 3]	
11:00	Arne Körtzinger (Invited) Sensing marine carbon and oxygen dynamics with autonomous observation approaches	Group 1 Poster Session (continued) New achievements in observational research		Nele Tim Simulating the variability of eastern boundary upwelling over the past millennium	Éva E. Plagányi (Invited) A quantitative metric to identify critical elements within seafood supply networks under a changing climate	
11:20				Michael G. Jacox Upwelling intensity, stratification, and nutrient supply trends in the California Current System	Jason S. Link, (Invited) Some solutions for marine Ecosystem-based Fisheries Management in a changing climate	
11:30	Manfredi Manizza Testing ocean biogeochemical models using combined measurements of atmospheric potential oxygen (APO) and Ar/N ₂ ratio and oxygen/heat oceanic fluxes	Rosabrina La Ferla (Discussion Leader) Discussion: Scientific issues following from the posters				
11:40					Marisol García-Reyes Climate change and coastal upwelling drivers	Jacquelynne R. King Can we give good stock assessment advice in a changing climate?
11:50	Leticia C. da Cunha A snapshot of the marine CO ₂ -system in three coastal ecosystems in SE Brazil			Cindy Pilskain (Discussion Leader) Discussion: Developments and actions needed in coming years		
11:55						Cody Szuwalski Setting biological reference points under a changing climate
12:00		Patrícia Laginha Silva Decadal variability of the Iberian Margin subsurface structure in response to global warming				
12:10	Rodrigo Kerr On the progress of the Brazilian Ocean Acidification Research Group: Two years of activities					Discussion [Rooms Diamante 3, 5; Pérola 2, 3]
12:20					Discussion	
12:25					<i>Lunch</i>	
12:30	<i>Lunch</i>					

Saturday, March 21 (continued)				
Workshop 2/6 (Day 1) [Room Diamante 6-7]		Workshop 3 (Day 1) [Room Diamante 2]	Workshop 4 (Day 1) [Room Diamante 1]	Workshop 5 (Day 1) [Room Diamante 3]
14:00	Marius N. Müller Ocean acidification experiments on coccolithophores under controlled laboratory conditions	<i>Lunch (continued)</i>	Kenneth F. Drinkwater Upwelling in the Arctic and Antarctic under climate change	Discussion (continued) [Rooms Diamante 3, 5; Pérola 2, 3]
14:15		Thorsten Dittmar (Invited) Current hypotheses explaining the long-term stability of marine dissolved organic matter		
14:20	Paulo Horta Ecophysiological responses of <i>Lithothamnion crispatum</i> and <i>Sonderophycus capensis</i> to alterations in temperature, $p\text{CO}_2$ and nutrients		William J. Sydeman (Invited) Of fish, seabirds, and trees: Present, past, and future of upwelling ecosystems	
14:40	Barbara R. Pinheiro			
14:45	Seasonal and diel CO_2 fluxes variability at Rocas Atoll-RN	Chuanlun Zhang (Discussion Leader) Discussion: Scientific issues following from the Introductory talk		
14:50			Discussion	
15:00	Adriana R. Perretti Evaluating qualitative dissolution indexes as proxies for ocean carbonate chemistry			
15:20	Manoela R. de Orte The use of multiple lines of evidences to conduct risk assessment in sediments affected by CO_2 acidification	Group 2 Poster Session New achievements in experimental approaches		
15:40	<i>Coffee/Tea Break</i>			

Saturday, March 21 (continued)				
Workshop 2/6 (Day 1) [Room Diamante 6-7]		Workshop 3 (Day 1) [Room Diamante 2]	Workshop 4 (Day 1) [Room Diamante 1]	Workshop 5 (Day 1) [Room Diamante 3]
16:10	<p>Group Discussion 1 I - SOLAS report: synthesis of the state-of-the-art procedures and advances being made for collecting, analyzing, modelling, and reporting scientific data on sea-air gas fluxes and ocean biogeochemistry for coastal/shelf and open ocean areas. The report will identify regional needs to study sea-air gas fluxes, such as analytical and logistic facilities, data access, or capacity building.</p>	<p>Group 2 Poster Session (continued) New achievements in experimental approaches</p>	<p>Discussion (continued)</p>	<p>Introduction</p>
16:25				<p>Leif Nøttestad (Invited) Increased abundance and spatial expansion of Northeast Atlantic mackerel (<i>Scomber scombrus</i>) according to swept-area trawl surveys in the Northeast Atlantic 2007 to 2014</p>
16:45				<p>Andrew J. Pershing Slow management during rapid ecosystem change: How rapid warming drove the collapse of Gulf of Maine cod</p>
16:50				<p>Sari Giering (Discussion Leader) Discussion: Scientific issues following from the posters</p>
17:00				<p>Stewart Frusher Observed impacts and adaptation strategies for coastal fisheries in south-east Australia</p>
17:15				<p>Poster summaries</p>
17:25				<p>Richard B. Rivkin (Discussion Leader) Developments and actions needed in coming years</p>
17:30				<p>Wrap-up discussions</p>
17:45				<p>Posters</p>
18:00	Workshops W2/W6, W3, W4, W5 end			

Sunday, March 22							
Workshop 1 [Room Diamante 5]		Workshop 2/6 (Day 2) [Room Diamante 6-7]	Workshop 3 (Day 2) [Room Diamante 2]	Workshop 4 (Day 2) [Room Diamante 1]	Workshop 5 (Day 2) [Room Diamante 3]		
Addressing uncertainty in projecting climate change impacts in marine ecosystems		Joint Brazilian Ocean Acidification Research and Surface Ocean-Lower Atmosphere Study (SOLAS) Workshop	Effects of climate change on the biologically-driven ocean carbon pumps	Upwelling systems under future climate change	Moving towards climate-ready fishery systems: Regional comparisons of climate adaptation in marine fisheries		
Convenors: Manuel Barange, William Cheung, Brian MacKenzie, Mark R. Payne		Convenors: Leticia C. da Cunha, Michelle Graco, Rodrigo Kerr, Ruy Kikuchi	Convenors: Curtis Deutsch, Nianzhi Jiao, Louis Legendre, Uta Passow	Convenors: Kenneth Drinkwater, Shoshiro Minobe	Convenors: Roger Griffis, Alan Haynie, Katherine Mills, Gretta Pecl, Andrew Pershing		
08:55	<i>Introduction by Convenors</i>						
09:00	William W.L. Cheung (Invited) Projecting changes to living marine resources in an uncertain future.	Group Discussion 2 II – Linking BrOA to international ocean acidification programs: (i) strengthening the scientific collaboration between Brazil and other countries in the context of ocean acidification research;(ii) identifying successes and failures in the implementation of ocean acidification.	Marion Gehlen (Invited) The future of the ocean carbon pumps: A modeling perspective	Breakout Groups/ Discussion	John K. Pinnegar (Invited) Climate change and UK fisheries – Exploring adaptation actions, perceptions within the industry and the challenge presented by fish stocks that move across international boundaries		
09:20						Alistair J. Hobday Observed and predicted impacts and adaptation strategies for pelagic fisheries in south-east Australia	
09:30	Mark R. Payne A statistical approach to model structural-uncertainty				Fei Chai (Discussion Leader) Discussion: Scientific issues following from the Introductory talk		Patrick Lehodey Managing Pacific tuna stocks under strong fishing pressure and climate change impact
09:35							

Sunday, March 22 (continued)

Workshop 1 [Room Diamante 5]		Workshop 2/6 (Day 2) [Room Diamante 6-7]	Workshop 3 (Day 2) [Room Diamante 2]	Workshop 4 (Day 2) [Room Diamante 1]	Workshop 5 (Day 2) [Room Diamante 3]	
09:50	Brian R. MacKenzie A downscaling investigation of multi-model uncertainty of hindcasted and projected regional temperatures	Group Discussion 2 (continued)	Fei Chai (continued)	Breakout Groups/ Discussion (continued)	Alan Haynie What are the key challenges to climate change adaptation in Bering Sea and Aleutian Islands groundfish fisheries?	
10:00			Group 3 Poster Session New achievements in numerical and conceptual models			
10:05					Chris Kennedy The role of institutional complexity, historical allocations, and changing demographics in management performance for a climate-changed ecosystem: Lessons from the US mid-Atlantic summer flounder fishery	
10:10	Cosimo Solidoro Uncertainties of model based assessment of climate change impact on marine ecosystems					Lisa Pfeiffer Adaptation to climate variation in a multispecies fishery: The West Coast groundfish trawl fishery
10:20						
10:30	<i>Coffee/Tea Break</i>					
10:35					<i>Coffee/Tea Break</i>	

Sunday, March 22 (continued)

Workshop 1 [Room Diamante 5]		Workshop 2/6 (Day 2) [Room Diamante 6-7]	Workshop 3 (Day 2) [Room Diamante 2]	Workshop 4 (Day 2) [Room Diamante 1]	Workshop 5 (Day 2) [Room Diamante 3]			
11:00	Philipp Neubauer Estimating variability and uncertainty in predatory relationships: A unified Bayesian framework for stable isotopes and fatty acid profiles.	Group Discussion 3 III – BrOA: (i) identifying national ocean acidification projects and learning how they have integrated field and laboratory/ analytical studies; (ii) identifying researchers to lead or coordinate potential BrOA sub-groups and activities; (iii) outline of 3rd BrOA report.	Group 3 Poster Session (continued) New achievements in numerical and conceptual models.	Breakout Groups/ Discussion (continued)	Malin L. Pinsky Adaptations of fish and fishing communities to rapid climate velocities			
11:15							Kirstin K. Holsman <i>Reel</i> change comes at a price: The future of Bering Sea (AK) fisheries under climate change	
11:20	Ana M. Queirós Scaling up experimental climate change research: From individuals to the ecosystem							
11:30						Charlotte Laufkoetter (Discussion Leader) Scientific issues following from the posters		Discussion [Rooms: Diamante 3; Pérola 2-5]
11:40	Lauge B. Rasmussen Ballast water management that adapts to climate changes and reduces harmful bio-invasions in marine eco-systems							
11:45		Group Discussion 4 IV – Manuscript outline: OA research in South America → recent advances, learning from experience, perspectives, challenges, potential partners.						
12:00	Manuel Barange Dealing with uncertainty when developing socio-economic scenarios for North Atlantic fisheries futures		Adrian Burd (Discussion Leader) Developments and actions needed in coming years					
12:30	<i>Lunch</i>	<i>Lunch</i>						
13:15	Breakout Groups/ Discussion	<i>Lunch</i>						

Sunday, March 22 (continued)					
Workshop 1 [Room Diamante 5]		Workshop 2/6 (Day 2) [Room Diamante 6-7]	Workshop 3 (Day 2) [Room Diamante 2]	Workshop 4 (Day 2) [Room Diamante 1]	Workshop 5 (Day 2) [Room Diamante 3]
14:00	Breakout Groups/ Discussion (continued)	Group discussion 4 (continued)	<i>Lunch (continued)</i>	Breakout Groups/ Discussion (continued)	Discussion (continued) [Rooms Diamante 3; Pérola 2-5]
14:15			Convenors (Discussion) Content of the white paper and assignment of participants to 4 breakout Writing Groups		
14:50			Stephanie Henson, Richard Lampitt, Marlon Lewis (Writing Group Leaders) Breakout Writing Groups [Rooms: Diamante 2; Pérola 15-16]		
15:40	<i>Coffee/Tea Break</i>				<i>Coffee/Tea Break</i>
15:45					
16:10	Group discussion and paper preparation	Group discussion 4 (continued)	Stephanie Henson, Richard Lampitt, Marlon Lewis (Writing Group Leaders) Breakout Writing Groups (continued) [Rooms Diamante 2; Pérola 15-16]	Reports/Summary	Discussion (continued) [Rooms: Diamante 3; Pérola 2-5]
16:15					
17:00			Convenors (Discussion) Reports of the Writing Groups and plans for completing the white paper	Workshop W4 ends	
17:30					
18:00	Workshops W1, W2/W6, W4 end				Workshop W5 ends

Monday, March 23	
08:45	Opening Ceremony
PLENARY SESSION (Day 1) [Rooms Diamante 1-3]	
	Convenor: Jacquelynne King
09:15	Chris Field (Keynote) Mapping the problem space and the opportunity space
10:15	<i>Coffee/Tea Break</i>
10:45	Arne Biastoch (S4 Plenary Speaker) The potential of nested ocean modeling
11:20	Margareth Copertino (S5 Plenary Speaker) Blue carbon ecosystems from South America: The role on carbon sequestration and mitigation of climate changes
11:55	Lynda E. Chambers (S6 Plenary Speaker) Phenology responses of southern marine species to climate: Impacts and adaptation options
12:30	<i>Lunch</i>
SESSION 4 [Rooms Diamante 1-3]	
SESSION 6 [Rooms Diamante 5-6]	
	Regional models for predictions of climate change impacts: Methods, uncertainties and challenges
	Climate change in the seasonal domain: Impacts on the phenology of marine ecosystems and their consequences
	Convenors: Enrique N. Curchitser, Shoshiro Minobe
	Convenors: Rubao Ji, Mark Payne
13:55	<i>Introduction by Convenors</i>
14:00	Shin-ichi Ito (Invited) Regional models for projections of climate change impacts on small pelagic fishes in the western North Pacific
14:30	Charles A. Stock Trophic amplification of ocean productivity trends in a changing climate
14:50	Edson J.R. Pereira Downscaling the 1990-2100 ocean climate projections for the Arabian Gulf
15:10	Angelica Peña A regional biogeochemical climate model for the British Columbia continental shelf
15:30	<i>Coffee/Tea Break</i>

Monday, March 23 (continued)	
SESSION 4 [Rooms Diamante 1-3]	
SESSION 6 [Rooms Diamante 5-6]	
16:00	<p>Rodrigo S. Martins Reviewing the use of computer-based modelling to study squid larval dispersal: Experiences from South Africa and Brazil</p>
16:00	<p>Inga Kristiansen Diversity and phenology changes of <i>Calanus</i> in the south-western Norwegian Sea, 1990-2014, linked to ocean climate</p>
16:20	<p>Illarion Mironov Comparison numerical models results and hydrographic data in the Atlantic Ocean</p>
16:20	<p>Yves-Marie Paulet From large scale climate variability to individual character changes in coastal invertebrates: The case of NAO and of the daily growth of the scallop, <i>Pecten maximus</i></p>
16:40	<p>Jonathan Tinker Marine climate projections for the NW European shelf seas: Dynamically downscaling a perturbed physics ensemble to explore climate uncertainty and temporal response</p>
16:40	<p>Andrew J. Pershing Seasonal forecasts for the timing of lobster landings</p>
17:00	<p>Ivonne Ortiz Fish movement and distribution drivers in a climate to fisheries model for the Bering Sea</p>
17:00	<p>Georg H. Engelhard Warmer winters and shifting spawning phenology in sole</p>
17:20	<p>Tarumay Ghoshal ROMS hindcast experiments on BOB's extreme events with daily forcing input</p>
17:20	<p>Brian R. MacKenzie The roles of plasticity and adaptation in spawning time of Atlantic cod (<i>Gadus morhua</i>): Explaining phenology and making predictions in a changing climate</p>
17:40	<p>Fedor N. Gippius Wind wave regime of eastern European seas</p>
17:40	<p>Rebecca G. Asch Projected mismatches between the phenology of phytoplankton blooms and fish spawning based on the GFDL Earth System Model (ESM2M)</p>
18:00	Sessions S4 and S6 end
19:00 22:30	Welcome Reception

Tuesday, March 24			
PLENARY SESSION (Day 2) [Rooms Diamante 1-3]			
	Convenor: Manuel Barange		
09:00	Paulo H.R. Calil (S1 Plenary Speaker) Multi-scale physical-biological interactions in the ocean – The importance of submesoscale processes		
09:35	Patrick Lehodey (S10 Plenary Speaker) Forecasting climate change impacts on large pelagic fish populations and fisheries: Progress, uncertainties and research needs		
10:10	Laura J. Richards (S12 Plenary Speaker) Looking back to go forward: Do past management actions foreshadow management responses to climate change?		
10:45	<i>Coffee/Tea Break</i>		
SESSION 1 [Room Diamante 5]	SESSION 10 (Day 1) [Rooms Diamante 1-3]		SESSION 12 [Rooms Diamante 6-7]
	Role of advection and mixing in ocean biogeochemistry and marine ecosystems	Forecasting climate change impacts on fish populations and fisheries	Linking climate change to marine management objectives
	Convenors: Fei Chai, Fangli Qiao	Convenors: Alistair Hobday, Anne Hollowed	Convenors: Jacquelynne R. King, Alexander Turra
11:15	<i>Introduction by Convenors</i>		
11:20	Alexander V. Babanin (Invited) Wave-induced turbulence: Theory and practice	Elvira Poloczanska (Invited) Climate change effects on fish and fisheries	Kao Sochivi (Invited) Fisheries management and climate change responses in Cambodia
11:50	Huijie Xue Variability of the North Equatorial Current (NEC) and its implications on Japanese eel larval transport	Joana Boavida-Portugal Small pelagics and climate change	Jake Rice Managing in times of transition: How policy and management should react to climate change
12:10	Julien Palmiéri Temporal evolution of marine biogeochemistry in Large Marine Ecosystems	Paul D. Spencer How might environmentally-driven changes in the distribution of arrowtooth flounder affect eastern Bering Sea walleye pollock predation mortality and population projections?	Marcus Haward Governance challenges for marine climate hotspots
12:30	<i>Lunch</i>		
14:00	Fangli Qiao The fundamental role of the surface wave in the ocean and climate systems	Sei-Ichi Saitoh Potential climate impacts of ocean warming to squid inferred habitat in North Pacific: Implications on future resource availability	Leo X.C. Dutra Institutional and organizational mapping – A powerful approach to identify opportunities and constraints for climate adaptation in fast warming regions
14:20	Shan Gao Temporal and spatial variability of carbon cycle in the northwestern Pacific Ocean: A three-dimensional physical-biogeochemical modeling study	Louise A. Rutterford Future fish distributions constrained by depth in warming seas	Linus Hammar Effects of climate change on the world's oceans are not important in current marine management
14:40	Eliana Gómez Ocampo Effects of dynamical processes on primary production and phytoplankton biomass in the Pacific subtropical-tropical zone	Abigail Marshall How do alternative models of individual growth affect size-structured population and community responses to climate change and fishing?	Débora De Freitas Uptake and pathways of coastal adaptation processes in Australia
15:00	Sólvá Káradóttir Eliassen How does horizontal mixing affect the primary production on the Faroe Shelf?	Nick Caputi The effect of an extreme marine heat wave on invertebrate fisheries in Western Australia	Stewart Frusher Informing ecosystem-based management of the range extending long-spined sea urchin using a structured decision making process

Tuesday, March 24 (continued)			
SESSION 1 [Room Diamante 5]		SESSION 10 (Day 1) [Rooms Diamante 1-3]	SESSION 12 [Rooms Diamante 6-7]
15:20	Vibe Schourup-Kristensen Iron supply to the Southern Ocean mixed layer from below: The ocean model effect	Jean-Baptiste Lecomte Linking climate variability to rockfish recruitment	Thomas G. Safford Climate change, science, and mariculture management in the United States and Brazil
15:40	<i>Coffee/Tea Break</i>		
16:10	Fei Chai Modeling impacts of mesoscale eddies on biogeochemical processes in the South China Sea	V. Kripa (Invited) Climate change influences on India's marine fisheries	Christopher Lynam Mixed fisheries and ecosystem based management: Trade-offs and the importance of climate
16:30	Andrew Yool Future change in ocean productivity: Is the Arctic the new Atlantic?		Stefan Koenigstein Model-based integration of experimental results and human uses to identify management options for marine ecosystems under climate change
16:40		José A. Fernandes Modelling fish production in Bangladesh under environmental change and socio-economic scenarios	
16:50	Karina Kammer Attisano Submarine Groundwater Discharge revealed by radium isotopes (Ra-223 and Ra-224) near a paleochannel on the Southern Brazilian continental shelf		Ana M. Queirós Carbon capture and storage impacts on marine systems: Are local impacts good return for global mitigation?
17:00		Georg H. Engelhard What the world's longest fish size time-series can tell us about climate change, fishing, eutrophication and war: North Sea plaice, 1902 to now	
17:10	Josie Robinson To what extent does iron advection affect the inter-annual variability of Southern Ocean island blooms?		Thamasak Yeemin Impact of coral bleaching events and adaptive management of tourism in the Thai waters
17:20		Tyler D. Eddy Effects of near-future climate change, fishing, and marine protection on a temperate, coastal ecosystem	
17:30	Shin-ichi Ito Importance of advection to form a climate and ecological hotspot in the western North Pacific		Session S12 ends
17:40		Alan Haynie Predicting how climate variation affects the Bering Sea pollock trawl and Pacific cod longline fisheries	
17:50	Bin Xiao The performance of a z-level ocean model in modeling global tide		
18:00		Day 1 Session S10 ends	
18:10	Session S1 ends		
18:30 20:30	Poster Session / Reception		

Wednesday, March 25			
PLENARY SESSION (Day 3) [Rooms Diamante 1-3]			
	Convenor: David Osborn		
09:00	Jean-Pierre Gattuso (S2 Plenary Speaker) Ocean acidification: Knowns, unknowns and perspectives		
09:35	Lisa A. Levin (S8 Plenary Speaker) Biodiversity consequences of climate change in the deep ocean		
10:10	Edward H. Allison (S11 Plenary Speaker) From climate physics to coastal people: What do we know about climate change and its potential impacts on coastal populations?		
10:45	<i>Coffee/Tea Break</i>		
SESSION 2 (Day 1) [Rooms Diamante 6-7]		SESSION 8 (Day 1) [Rooms Diamante 1-3]	
SESSION 11 [Room Diamante 5]			
	Ocean acidification	Climate change impacts on marine biodiversity and resilience	Impacts on coastal communities
	Convenors: Nicholas Bates, Silvana Birchenough	Convenor: Jake Rice	Convenors: Eddie Allison, Manuel Barange
11:15	<i>Introduction by Convenors</i>		
11:20	Ruy Kenji P. Kikuchi (Invited) Progress and prospects on ocean acidification research of the Tropical South Atlantic	Camilo Mora (Invited) We punch nature and it will punch us back: Human impacts on marine biodiversity and their feedbacks	Nesar Ahmed (Invited) Climate change vulnerability and adaptation in the low-lying tropics: The case of shrimp farming in coastal Bangladesh
11:50	Aziz ur Rahman Shaik Effective CO ₂ utilization in response to increasing CO ₂ levels in natural phytoplankton assemblages from the coastal Bay of Bengal, India	Giulia Ghedini Contrasting effects of sustained warming and heat waves on ecosystem resilience: Climate variability disrupts producer-consumer relationships decreasing resilience to multiple disturbances	Mohammad Mahmudul Islam Analyzing climate change impacts through social wellbeing lens: The case of Bangladesh coastal community
12:10	Markus Weinbauer Effects of elevated pCO ₂ and temperature on prokaryotic community composition and respiration in mesopelagic waters of the NW Mediterranean Sea	Inês Leal Acclimation capacity of tropical and temperate coastal organisms	Sibananda Senapati Climate change and vulnerable communities: A study on coastal fisheries from India
12:30	<i>Lunch</i>		
14:00	Marius N. Müller Coccolithophores, calcification and ocean acidification	Stephanie A. Henson Rapid emergence of marine ecosystem stress	William W.L. Cheung Transforming fisheries management to build climate-resilience in seafood security of coastal countries
14:20	Suchana Chavanich pH monitoring in the upper Gulf of Thailand and effect on early development and settlement of corals, <i>Acropora millepora</i> and <i>Pocillopora damicornis</i>	Éva E. Plagányi Modelling ecological tipping points and road-testing management strategies for increasing marine ecosystem resilience	Jenny Shaw Fishers adapting to change: A cascade of climate, environment, management, economic and social changes
14:40	Anna K. McLaskey Effects of ocean acidification on crustacean zooplankton: A comparison of the copepod <i>Calanus pacificus</i> and the krill <i>Euphausia pacifica</i> (S2-10139)	Miranda C. Jones Assessing vulnerability of marine species to climate change in the world's oceans: Combining biological traits, climate projections and species distribution modelling	James A.E. Howard Social vulnerability of coastal communities to climate change: A Southern hemisphere comparison

Wednesday, March 25 (continued)			
SESSION 2 (Day 1) [Rooms Diamante 6-7]		SESSION 8 (Day 1) [Rooms Diamante 1-3]	SESSION 11 [Room Diamante 5]
15:00	Adam Sokolowski Behavioural and physiological responses of the estuarine bivalve <i>Macoma balthica</i> from the Baltic Sea to increased CO ₂ concentration (S2-9885)	Laura J. Falkenberg The role of species interactions in determining ecosystem resistance to an increasingly modified world	Débora De Freitas Climate change impacts on coastal societies and infrastructure – Assessing risk against a changing population in the north coast of São Paulo, Brazil
15:20	Anthony Moreira Combined effects of seawater acidification and Arsenic in <i>Crassostrea gigas</i> and <i>C. angulata</i> : Oxidative stress and biomineralization enzymes activity assessment	Malin L. Pinsky Impacts of climate on marine community structure across North America	Carla I. Eliff Considerations on the potential of increase in coastal vulnerability in Tinharé and Boipeba Islands, Bahia, Brazil, in face of climate change
15:40	<i>Coffee/Tea Break</i>		
16:10	Sue-Ann Watson Ocean acidification alters marine invertebrate behaviour via neural impairment	Claudie Beaulieu Marine regime shift detection and attribution	Shang Chen Anthropogenic and climate effects on change of marine ecological capital
16:30	Megan J. Welch Effects of elevated CO ₂ on fish behaviour undiminished by transgenerational acclimation	Laurène Pécuchet Environmental pressure drives functional diversity of fish assemblages in a temperate brackish system	Adonis Velegrakis Evaluation of climate change impacts on the sea-turtle nesting beaches of Zakynthos National Marine Park, Greece
16:50	Ellie Bergstrom Effects of ocean acidification and global warming on the physiological ecology of rhodoliths (Rhodophyta) and seagrass	Katherine E. Mills Size structure, diversity and resilience: Observations and predictions in the context of climate change	Ingrid van Putten A marine climate change adaptation blueprint for coastal regional communities
17:10	Marta S. Pimentel The effect of ocean warming and acidification on the aerobic and anaerobic metabolic potential of fish early life stages	Denilson da Silva Bezerra Modeling of the pattern of mangrove resistance to sea-level rise	Discussion
17:30	Tullio Rossi Ocean acidification causes disorientation in fish larvae during critical settlement stage	Pedro C. González-Espinosa Extreme events of cold water and high light irradiance are responsible of massive bleaching in coral reefs	
17:50	Rui Rosa Ecophysiology of shark early stages under climate change	Gretta Pecl Ecological impacts of species range shifts: Identifying the good, the bad and the uncertain	
18:10	Sessions S2, S3, S11 end		
18:30	Symposium Dinner		

Thursday, March 26					
SESSION 2 (Day 2) [Rooms Diamante 6-7]		SESSION 8 (Day 2) [Rooms Diamante 1-2]		SESSION 10 (Day 2) [Room Diamante 3]	
	Ocean acidification	Climate change impacts on marine biodiversity and resilience	Forecasting climate change impacts on fish populations and fisheries		
	Convenors: Nicholas Bates, Silvana Birchenough	Convenor: Jake Rice	Convenors: Alistair Hobday, Anne Hollowed		
08:55	<i>Introduction by Convenors</i>				
09:00	Nelson Lagos (Invited) Ocean acidification along the southeastern Pacific coastal ecosystems: Biological responses, interactions with multiple stressors and human dimensions	Alistair J. Hobday Testing a climate adaptation strategy for vulnerable seabirds based on prioritisation of intervention options	William W.L. Cheung Change in global fisheries economics with climate change		
09:20		Rodolfo Vögler Long-term climate variability effects on the trophodynamics of a South American temperate estuarine ecosystem	Christopher Lynam Long-term trends in the biomass of commercial fish in the North Sea: The role of fishing impacts, predator-prey interactions and temperature change		
09:30	Julien Palmiéri Simulated anthropogenic CO ₂ storage and acidification of the Mediterranean Sea				
09:40		Angelo F. Bernardino Predicting ecological changes of benthic estuarine assemblages from Marine Ecoregions of Brazil through decadal climatology	Kelly Ortega-Cisneros Modelling impacts of climate change on fisheries in the southern Benguela system		
09:50	Eric Douville A 200-year record of interannual pH and SST variability from the Lesser Antilles (Caribbean Sea) inferred from a <i>Siderastrea siderea</i> reef coral				
10:00		Bayden D. Russell Surviving in a warming world: Acclimation of molluscs to warming is dependent on ocean acidification and thermal variability	Bryony L. Townhill Fisheries, low oxygen and climate change: Integrating physiological data with model projections		
10:10	Gisela Dionísio Climate change impacts on tropical and temperate photosynthetic sea slugs				
10:20		Elvira Poloczanska Future ecosystem states: Linking ecological responses to climatic extremes	Anne B. Hollowed A framework for evaluating IPCC AR5 projected climate change impacts on Bering Sea (AK) fish and fisheries		
10:30	<i>Coffee/Tea Break</i>				
10:40	<i>Coffee/Tea Break</i>				

Thursday, March 26 (continued)			
SESSION 2 (Day 2) [Rooms Diamante 6-7]		SESSION 8 (Day 2) [Rooms Diamante 1-2]	SESSION 10 (Day 2) [Room Diamante 3]
11:00	Sean D. Connell The other ocean acidification problem: CO ₂ as a resource among competitors for ecosystem dominance	<i>Coffee/Tea Break (continued)</i>	
11:10		Ivan Nagelkerken Effects of ocean acidification on marine species	Alistair J. Hobday Seasonal forecasting as a stepping stone to climate adaptation in marine fisheries and aquaculture
11:20	John K. Pinnegar Who are the most vulnerable? – A global assessment of exposure, sensitivity, adaptive capacity and vulnerability to ocean acidification		
11:30		Coleen Suckling Antarctic sea urchins can acclimate within months to rapid climate change	Melissa A. Haltuch Assessing the future effects of climate change trends on U.S. west coast sablefish productivity and on the performance of alternative management strategies
11:40	Uta Passow Ocean acidification, warming and the biological carbon pump		
11:50		Bryony L. Townhill Invasive, non-native and nuisance species and how climate change might contribute to their spread	Josephine Dianne Deauna Temporal variability of upwelling parameters in the Zamboanga Peninsula, Philippines and its relationship with sardine production
12:00	Denise Breitburg Climate change in the shallows – interacting effects of diel-cycling hypoxia and acidification		
12:10		Daniel J. Mayor The metabolic response of marine copepods to environmental warming, ocean acidification and food deprivation	Carey R. McGilliard Quantitative tools for predicting fish population dynamics and evaluating alternative harvest strategies under climate change for marine fisheries in Alaska
12:20	Sue-Ann Watson Giant clams and rising CO ₂ : Light may ameliorate effects of ocean acidification in a solar-powered animal		
12:30		Session S8 ends <i>Free time</i>	Session S10 ends <i>Free time</i>
12:40	Session S2 ends <i>Free time</i>		

Friday, March 27					
PLENARY SESSION (Day 4) [Rooms Diamante 2-3]					
	Convenor: Luis Valdés				
09:00	Micha J.A. Rijkenberg (S3 Plenary Speaker) Bio-essential and pollutant trace metals in a changing Atlantic Ocean				
09:35	Philip L. Munday (S7 Plenary Speaker) Predicting evolutionary responses to climate change in the sea: Progress and challenges				
10:10	Coleen L. Moloney (S9 Plenary Speaker) Going nowhere or moving on: How do changes in species distribution impact marine food webs?				
10:45	<i>Coffee/Tea Break</i>				
SESSION 3 [Room Diamante 5]		SESSION 7 [Room Diamante 1]		SESSION 8 (Day 3) [Rooms Diamante 2-3]	SESSION 9 [Rooms Diamante 6-7]
	Changing ocean chemistry: From trace elements and isotopes to radiochemistry and organic chemicals of environmental concern	Evolutionary response of marine organisms to climate change	Climate change impacts on marine biodiversity and resilience	Impact of climate change on ecosystem carrying capacity via food-web spatial relocations	
	Convenors: Angelica Peña, Geraldine Sarthou	Convenor: Philip Munday	Convenor: Jake Rice	Convenor: Brian R. MacKenzie	
11:15	<i>Introduction by Convenors</i>				
11:20	Maeve C. Lohan (Invited) The role of the Southern Ocean export in the biogeochemical cycling of zinc, cadmium and cobalt in the Atlantic Ocean	Robin S. Waples (Invited) Predicting life history changes in marine ectotherms responding to directional climate change and fluctuating productivity regimes	Joana Boavida-Portugal Global patterns of Tunas and Billfishes (marlins): Present and future	Jason S. Link (Invited) Moving parts of the food web: Detecting and predicting climate-induced migratory changes to structure, function, resilience and production of marine ecosystems	
11:40			Francisco Barros Beta, alpha and gamma benthic diversity on estuaries: What to expect?		
11:50	Leonardo Contreira-Pereira Study of the sources of iron to the southern Brazilian coast and adjacent ocean	David Abrego Early survival of coral juveniles and initial uptake of algal symbionts in the world's hottest reefs		Xochitl Cormon Evaluation of potential trophic impacts from hake (<i>Merluccius merluccius</i>) emergence in the North Sea	
12:00			Johanna Yletyinen Understanding marine regime shifts: Detecting possible changes in structures and functions in coastal and pelagic food webs		
12:10	Sarah L.C. Giering Potential changes in iron availability through long-term changes in zooplankton	Andrew Thomas Jones Robust monitoring of genetic effective population size in a changing environment		Susa Niiranen Does body-size matter when marine systems face climate change?	
12:20			Daniel G. Boyce Macroecological patterns of trophic structure and community stability in marine ecosystems		
12:30	<i>Lunch</i>			<i>Lunch</i>	
12:40	<i>Lunch</i>			<i>Lunch</i>	

Friday, March 27 (continued)			
SESSION 3 [Room Diamante 5]	SESSION 7 [Room Diamante 1]	SESSION 8 (Day 3) [Rooms Diamante 2-3]	SESSION 9 [Rooms Diamante 6-7]
13:40	<i>Lunch (continued)</i>		Thorsten Werner Krill worldwide: A comparison of hypoxia tolerances of euphausiid species from Atlantic, Pacific and Polar regions
14:00	Géraldine Sarthou High variability of dissolved iron concentrations in the vicinity of the Kerguelen Island (Southern Ocean)	Emily Howells Adaptation of coral symbioses to extreme temperatures	Cosimo Solidoro Modelling Mediterranean Sea ecosystem state under contemporary and future climate
14:20	Vanessa Hatje Temporal and spatial gradients of anthropogenic Gd in San Francisco Bay	Jorge E. Ramos Population genetic signatures of a recent marine range extension	José R. Paula Future global patterns of marine cleaning interactions
14:40	Konstantin Choumiline Historical trends in hypoxia of the southeastern Gulf of California: 18,000 year record within Pescadero Basin sediments	Ayako Suda Different responses to water temperature in two distinct groups of Pacific cod (<i>Gadus macrocephalus</i>) inhabiting around Japan	K. Allison Smith (K.A.S. Mislan) Diversity of blood-oxygen binding traits in the global ocean
15:00	Yongwen Gao Stable isotopic records of otoliths and clam shells in detecting the climate change and the effects of ocean acidification	Fabiano Thompson Effects of global changes in health and disease of carbonatic holobionts	Session S8 ends
15:20	Pedro Echeveste Interactions of persistent organic pollutants with marine phytoplankton in temperate and polar seawaters	Session S7 ends	Hjálmar Hátún Labrador Sea convection blows life to the northeastern Atlantic
15:40	Session S3 ends		Session S9 ends
15:40	<i>Coffee/Tea Break</i>		
16:10	General Plenary and Closing Ceremony		
17:30	End of 3rd International Symposium: Effects of Climate Change on the World's Oceans		

POSTER SESSION

S1. Role of advection and mixing in ocean biogeochemistry and marine ecosystems

- S1-P1 **Rosabruna La Ferla**
Microbial biogeochemistry in the Southern European Seas: The multidisciplinary ADREX survey
- S1-P2 **Xingrong Chen**
The use of physical decomposition to analyze interannual climate variability in the southern Indian Ocean
- S1-P3 **Anahí A. Brun**
Transoceanic fluxes in southern Patagonia
- S1-P4 **Ramiro Riquelme-Bugueño**
Growth rate and fatty acid composition in the Humboldt Current krill, *Euphausia mucronata*, in the coastal upwelling zone off central Chile
- S1-P5 **Karina Kammer Attisano**
Submarine Groundwater Discharge for the coastal region in southern Brazil
- S1-P6 **Carlos A. Cantergiani**
Vertical migrations of copepods in the oxygen minimum zone: Conceptual model approach and its simplification of the bioelement fluxes
- S1-P7 **Carol C. González**
Abundance and biomass of live and dead copepods associated with the oxygen minimum zone in northern Chile (23°S)
- S1-P8 **Jianfang Chen**
The effect of advection on biogenic fluxes and paleo-proxies in the deep South China Sea
- S1-P9 **Nancy K. Taniguchi**
Implications of North Brazil Current variations during the last 8000 cal years BP and its role in the paleoclimate on Northeast Brazilian margin
- S1-P10 **Mônica Wallner-Kersanach**
Nutrient concentrations along the coast of southern Brazil
- S1-P11 **Selma Pacariz**
Nutrient limitation in the subpolar North Atlantic drives mackerel westwards

S2. Ocean acidification

- S2-P1 **Mary Chris Lagumen**
Assessment of acidification and eutrophication in the coastal waters of Bolinao, Pangasinan, Philippines
- S2-P2 **José A. Fernandes**
End-to-end assessment of ocean warming and acidification on fisheries: From experiments and models to economic and social impacts
- S2-P3 **Kannan Gunasekaran**
Impact of ocean acidification on marine clownfish sperm behaviour and fertilization of *Amphiprion sebae*
- S2-P4 **Adriana R. Perretti**
A 12 ka history about changes in deep ocean carbonate chemistry and its effects on foraminiferal tests
- S2-P5 **Rosa Freitas**
Effects of seawater acidification on *Diopatra neapolitana* (Polychaete, Onuphidae) performance: Biochemical and regenerative capacity responses
- S2-P6 **Rosa Freitas**
How life history influences the responses of the clam *Scrobicularia plana* to the combined impacts of pH decrease and carbamazepine

- S2-P7 **Etelvina Figueira**
Biochemical and metabolomic alterations in the invasive clam *Venerupis philippinarum* when exposed to salinity changes
- S2-P8 **Dominika Brulińska**
Effect of elevated carbon dioxide concentrations on the growth of estuarine bivalve *Macoma balthica* from the Baltic Sea
- S2-P9 **Laura Sordo**
Long-term effects of ocean acidification on free-living coralline algae
- S2-P10 **Visnu C. Sarmiento**
Effects of seawater acidification on a coral reef meiofauna community
- S2-P11 **Rui Zhang**
Response of bacterioplankton interaction to acidification in the Arctic Ocean revealed by phylogenetic molecular ecological networks
- S2-P12 **Marta S. Pimentel**
Sparus aurata and *Argyrosomus regius* early life stages responses to ocean warming and acidification
- S2-P13 **Jannine M.L. Avila**
Variations of AT, CT and pH in Indian Austral Ocean between 2005 and 2010 in response to cooling and evaporation
- S2-P14 **Tarciane P. Souza**
Effects of seawater acidification on a coral reef Nematoda community
- S2-P15 **Ana Claudia Rodrigues**
Effect of ocean acidification in the ecophysiology and ultrastructure of *Halodule wrightii* Ascherson – An evaluation in a tropical mesocom
- S2-P16 **Mônica Wallner-Kersanach**
The submarine groundwater process, the biological pump and the CO₂ fluxes on the Brazilian southeastern and southern shelf
- S2-P17 **Aniko Zseni and Eva V. Pestine Racz**
Acidification of Europe's seas: An overview based on the European Climate Adaptation Database

S3. Changing ocean chemistry: From trace elements and isotopes to radiochemistry and organic chemicals of environmental concern

- S3-P1 **Silvia K. Kawakami**
Natural and anthropogenic sedimentary organic compounds in the Guajará Bay, an urbanized Amazonian coastal system (Pará, North Brazil)
- S3-P2 **Jasmin G. John**
Fingerprints of centennial climate change on ocean biogeochemistry
- S3-P3 **Natalia Ospina-Alvarez**
Land-sea boundary as a reference for analysis of environmental changes: Sinking particle fluxes of metals and organic matter in a mesotrophic pristine coastal system
- S3-P4 **Lucia H. Vieira**
Ra isotopes as tracers of iron (Fe) sources supplying the phytoplankton blooms under the ice in the Arctic Ocean
- S3-P5 **Kirsten Isensee**
IGMETS: Assessing global oceanic changes one time-series at a time
- S3-P6 **Julianna Ma. de A. Martins**
Guanabara Bay organic matter flux and its influence in the adjacent continental shelf
- S3-P7 **Etelvina Figueira**
Biochemical and metabolomic alterations in the invasive clam *Venerupis philippinarum* when exposed to salinity changes and Arsenic contamination

S4. Regional models for predictions of climate change impacts: Methods, uncertainties and challenges

- S4-P1 **Ana M. Queirós**
Scaling up experimental ocean acidification and warming research: From individuals to the ecosystem
- S4-P2 **Edson J.P. Pereira**
Ocean climate projections downscaled for the Arabian Gulf
- S4-P3 **José A. Fernandes**
Multivariate comparison of modelled and realised changes in fish abundance and distribution in response to climate
- S4-P4 **Sei-Ichi Saitoh**
The impacts of climate change on marine environment variation to Japanese scallop growth in Funka Bay, Japan using MODIS and OGCM
- S4-P5 **Jinkun Yang**
Mode analysis of Indian-Pacific Sea surface temperature anomaly

S5. Coastal blue carbon and other ocean carbon sinks

- S5-P1 **Lucía C. Kahl**
Space variability of sea-air CO₂ fluxes in the Patagonian Sea: Seasonal biological and thermal effects on CO₂
- S5-P2 **Silvana Birchenough**
The shelf-life of blue carbon
- S5-P3 **Silvana Birchenough**
Blue carbon exchanges and storage: Assessing the role of human activities and management implications
- S5-P4 **Jannine M.L. Avila**
Sea-air carbon dioxide fluxes along 35°S in the South Atlantic Ocean and adjacent continental shelves

S6. Climate change in the seasonal domain: Impacts on the phenology of marine ecosystems and their consequences

- S6-P1 **Hongjun Song**
Plankton biogeography and phenology in the Southern Yellow Sea
- S6-P2 **Ismael Núñez-Riboni**
Causes and effects of hydrography changes in the North Sea from the inter-annual to multi-decadal time scales
- S6-P3 **Felipe Gusmão**
Long term zooplankton variability in a South Atlantic coastal channel and its relationship with climatic indices
- S6-P4 **Yun Li**
Changing rhythm of stratification on the Northwest Atlantic shelf: Interannual variability and its biological implications
- S6-P5 **Christopher A. Griffiths**
Juvenile sandeel growth: An individual's physiological and phenological response to climatic warming
- S6-P6 **Carlos A. Cantergiani**
Annual variability in the composition and abundance of the zooplanktonic communities associated with the upwelling zone in Mejillones Bay (23°S), northern Chile
- S6-P7 **José E. Martinelli Filho**
Cyclopoid copepods in a subtropical coastal area (Ubatuba, Brazil): Growth rates and production
- S6-P8 **Arno Pöllumäe**
Macrophyte community response to the changing water temperature in a shallow brackish water Kõiguste Bay

S7. Evolutionary response of marine organisms to climate change

- S7-P1 **Claire Samantha T. Juanico**
Changes in conservation units of some tiger shrimp populations in Southeast Asia
- S7-P2 **Marcela Cornejo**
Effects of hypoxia on nitrogen fluxes of *Acartiatonsa* in the oxygen minimum zone of the eastern south Pacific

S8. Climate change impacts on marine biodiversity and resilience

- S8-P1 **Pavan Kumar**
Identification of coral reef bleaching warming in Gulf of Kachchh using climatology parameter by geospatial techniques
- S8-P2 **Inês Leal**
Vulnerability of tropical and temperate coastal organisms to climate change
- S8-P3 **Catarina Vinagre**
Network structure of estuarine food webs – The role of humans and climate change
- S8-P4 **Laura J. Falkenberg**
A novel method to identify the effects of climate change: Potential insights for future biodiversity and ecosystem resilience
- S8-P5 **Elvira Poloczanska**
Marine climate change impacts and adaptation report card for Australia
- S8-P6 **Alagarsamy Sakthivel**
Histological and scanning electron microscopic studies on internal parasite *Echinorhynchus* sp. in yellowfin tuna (*Thunnus albacares*)
- S8-P7 **Matthew B. Sanders**
Effect of ocean acidification on white spot syndrome virus (WSSV) replication in juvenile European lobster (*Homarus gammarus*)
- S8-P8 **Makamas Sutthacheep**
Coral reef resilience to climate change in the Gulf of Thailand and the Andaman Sea
- S8-P9 **W.A.S. Chamika**
Current status of microbial activity at Pareviwella reef Tangalle southern Sri Lanka
- S8-P10 **Eva Cacabelos**
Marine assemblages on natural shores and coastal defence structures
- S8-P11 **Visnu C. Sarmento**
Effects of climate change scenarios on a coral reef meiofauna community
- S8-P12 **Rodolfo F.M. Nascimento**
Response of *Halimeda* sp. to a climate change scenario
- S8-P13 **Jesús S. Troncoso**
Enlargement and reductions on habitat of sub-tropical and boreal intertidal species of gastropods along Atlantic coast of Iberian Peninsula in a global warming scenario
- S8-P14 **Ruy Kenji P. Kikuchi**
Coral bleaching in Brazil
- S8-P15 **Gisela Dionísio**
Ontogenic development of tropical photosynthetic mollusks in a changing ocean
- S8-P16 **Helena Matthews-Cascon**
Population density of *Bursatella leachii* (Mollusca: Gastropoda) in three estuaries of Ceará State, Northeast Brazil
- S8-P17 **Carlos Augusto Oliveira de Meirelles**
Aplysia dactylomela (Mollusca: Gastropoda) from Rocas Atoll (RN – Brazil): Where did it go?
- S8-P18 **D. Sanna Durgappa**
Impact of climate change on marine biodiversity in west coast of India

- S8-P19 **Visnu C. Sarmiento**
Effects of increasing seawater temperature on phytoplankton community
- S8-P20 **José R. Paula**
Combined effects of climate change and methylmercury exposure on marine fish ecophysiology
- S8-P21 **Juan I. Cañete**
Estuarine neustonic communities: Oceanographic tool to relate climate change with fluctuation in salinity at southern Chilean fjords
- S8-P22 **Juan I. Cañete**
Distribution patterns of native and exotic ascidians in two areas of Chile with contrasting oceanographic features and human activity record
- S8-P23 **Ítalo Lima**
Coral bleaching in a highly turbid environment: A reef monitoring through 2 years in an equatorial coast (NE, Brazil)
- S8-P24 **Tore Johannessen**
Predator-prey synergism – A novel perspective in ecology
- S8-P25 **Ian McCarthy**
Assessing impacts of ocean acidification on energy status of marine invertebrates
- S8-P26 **Ian McCarthy**
Metabolic responses of two species of brachyuran crustaceans to ocean acidification and reduced salinity

S9. Impact of climate change on ecosystem carrying capacity via food-web spatial relocations

- S9-P1 **Wilhelm Hagen**
Life strategies and dietary interactions of copepods in the northern Benguela upwelling system
- S9-P2 **Holger Auel**
Impact of hypoxia on zooplankton communities in the subtropical and tropical Atlantic Ocean
- S9-P3 **Katherine E. Mills**
Integrating species distribution, phenology, body size, and abundance to evaluate climate impacts on marine trophic interactions
- S9-P4 **Julie E. Keister**
Consequences of hypoxia on distributions, species composition, predator-prey interactions, and energy flow in a pelagic marine ecosystem

S10. Forecasting climate change impacts on fish populations and fisheries

- S10-P1 **Nick Caputi**
Decline in puerulus settlement in the western rock lobster fishery in Western Australia: A climate change effect?
- S10-P2 **Diana Perry**
Marine shallow water seascapes under a changing climate: A seagrass perspective
- S10-P3 **Alexander Zavolokin**
Long-term trends in growth of Kamchatka chum salmon (*Oncorhynchus keta*) in relationship to climate and salmon abundance, 1927-2012
- S10-P4 **Shin-ichi Ito**
Modelling ecological responses of Pacific saury (*Cololabis saira*) to future climate change and its uncertainty
- S10-P5 **Hwa Hyun Lee**
Buoyancy and vertical distribution of Pacific Mackerel eggs and larvae and its climate change implication for the temporal variability of recruitment

- S10-P6 **Walter H.D. Pinaya**
The Brazilian sardine (*Sardinella brasiliensis*) landings and its relationship with the marine variability in the Southeast Brazilian Bight (SBB)
- S10-P7 **Andrew J. Pershing**
Impact of rapid warming on the Gulf of Maine ecosystem

S12. Linking climate change to marine management objectives

- S12-P1 **Keshnee Pillay**
South African ocean monitoring: A new era

General Poster Session

- GP-P1 **Michael Adedotun Oke**
Overview and experiences gathering during boat tour in ocean of Ghana
- GP-P2 **Frédéric Kpèdonou Bonou**
Variability of total alkalinity and total inorganic carbon in the western tropical Atlantic Ocean
- GP-P3 **Sara Bojórquez-Sánchez**
Recent accretion rates in coastal seasonal floodplain, as an evidence of Global Change in Veracruz, Mexico
- GP-P4 **Thulwaneng B. Mashifane**
Biogeochemical feedback processes in the oxygen minimum zone of the Benguela upwelling system
- GP-P5 **Aurore Regaudie-de-Gioux**
UV sensitivity of planktonic net community production in ocean surface waters
- GP-P6 **Lourianne M. Freitas**
Calcification response of the coral *Montastraea cavernosa* (Linnaeus, 1767) to heterotrophy during a bleaching event
- GP-P7 **Raisa de Siqueira Alves**
Modes of sea level variability in the South Atlantic
- GP-P8 **Qingsheng Miao**
Climate response and spatial-temporal model on the inter-annual change of winter temperature-salinity in the East China Sea
- GP-P9 **Maria Eduarda F. Mansur**
Implications to erosion in coastal protected areas
- GP-P10 **Anna Schukat**
Downward export of carbon by diel migrant zooplankton in the northern Benguela upwelling system with regard to the OMZ
- GP-P11 **Alexey Maximov**
Climate-driven changes in disturbed marine ecosystem: The case of the Neva Estuary
- GP-P12 **Kevern L. Cochrane**
Global learning for local solutions: Reducing vulnerability of marine-dependent coastal communities
- GP-P13 **Jennifer C.A. Pistevos**
Ocean acidification and global warming impair behaviour and growth in an apex predator
- GP-P14 **Patricia G. Cardoso**
How trophic interactions (*Littorina obtusata/Ascophyllum nodosum*) may be endangered by climate change
- GP-P15 **Lisa Pfeiffer**
A safer catch? The effects of catch share management on fishing safety
- GP-P16 **Miryam Juárez**
Paleoproductivity in the northeast Pacific for the last millennium

- GP-P17 **Rui Rosa**
Are intertidal shrimps more vulnerable to global warming than subtidal ones?
- GP-P18 **Iole B.M. Orselli**
A potential tool for detecting Harmful Algal Blooms through remote sensing data
- GP-P19 **Carmen Rodriguez**
Estimating the effect of pressure on the TRIS buffer system for in-situ pH measurements
- GP-P20 **Adoté Blim Blivi**
Predictions of retreat of coastline up to 2025, 2050, 2075, 2100, depletion of sand and effect of sea level rise along gulf of Benin in Eastern Atlantic Ocean

W2/W6. Joint Brazilian Ocean Acidification Research and Surface Ocean-Lower Atmosphere Study (SOLAS) Workshop: Biogeochemical-physical interactions and feedbacks between the ocean and atmosphere

- W2/W6-P1 **Marina T. Botana**
Response of Brazilian phytoplankton to temperature and ocean acidification
- W2/W6-P2 **Camila Ortulan Pereira**
Carbon flows through a coastal benthic community under ocean acidification conditions
- W2/W6-P3 **Iole B.M. Orselli**
An estimate of anthropogenic CO₂ distribution in Southwestern Atlantic

W3. Effects of climate change on the biologically-driven ocean carbon pumps

W3-Group 1

- W3-G1-P1 **Rosabruna La Ferla**
Seasonal and inter-annual changes of microbial activities in the Mediterranean Sea
- W3-G1-P2 **Louis Legendre**
The microbial carbon pump: Potential significance in the globally changing ocean
- W3-G1-P3 **DanLing Tang**
Typhoons impacts on sea-air exchanges of CO₂ and DO in the South China Sea
- W3-G1-P4 **Lionel Guidi**
A new look at ocean carbon remineralization for estimating deep-water sequestration
- W3-G1-P5 **Cynthia H. Pilskaln**
Carbon pump dynamics and budget for the Northwestern Atlantic shelf
- W3-G1-P6 **Richard B. Rivkin**
Manna from heaven... Role of aeolian nutrient inputs on carbon pumps in the contemporary and future ocean
- W3-G1-P7 **Rosabruna La Ferla**
Variability of carbon dioxide production rates in the water masses of Southern Adriatic Pit in the period 1993-2004
- W3-G1-P8 **Jianfang Chen**
Variability of biological pump in the deep northern South China Sea
- W3-G1-P9 **Nianzhi Jiao**
Emerging needs for standard protocols for core measurements of the marine carbon sinks
- W3-G1-P10 **Daniel J. Mayor**
Microbial gardening in the ocean's twilight zone: Detritivorous metazoans benefit from fragmenting, rather than ingesting, sinking detritus

W3-Group 2

- W3G2-P11 **Xavier Mari**
On the impact of soot deposition on carbon pumps
- W3-G2-P12 **Markus G. Weinbauer**
Role of viral lysis of plankton for the cycling of organic matter
- W3-G2-P13 **Rosabruna La Ferla**
Carbon dioxide production rates in the Ross Sea (Antarctica)
- W3-G2-P14 **Rosabruna La Ferla**
Variability of microbial respiratory activity in relation to particulate organic matter over short time scales in a glacial Arctic fjord (Kongsfjorden, Svalbard)
- W3-G2-P15 **Rui Zhang**
Viral control on bacterioplankton and its ecological and biogeochemical implicates in the deep western Pacific Ocean
- W3-G2-P16 **Feng-Ping Wang**
Roles of archaea in organic matter degradation in marine sediments
- W3-G2-P17 **Chuanlun Zhang**
Variability in abundance of the Bacterial and Archaeal 16S rRNA and *amoA* genes in water columns of northern South China Sea
- W3-G2-P18 **Nianzhi Jiao**
Marine Ecosystem Experimental Chamber System (MECS) – A powerful tool for scenario studies on climate and environmental changes
- W3-G2-P19 **Jun Sun**
Phytoplankton biovolume conversion carbon biomass calculation and its implication for biological pump

W3-Group 3

- W3-G3-P20 **Stephanie A. Henson**
Variability in efficiency of particulate organic carbon export: A model study
- W3-G3-P21 **Uta Passow**
Effects of rising atmospheric carbon dioxide concentrations on the biological carbon pump
- W3-G3-P22 **Jerry Tjiputra**
Sensitivity and regional change of future biological carbon pump to POC flux parameterization
- W3-G3-P23 **Gianpiero Cossarini**
The continental shelf pump in the Adriatic Sea (Mediterranean Sea): Modeling the interaction between physical processes and the biogeochemical carbon cycle
- W3-G3-P24 **Adrian Burd**
The impact of climate change on aggregation and particle flux in the marine environment
- W3-G3-P25 **Sarah L.C. Giering**
Balancing the carbon budget in the twilight zone
- W3-G3-P26 **Charlotte Laufkoetter**
Drivers of future changes in export efficiency in marine ecosystem models
- W3-G3-P27 **K. Allison Smith**
Particle attenuation simulated using a microbial remineralization model
- W3-G3-P28 **Fei Chai**
Modeling carbon cycle in the Pacific Ocean
- W3-G3-P29 **Ya-Wei Luo**
Comparison of microbial carbon pump (MCP) in several open ocean stations using an ecosystem model
- W3-G3-P30 **M. Robin Anderson**
Cumulative effects of climate change and other anthropogenic pressures on ocean carbon pumps

W5. Moving towards climate-ready fishery systems: Regional comparisons of climate adaptation in marine fisheries

- W5-P1 **Gretta Pecl**
Evaluating adaption options for four key fisheries in South Eastern Australia
- W5-P2 **Katherine E. Mills**
Following the fish? Fishery responses to shifting fish distributions in the Northeast United States
- W5-P3 **Andrew J. Pershing**
Slow management during rapid ecosystem change: How rapid warming drove the collapse of Gulf of Maine cod
- W5-P4 **Alan Haynie**
Climate change and adaptive fisher behavior in the Pacific cod longline fishery
- W5-P5/
S10-P1 **Nick Caputi**
Decline in puerulus settlement in the western rock lobster fishery in Western Australia:
A climate change effect?

Upcoming International Events

NPAFC Symposium on “Pacific salmon and steelhead production in a changing climate: Past, present, and future”

May 17–19, 2015, Kobe, Japan

http://www.npafc.org/new/events/symposium/2015symposium/symposium_home.html

International Symposium on “Harmful algal blooms and climate change”

May 19–22, 2015, Göteborg, Sweden

http://www.pices.int/meetings/international_symposia/2015/2015-HAB/scope.aspx

International Scientific Conference on “Our common future under climate change”

July 7–10, 2015, Paris, France (in preparation for the 21st UNFCCC Conference of the Parties (COP21), November 30–December 11, 2015, Paris, France)

<http://www.commonfuture-paris2015.org/>

PICES/ICES international workshop on “Modeling effects of climate change on fish and fisheries”

August 10–12, 2015, Seattle, WA, U.S.A.

9th International Conference on Marine Bioinvasions

January 26–29, 2016, Sydney, Australia

ICES Symposium on “Understanding marine socio-ecological systems: Including the human dimension in Integrated Ecosystem Assessments”

May 30–June 3, 2016, Brest, France

<http://www.ices.dk/news-and-events/symposia/Pages/Understanding-marine-socio-ecological-systems.aspx>

6th ICES/PICES Zooplankton Production Symposium on “New challenges in a changing ocean”

May 9–13, 2016, Bergen, Norway

<http://www.ices.dk/news-and-events/symposia/Pages/6th-Zooplankton-Production-Symposium.aspx>

PICES/ICES Symposium on “Drivers of small pelagic fish resources”

March 6–11, 2017, Victoria, Canada

<http://www.ices.dk/news-and-events/symposia/Pages/Symposium-on-Drivers-of-dynamics-of-small-pelagic-neritic-fish-resources.aspx>

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SIHESP/FARESP

CAPES

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Coordination for the Improvement of Higher Education Personnel

NOAA

U.S. National Oceanic and Atmospheric Administration

CNPq

Conselho Nacional de Desenvolvimento Científico e Tecnológico
The Brazilian Science Council

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International Coordination Centre

SOLAS

Surface Ocean-Lower Atmosphere Study

