



# Associazione Italiana di Oceanologia e Limnologia A.I.O.L.

## CONSIGLIO DI PRESIDENZA

### Presidente

Roberto Danovaro  
Ancona

### Consiglieri

Andrea Bergamasco  
Venezia

Roberto Bertoni  
Verbania

Simona Fraschetti  
Lecce

Michele Giani  
Trieste

Olga Mangoni  
Napoli

Aniello Russo  
Ancona

### Segretario Generale

Antonio Pusceddu  
Ancona

### Tesoriere

Giuseppe Morabito  
Verbania Pallanza

*Rappresentante AIOL presso la  
European Federation for Freshwater  
Sciences (EFFS)*

Luigi Naselli Flores  
Palermo

*Rappresentante AIOL presso la  
European Federation of Marine  
Science and Technology Societies  
(EFMS)*

Aniello Russo  
Ancona

Cari Soci,

il prossimo congresso della Associazione Italiana di Oceanologia e Limnologia si terrà a Lecce tra il 4 ed l'8 Luglio 2011 presso i locali dell'Hotel Tiziano, una "location" accogliente e ben attrezzata a ricevere eventi come il nostro Congresso.

Come già richiamato precedentemente si tratta di un evento speciale perché questo è il **Ventesimo Congresso AIOL** e, pertanto, auspichiamo che si configuri come un evento rilevante scientificamente ed altamente partecipato da quanti più soci possibile.

Ricordiamo nuovamente che nel corso del Congresso avrà luogo l'**Assemblea Generale dei Soci** nel corso della quale saranno rinnovate le cariche sociali per il prossimo biennio. Rispetto al consueto, qualora venissero accettate le modifiche allo statuto proposte dal Consiglio di Presidenza, attualmente oggetto di voto, saremo chiamati non solo a **rinnovare il Consiglio di Presidenza ed a nominare un nuovo Presidente ma anche, per la prima volta, un Vice-Presidente.**

A tal riguardo rammento a quanti di voi non avessero ancora provveduto che per dichiarare il vostro voto (FAVOREVOLE o CONTRARIO) sulle modifiche allo Statuto AIOL presentate nel corso della scorsa Assemblea dei Soci potete inviare un e-mail al segretario ([a.pusceddu@univpm.it](mailto:a.pusceddu@univpm.it)) entro il 31 maggio 2011. Lo statuto ed il regolamento attualmente vigenti sono riportati nel sito dell'Associazione: [www.aiol.info](http://www.aiol.info). La proposta di modifiche è stata comunicata tramite lo scorso numero delle AIOL Breaking News.

Come di consueto, il Congresso non sarà dedicato ad un tema specifico ma sarà aperto a tutti i soci interessati ad un confronto scientifico sui loro temi di ricerca. Il Congresso tuttavia ospiterà una piccola sessione dedicata alla Ecologia Microbica, curata dai colleghi di Site-Micro.

<http://www.aiol.info/>

Webmaster Roberto Bertoni E-mail: [roberto.bertoni@ise.cnr.it](mailto:roberto.bertoni@ise.cnr.it)

Presidenza e Segreteria: c/o Dipartimento di Scienze Marine, Università Politecnica delle Marche  
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Aniello Russo  
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Come preannunciato nel precedente avviso, anche quest'anno il Consiglio di Presidenza ha fatto uno sforzo per individuare degli *Invited Speaker* di assoluto valore. Siamo infatti orgogliosi di annunciarVi che il XX Congresso sarà arricchito dalla presenza di Jorge Sarmiento, Fiorenza Micheli, Gianluca Corno, Alessandra Pugnetti, Marco Taviani, Fabio Bulleri e Manuela Coci. I dettagli sui nostri ospiti e sulle loro *Invited Lecture* sono allegati a questo Annuncio.

Durante il congresso è inoltre prevista una tavola rotonda intitolata "Donne e Ricerca" che sarà animata da interventi di Simonetta Frascchetti (Università del Salento), Adriana Albini (Responsabile Ricerca Oncologica, IRCCS Multimedica) e Simona Castaldi (Università di Napoli).

Come ormai tradizione anche per il XX Congresso sono stati istituiti tre premi: uno alla miglior pubblicazione nell'anno solare precedente il Congresso, uno alla migliore comunicazione, uno al miglior poster. **Con il prossimo avviso saranno rese note le modalità di partecipazione.**

**E' inoltre prevista l'assegnazione di un premio speciale alla carriera.**

Nelle pagine a seguire troverete la "Call for Abstract" e la modulistica per l'iscrizione al Congresso, le informazioni e la relativa Scheda di Prenotazione Alberghiera, il Programma Preliminare del Congresso, abstract e biosketch dei relatori ad invito.

Rinnoviamo l'auspicio di una Vostra massiccia partecipazione!

Il Presidente  
Roberto Danovaro

<http://www.aiol.info/>

Webmaster Roberto Bertoni E-mail: [roberto.bertoni@ise.cnr.it](mailto:roberto.bertoni@ise.cnr.it)

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*Associazione Italiana di Oceanologia e Limnologia*  
**A.I.O.L.**

**XX Congresso della Associazione Italiana di Oceanologia e Limnologia**  
**Lecce, Hotel Tiziano - 4-8 luglio 2011**

**INVITO A PRESENTARE I RIASSUNTI**

I soci interessati a partecipare al XX Congresso AIOL, sono invitati fin d'ora a presentare il loro contributo sotto forma di riassunto e di inoltrarlo per posta elettronica, unitamente alla scheda di iscrizione, all'attenzione del Presidente del Comitato Organizzatore, Prof.ssa Simonetta Frascchetti, al seguente indirizzo di posta elettronica: [antheus@unisalento.it](mailto:antheus@unisalento.it)

Il riassunto, che non dovrà eccedere le 300 parole (Times New Roman 12), dovrà riportare chiaramente:

Nome, Cognome ed Afferenza di tutti gli Autori

Titolo del lavoro in grassetto

Indicazione dell'indirizzo e-mail per la corrispondenza

Modalità di presentazione richiesta: orale o poster

I riassunti potranno essere inviati unitamente alla scheda di iscrizione al Congresso ed alla eventuale ricevuta dell'avvenuto pagamento della quota di iscrizione ridotta fino al 30 Aprile 2011.

Come il riassunto, le schede di iscrizione e le eventuali ricevute di pagamento dovranno essere inoltrate alla attenzione della Prof. Simonetta Frascchetti all'indirizzo e-mail: [antheus@unisalento.it](mailto:antheus@unisalento.it)

Il Comitato Scientifico informerà circa l'eventuale accettazione del riassunto entro il 15 Maggio 2011.

**Comitato Scientifico**

Roberto Danovaro (Coordinatore), Andrea Bergamasco, Roberto Bertoni, Simonetta Frascchetti, Michele Giani, Olga Mangoni, Giuseppe Morabito, Luigi Naselli Flores, Aniello Russo, Antonio Pusceddu

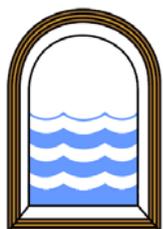
**Presidente del Comitato Organizzatore**  
**Simonetta Frascchetti**

*<http://www.aiol.info/>*

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**Lecce, Hotel Tiziano 4-8 luglio 2011**

**SCHEDA DI ISCRIZIONE AL CONGRESSO**

Nome \_\_\_\_\_ Cognome \_\_\_\_\_

Afferenza \_\_\_\_\_

Indirizzo \_\_\_\_\_

E- mail: \_\_\_\_\_

Presentazione orale

Poster

Partecipazione senza riassunto

**Iscrizione con pagamento entro il 30 aprile 2011\***

Soci AIOL Senior € 240\*\*

Soci AIOL Juniores € 80\*\*

Non soci € 250\*

**Iscrizione con pagamento dopo il 30 aprile 2011**

Soci AIOL Senior € 310\*\*

Soci AIOL Junior € 150\*\*

Non Soci € 340

\* I "Non soci" possono iscriversi entro il 30 aprile pagando la quota riservata ai soci AIOL se, contestualmente, avanzano proposta di associazione.

\*\* La quota di iscrizione al Congresso 2011 è comprensiva delle quote associative AIOL per due anni.

Data \_\_\_\_\_ Firma \_\_\_\_\_

Le quote di partecipazione potranno essere conferite utilizzando il Conto Corrente dell'Associazione o versate presso la sede congressuale:  
**c/c n. 000100405546 ABI 02008 CAB 22402 intestato A.I.O.L. ASS.NE ITAL.OCEANOLOGIA E LIMNOLOGIA c/o Unicredit Banca, Agenzia di Verbania Intra, C.so Mameli 47, 28921 (VB). Codice IBAN IT88F0200822402000100405546**

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## La struttura ospitante

La struttura che ospiterà il Congresso (Hotel Tiziano <http://www.grandhoteltiziano.it>) è all'ingresso della città di Lecce a circa 50 minuti dall'aeroporto di Brindisi collegato con un Air Terminal posto a 50 metri dall'Albergo, a 10 minuti di taxi dalla stazione ferroviaria della città di Lecce.



L'AIOL ha formalizzato una convenzione per 150 camere ad un prezzo concordato (Opzione valida sino al 30/05/2011):

## Tariffe camere con trattamento B&B:

Tariffe p/camera – p/notte con trattamento di pernottamento e prima colazione (B&B) :

Classic Dus	Euro	70,00
Classic doppia	Euro	95,00
Superior Dus	Euro	90,00
Superior Doppia	Euro	130,00

Nei prezzi su-indicati B&B sono inclusi i seguenti servizi:

- Breakfast Buffet
- Garage
- Quotidiano nazionale
- Piscina scoperta nei mesi estivi.
- City-bike per la città.

\*\*\*\*\*

**Prenotazioni alberghiere dirette** (segue scheda da compilare): all'atto delle prenotazioni alberghiere dirette è indispensabile che i congressisti facciano riferimento: al nome del convegno "A.I.O.L.\_ Associazione Italiana Oceanologia e Limnologia), e che le prenotazioni saranno accettate esclusivamente via e-mail all'indirizzo [info@grandhoteltiziano.it](mailto:info@grandhoteltiziano.it) o via fax al numero 0832 272 840. per motivi di sicurezza, e al fine di assicurare la prenotazione, non sarà presa in considerazione alcuna conferma telefonica.

\*\*\*\*\*

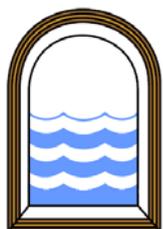
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## Servizio Navetta

AUTOLINEA REGIONALE COTRAP Soc. SITA

BRINDISI (aeroporto) - LECCE City Terminal (Attiguo all'hotel Tiziano)

Tempo di percorrenza: 40 / 45 minuti

Tabella orari: giornalieri in vigore dal 31/10/2010

### LECCE (City terminal) -> BRINDISI AEROPORTO

partenza	arrivo
05.35	06.10
07.20	08.00
09.55	10.35
12.00	12.40
13.00	13.40
14.50	15.25
15.55	16.35 (*)
18.00	18.35 (*)
20.15	20.55 (*)

### BRINDISI AEROPORTO -> LECCE (City terminal)(\*\*)

partenza	arrivo
06.20	07.00
09.00	09.40
11.15	11.55
12.40	13.20
14.10	14.50
15.25	16.05
17.20	18.00 (*)
19.15	19.55 (*)
23.15	23.55 (*)

(\*): corsa esercitata da SEAT Srl per conto di SITA Spa

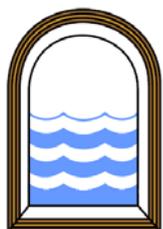
(\*\*): il City Terminal è ubicato in viale Porta Europa (ingresso città provenendo da Brindisi)

<http://www.aiol.info/>

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### **Dove comprare il biglietto (TARIFFA € 6,00):**

Brindisi: Boutique FLUXA – Aeroporto Brindisi Casale

Lecce: Agenzia Viaggi ELIOS TOURS - via Salandra,9

Agenzia Viaggi MAZZINI - P.zza Mazzini

Ag. THEUTRA (c/o city terminal)

Garden Coffee – Via Adriatica, 16

A bordo dell'autobus

N.B. Gli orari si riferiscono ai dati forniti dalle società di trasporto e sono quindi suscettibili di modifica. Le navette (AUTOBUS) non sono tenute ad attendere eventuali ritardi sui voli. Invitiamo a consultare per conferma il sito web: [www.sitabus.it](http://www.sitabus.it)

In alternativa:

è possibile prenotare una navetta Airshuttle dell'Agenzia CRUSI in servizio sulla tratta Lecce - Brindisi e ritorno.

Per prenotazioni chiamare lo 0832.30.55.22 oppure inviare una mail alla [biglietteria@crusiviaggi.it](mailto:biglietteria@crusiviaggi.it)

*<http://www.aiol.info/>*

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Grand Hotel TIZIANO e dei Congressi  
Viale Porta d'Europa  
73100, Lecce  
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Email: congress@grandhoteltiziano.it  
<http://www.grandhoteltiziano.it/>



## SCHEDA DI PRENOTAZIONE ALBERGHIERA

Congresso AIOL

Lecce, 4-8 LUGLIO 2011

Deadline per conferma prenotazione: **30 maggio 2011**

Le tariffe speciali indicate sono valide solo ed esclusivamente per le prenotazioni effettuate entro la deadline.

Nome/Name: .....

Struttura/Company: .....

Indirizzo/Address: .....

Tel: .....

Fax: .....

E-mail: .....

<i>Data di arrivo</i>	<i>Data di partenza</i>	Numero di notti

### TARIFFE CAMERE CON TRATTAMENTO BB (pernottamento e prima colazione):

Classic Dus (Doppia uso singola)	Euro 70,00	<input type="checkbox"/>
Classic doppia/ matrimoniale	Euro 95,00	<input type="checkbox"/>
Superior Dus (Doppia uso singola)	Euro 90,00	<input type="checkbox"/>
Superior doppia/matrimoniale	Euro 130,00	<input type="checkbox"/>

Nei prezzi su-indicati B&B sono inclusi i seguenti servizi:

- Breakfast Buffet
- Garage
- Quotidiano nazionale
- Piscina scoperta nei mesi estivi.
- City-bike per la città.

Tutte le tariffe su-indicate sono netto hotel.

La tipologia delle camere sarà assegnata sulla base della disponibilità dell'hotel. I prezzi su-indicati sono in Euro, per camera/al giorno, e sono netto hotel. Essi includono i seguenti servizi: Buffet breakfast, quotidiano nazionale, utilizzo della piscina scoperta durante i mesi estivi, city bike per la città. I partecipanti sono invitati a contattare l'Hotel per comunicare eventuali intolleranze di cibi.

**Garanzia della prenotazione:** Si prega di indicare il numero di carta di credito che sarà considerato esclusivamente a conferma della prenotazione alberghiera. In caso di cancellazione oltre 7 giorni dalla data di arrivo l'hotel si riserva di prelevare la somma pari al primo pernottamento.

Tipo di carta .....

Num. carta di credito :..... validità:.....

Nome del titolare della carta di credito: .....

Data:.....

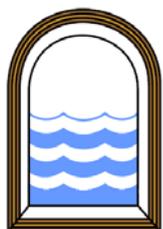
Firma: .....

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**XX Congresso della  
Associazione Italiana di Oceanologia e Limnologia  
Lecce 4-8 Luglio 2011  
Hotel Tiziano**

**PROGRAMMA PRELIMINARE**

**LUNEDI' 4 LUGLIO**

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10.00	Apertura segreteria presso Hotel Tiziano
15.00-15.30	Apertura del Congresso e saluti delle Autorita'
15.30-16.00	Relazione ad invito <i>J. Sarmiento et al. (University of Princeton) <u>Impact of climate change on ocean physical and biological processes of relevance to fisheries</u></i>
16.30-17.00	Comunicazioni
17.00-17.15	Pausa Caffè
17.15-18.30	Comunicazioni
19.00-20.00	Cocktail di benvenuto

**MARTEDI' 5 LUGLIO**

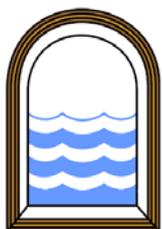
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09.00-09.30	Relazione ad invito <i>F. Micheli (University of Stanford) <u>Climatic Impacts and resilience of coastal ecosystems and fisheries</u></i>
09.30-11.00	Comunicazioni
11.00-11.15	Pausa Caffè
11.15-13.00	Comunicazioni
13.00-14.00	Pausa pranzo
14.00-14.30	Relazione ad invito <i>G. Corno (CNR, Pallanza) <u>Do microbial coexistence and cooperation preserve diversity and productivity in aquatic systems?</u></i>
17.00-17.15	Pausa Caffè
17.15-18.30	Comunicazioni
19.00-21.00	Poster e degustazione prodotti tipici

*<http://www.aiol.info/>*

Webmaster Roberto Bertoni E-mail: [roberto.bertoni@ise.cnr.it](mailto:roberto.bertoni@ise.cnr.it)

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via Breccie Bianche, 60131 Ancona Tel.: +39 071 220 4335 Fax: +39 071 220 4650  
E-mail Presidenza: [r.danovaro@univpm.it](mailto:r.danovaro@univpm.it) - E-mail Segreteria: [a.pusceddu@univpm.it](mailto:a.pusceddu@univpm.it) - E-mail Tesoreria: [g.morabito@ise.cnr.it](mailto:g.morabito@ise.cnr.it)



# Associazione Italiana di Oceanologia e Limnologia A.I.O.L.

## MERCOLEDÌ 6 LUGLIO

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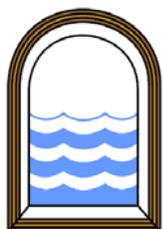
- 09.00-09.30 Relazione ad invito  
J.-P. Descy (University of Namur)  
*Lake Kivu: A lakeful of troubles...or an extraordinary site for limnological research?*
- 09.30-11.00 Comunicazioni
- 11.00-11.15 Pausa Caffè
- 11.15-13.00 Comunicazioni
- 13.00-14.00 Pausa Pranzo
- 14.00-14.30 Relazione ad invito  
A. Pugnetti (CNR, ISMAR)  
*Environmental change blindness, "invisible present" and long-term ecological research: issues, opportunities and threats from LTER-ITALY freshwater and marine sites?*
- 14.30-16.30 Comunicazioni
- 16.30-16.45 Pausa Caffè
- 16.45-17.45 Tavola Rotonda  
Donne e Ricerca  
con S. Fraschetti (Università del Salento), A. Albini (Responsabile Ricerca Oncologica, IRCCS Multimedica) e S. Castaldi (Università di Napoli)
- 17.50-19.50 Assemblea dei Soci e comunicazione esito Rinnovo Cariche Sociali per il biennio 2012-2013
- 20.30 Cena Sociale & Spettacolo di Pizzica

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# Associazione Italiana di Oceanologia e Limnologia A.I.O.L.

## GIOVEDI' 7 LUGLIO

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- 09.00-09.30 Relazione ad invito  
M. Taviani (CNR, ISMAR) *Living the last segment: our falsified perception of the holocene biodiversity*
- 09.30-11.00 Comunicazioni
- 11.00-11.15 Pausa Caffè
- 11.15-13.00 Comunicazioni: Contributi su Grotte Marine
- 13.00-14.00 Relazione ad invito  
F. Bulleri (Università di Pisa)  
*Good riddance to bad luck: positive species interactions in an increasingly hostile world*
- 14.30-17.00 Comunicazioni
- 17.00-17.15 Pausa Caffè
- 17.15-19.15 Comunicazioni
- 19.15-19.45 Premio alla Carriera

## VENERDI' 8 LUGLIO

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- 09.00-09.30 Relazione ad invito  
M. Coci (CNR, Pallanza) *Bacterial and archaea diversity in nitrogen cycle: recent discoveries and future challenges*
- 09.30-11.00 Comunicazioni: Contributi SItE-Micro
- 11.00-11.15 Pausa Caffè
- 11.15-13.00 Comunicazioni
- 13.00-14.00 Pausa Pranzo
- 14.00-15.00 Cerimonia Premiazioni: Miglior Pubblicazione, Miglior Poster, Miglior Comunicazione

Il programma potrà subire qualche modifica,  
in relazione al numero di comunicazioni

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# Associazione Italiana di Oceanologia e Limnologia A.I.O.L.



Jorge L. Sarmiento

**Title:** Impact of climate change on ocean physical and biological processes of relevance to fisheries.

**Authors:** Jorge L. Sarmiento<sup>1</sup>, Thomas Frölicher<sup>1</sup>, William Cheung<sup>2</sup>, John Dunne<sup>3</sup>, Kelly Kearney<sup>4</sup>, Daniel Pauly<sup>5</sup>, and Charles Stock<sup>3</sup>

<sup>1</sup>Atmospheric and Oceanic Sciences Program, Princeton University, Princeton, NJ, USA

<sup>2</sup>School of Environmental Sciences, University of East Anglia, Norwich, UK

<sup>3</sup>Geophysical Fluid Dynamics Laboratory, National Oceanic and Atmospheric Administration, Princeton, NJ, USA

<sup>4</sup>Department of Geosciences, Princeton University, Princeton, NJ, USA

<sup>5</sup>Sea Around Us Project, Aquatic Ecosystems Research Laboratory, The University of British Columbia, Vancouver, BC, Canada

**Abstract:** Cheung et al.\* have recently developed a combined empirical and mechanistic dynamic bioclimatic envelope model (DBEM) to predict the response of maximum fisheries catch potential to climate change in the Northeast Atlantic. The DBEM uses earth system model (ESM) projections of temperature, salinity, oxygen, and pH at the sea surface and ocean bottom, as well as surface advection fields and sea ice extent to predict the geographic and vertical shifts in relative abundance of exploited marine fish and invertebrate species. The ecophysiological response of the fish and invertebrates to changes in temperature, oxygen, and acidification is then estimated, and ESM simulations of primary production are used to calculate their maximum catch potential. The DBEM calculations have so far been done with only one ESM and only for the Northeast Atlantic. We here analyze the full global response in a large number of such ESM simulations to study the fundamental processes driving the response to future climate change, to determine the range in responses of the properties used to drive the DBEM, and to estimate how much uncertainty this variability between models introduces into the maximum catch potential estimates.

\*Cheung, W. L., J. Dunne, J. Sarmiento, and D. Pauly, in press. Integrating eco-physiology and plankton dynamics into projected changes in maximum fisheries catch potential under climate change in the Northeast Atlantic. *ICES Journal of Marine Science*

**Biosketch:** Dr. Jorge L. Sarmiento is the George J. Magee Professor of Geosciences and Geological Engineering at Princeton University. He has published more than 160 papers on the global carbon cycle, on the use of chemical tracers to study ocean circulation, and on the impact of climate change on ocean biology and biogeochemistry. He has participated in the scientific planning and execution of many of the large-scale multi-institutional and international oceanographic biogeochemical and tracer programs of the last three decades. He was Director of Princeton's Atmospheric and Oceanic Sciences Program from 1980 to 1990 and 2006 to the present, and is Director of the Cooperative Institute for Climate Science. He has served on the editorial board of multiple journals and as editor of *Global Biogeochemical Cycles*. He is a Fellow of the American Geophysical Union, a Fellow of the American Association for the Advancement of Science, and the American Geophysical Union's 2009 Roger Revelle Medalist.

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# Associazione Italiana di Oceanologia e Limnologia A.I.O.L.



Fiorenza Micheli

**Title:** Climatic Impacts and resilience of coastal ecosystems and fisheries.

**Author:** Fiorenza Micheli

Hopkins Marine Station, Stanford University, Pacific Grove, California, USA

**Abstract:** Marine and coastal ecosystems and human communities around the world are impacted by climate change, resulting in decreased ocean productivity, altered food web dynamics, habitat degradation, economic losses, and health and safety risks as a consequence of the changing and more variable climate. Climatic impacts occur both through altered physical conditions and variability, e.g., seawater temperature and sea level, and through a suite of chemical changes, including ocean

acidification and hypoxia. In particular, time series analyses have highlighted declines in dissolved oxygen (DO) concentration in the ocean over the last several decades. In addition to these global trends of decreasing DO, hypoxic conditions have been documented at several coastal locations within the California Current region, most recently at Isla Natividad, Baja California Sur, Mexico, resulting in high mortality of ecologically and commercially important nearshore marine species and significant economic losses. The capacity of local ecosystems and associated human communities to adapt to these pressures depends on their resilience, that is the ability of ecosystems to absorb disturbance while retaining function and continuing to provide ecosystem services, and the ability of people to adapt to change in their environment by altering their behaviours and interactions. I will present and discuss results of an interdisciplinary research program investigating the current impacts of climate change on coastal marine ecosystems and human communities of the Pacific coast of Baja California, Mexico, and the influences of local and global feedbacks on the resilience and adaptive capacity of these systems.

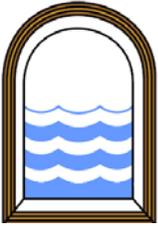
**Biosketch:** Fiorenza Micheli is a marine ecologist and conservation biologist. She graduated from the University of Florence, Italy. She obtained her PhD in the US from the University of North Carolina at Chapel Hill. She was then a postdoctoral researcher at the National Center for Ecological Analysis and Synthesis (NCEAS), in Santa Barbara, California, and she has been part of the faculty of the Biology Department at Stanford University since 2001. Dr Micheli's research focuses on the processes shaping marine communities and incorporating this understanding in the management and conservation of marine ecosystems. Dr Micheli is a member of the Science Advisory Committee for the WWF (Rome, Italy), of the the Monterey Bay National Marine Sanctuary Research Activity Panel, and of the Center for Ocean Solutions, in Monterey, California. She is a Pew fellow in marine conservation, a fellow of the California Academy of Sciences and of the Aldo Leopold Leadership Program. Web pages: <http://micheli.stanford.edu/>; <http://www-marine.stanford.edu/micheli.htm>.

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# Associazione Italiana di Oceanologia e Limnologia A.I.O.L.



Gianluca Corno

**Title:** Do microbial coexistence and cooperation preserve diversity and productivity in aquatic systems?

**Author:** Gianluca Corno

CNR-Istituto per lo Studio degli Ecosistemi, Verbania-Pallanza (VB), Italy

**Abstract:** Potential competitors can raise their fitness, and their chances of ecological success, by developing common strategies to face sudden limitations. By applying artificial experimental systems it is possible to use microbes as model organisms to powerfully test ecological theories and draw back experimental trends to the natural environment. The interactions between microbial species common (and ecologically successful) in waters and occasional species belonging to the rare biosphere are often more complex than expected.

Apparent cooperation, as well as necessary mutualism can be established between potentially competing bacterial species, for example in order to escape from predation (by co-aggregation, for the first time here presented as an anti-predator strategy) and concomitantly survive the uneven competition for resources in open waters. The result of the positive interaction between the two strain is the survival of both strains, even when ecological stressors could drive them to extinction when grown alone. Predator-prey interactions are highly impacted by the formation of co-aggregates: predators gain in terms of numbers and biomass when fed on mixed cultures, allowing speculations about the actual quality (and complementarity) of the different bacterial strains. The potential function of the co-aggregates composed by prey of different palatability as proxy of lake and marine-snow and thus as additional sources of nutrients in periods of food limitation, supports larger (predator) populations at higher trophic levels. Thanks to co-aggregates potential competitors survive to environmental stressors, incrementing their ecological relations. At the same time, the more complex prey population can support a higher predator population, resulting fundamental for the correct functioning of the trophic pyramid in limiting aquatic environments.

**Biosketch:** I research the ecology of aquatic microbes, with a particular focus on their interactions within species and with the environment. I work both in the field and in lab, where I design and perform artificial systems to test ecological theories and to clarify, under simplified conditions, the variables controlling the microbial populations in waters. My main interest deals with the prey-predator interactions at the microbial level, and with the ecological interactions (competition, cooperation, parasitism, mutualism) related to them.

I got my master degree in Natural Sciences at the University of Milan in year 2000, then I spent three years at the Max Planck Institute for Evolutionary Biology (former MPI for Limnology) in Ploen, preparing my PhD thesis defended at the University of Parma (2005). After 4 years post-doc at the Institute for Ecosystem Study (CNR-ISE) in Verbania, I spent 1.5 years as post-doc at the University of Zurich. From November 2010 I hold a full research position at the CNR-ISE.

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# Associazione Italiana di Oceanologia e Limnologia A.I.O.L.



Jean-Pierre Descy

**Title:** A lakeful of troubles... or an extraordinary site for limnological research?

**Author:** Jean-Pierre Descy

Laboratory of Freshwater Ecology, University of Namur, Belgium

**Abstract:** Lake Kivu is, in several respects, one of the most extraordinary lakes in the world: aerobic life is limited to the top 60 m (often called the "biozone"), below which the temperature and salinity increase by steps. A major salinity step is located at a depth of 270 m, below which are trapped, due to the high hydrostatic pressure, extremely high amounts of gases, the most abundant being carbon dioxide and methane. This reminds of the "killer lakes", Lake Nyos and Monoun (Cameroun) which presented sudden

gas eruptions, responsible for the death of more than a thousand people from the surrounding villages, as well as of cattle and wildlife. During the first decade of the years 2000, a great deal of new knowledge has accumulated on Lake Kivu, in particular thanks to projects run in parallel by Swiss and Belgian research teams. Eawag, in Switzerland, was mainly interested in measuring present gas concentrations and in investigating further the very peculiar physical structure of Lake Kivu, which had attracted international attention following the eruption of the volcano Nyiragongo in early 2002. What would happen if the lava flow that devastated part of the city of Goma reached the lake? Would the stratification of the lake be disturbed, triggering a massive eruption of another nature, releasing, among other gases, the carbon dioxide, threatening people and animals all around the lake? In addition to these natural risks, industrial methane harvesting has already begun, and may, if conducted at a large scale and with releases at inadequate depth, threaten ecosystem goods and services. Among these is the fishery, which is an affordable protein source for the local population. The main exploited species is a sardine introduced in the mid 1950s, *Limnothrissa miodon* or "sambaza", endemic to Lake Tanganyika. Belgian limnological research led in the first part of the XXth century had shown that the pelagic zone supported large amounts of plankton, but no planktivore. The introduction of the sambaza has been widely considered as a great success from the fishery standpoint. By contrast, some scientists were less optimistic, and, based on observation of a dramatic zooplankton decrease, predicted the collapse of the sardine fishery. If such a collapse did not happen so far, as the annual yield has maintained itself as the fishing methods evolved, the sardine production has not met the expectations. The research projects conducted from 2002 on the "biozone" of Lake Kivu aimed at understanding ecosystem function of this East African great lake. The presentation will be devoted to a summary of the ecological knowledge acquired on the lake and will address to what extent this knowledge can be applied to other great tropical lakes. Ongoing applied and fundamental research will also be considered.

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## *Associazione Italiana di Oceanologia e Limnologia* **A.I.O.L.**

**Biosketch:** My research interest is in ecology of microorganisms in freshwaters. I graduated in Botany at University of Liège, Belgium, I began my research career with a PhD on the ecology of benthic diatoms in lowland rivers and their use as water pollution indicators.

I presented this PhD in 1975 and then worked on the same topic in the watershed of the R. Meuse. In the beginning of the 1980s, I became involved in research on potamoplankton, in the framework of impact assessment of nuclear plants on the R. Meuse. This is when I began collaborating with a team of modellers and discovered these techniques.

In 1986, I moved to University of Namur and began teaching biology and ecology of plants, while pursuing my research in potamoplankton. Later on I got involved in research on African lakes, with the supervision of a PhD in lake Muhazi, Rwanda, and with a first “discovery” of Lake Kivu in 1990. In 1996, I did a sabbatical at University of Wisconsin, Madison, where I learned everything on HPLC analysis of pigments. Back in Namur, I applied HPLC to phytoplankton and grazing studies, on lakes and rivers, using CHEMTAX.

The 2000s began with a research program on Lake Tanganyika and the coordination of the CLIMLAKE project, involving collaboration of the Belgian teams with African teams. At the same time, I went back to Lake Kivu and we started studying this lake. That’s where our interest for picoplankton and heterotrophic protists, and the microbial loop, developed, with several projects carried out with my graduate and PhD students.

Ongoing research is on ecology of great tropical lakes, as influenced by climate change and by species introductions, on cyanobacteria blooms and cyanotoxins in reservoirs and ponds, on microbial diversity and function, and on invasive clams in rivers, in collaboration with teams from Belgium and abroad.

My expertise in algal ecology and biological assessment of water quality is still useful for the determination of the ecological status of water bodies.

Since I was a young boy, I have been fishing, mainly in rivers, using different techniques, from the worm to the fly, but I have specialised in fly-fishing since the 1970s: I tie flies and cast nymphs and dry flies in running waters. Centrales électriques sur l'écosystème aquatique»

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# Associazione Italiana di Oceanologia e Limnologia A.I.O.L.



Alessandra Pugnetti

**Title:** Environmental change blindness, “invisible present” and long-term ecological research: issues, opportunities and threats from LTER-Italy freshwater and marine sites.

**Author:** Alessandra Pugnetti

Institute of Marine Science – National Research Council, ISMAR-CNR, Castello, Venice, Italy

**Abstract:** The psychological human trait called “change blindness” deals with the difficulties observers have in noticing large environmental changes, when they are not framed in the appropriate long-term recording context: at the time scale of decades humans are inclined to perceive the world as static, typically underestimating the degree of change that does occur.

Processes acting over years are hidden and reside in what has been defined by Magnuson (1990) as the “invisible present”: this metaphor contains and represents the time scale within which our responsibilities for the planet are most evident. Long-Term Ecological Research (LTER), which focuses on multidecadal observations, provides the temporal context needed to avoid serious misjudgements in our attempts to understand and predict changes in the world around us and to manage our environment. LTER is also critical for testing ecological theories on community dynamics, variability and resilience, enhancing our capacity of forecasting and of managing resources. The study of ecosystems with a LTER perspective and a within- and across-system comparison approach, appears crucial in order to identify common patterns of variability and their links at different spatial and temporal scales.

Within this context we synthetically describe the LTER networks conceptual frame and we review the contribution to these issues of some Italian aquatic LTER sites, both marine and freshwater, taking into consideration examples from the activities carried out in the LTER-Italy network (LTER-Italy: [www.lteritalia.it](http://www.lteritalia.it)).

**Biosketch:** Laurea cum laude in Biological Sciences, University of Milano

PhD in Environmental Science, University of Ferrara

My research interests have been mainly addressed towards the ecology of phytoplankton, considering the phenology, the photosynthetic activity and the role in the trophic web, in lacustrine, transitional and marine ecosystems.

I began my research activity at the Institute for Ecosystem Study (ISE) and then at the Institute of Marine Science (ISMAR). My current research activity concerns: 1) the interactions between the phytoplankton and bacteria communities, 2) the relations between autotrophy and heterotrophy in the plankton community, 3) the long-term ecological series.

Presently I am chairing the Italian Long-Term Ecological research network (LTER-Italy; [www.lteritalia.it](http://www.lteritalia.it)) and I am the Coordinator of the EC Project Life Plus “EnvEurope” (2010-2013). (Environmental quality and pressure assessment across Europe: the LTER network as an integrated and shared system for ecosystem monitoring [www.eneurope.eu](http://www.eneurope.eu)).

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# Associazione Italiana di Oceanologia e Limnologia A.I.O.L.



Marco Taviani

**Title:** LIVING THE LAST SEGMENT: OUR FALSIFIED PERCEPTION OF THE HOLOCENE BIODIVERSITY.

**Author:** Marco Taviani

ISMAR-CNR, Bologna, Italy

**Abstract:** Mankind originated sometimes in the Quaternary and its conscious approach to an organized, abstract and rational knowledge of the natural world enjoyed an exponential acceleration in the last segment of this era, the Holocene.

In the stratigraphic nomenclature, the Holocene is the current epoch of the Quaternary whose conventional beginning is set at ca. 11700 ka. Science as a discipline itself was conceived just a handful of millennia ago, thus being a late Holocene invention. One side effect for 'scientific' humans of being themselves basically a Holocene accident is their widespread perception of the living world in such time span to be the representative standard scenario for life. This feeling is psychologically very deeply rooted and bears not trivial consequences in handling natural history issues, often contaminating and biasing our thinking. The geologist looks at the Holocene differently, considering it as unrepresentative of the Quaternary as a whole. In fact, the Quaternary is punctuated by many astronomically-paced glacial cycles with a rough duration of 100 ky each. The overwhelming cold mode is interrupted by interglacials, i.e. warm periods of variable intensity and short duration, ca. 10 ky. The Holocene, our time, is just but one such interglacial, actually the latest in order of time. The remaining 9/10ths of the last glacial period are climatically cold-temperate or cold, and the same holds true for the preceding glacial cycles in the Pleistocene. It is immediately intuitive that such climatic vagaries impinge drastically on living ecosystems, directing their organization, evolution and fate. The Mediterranean basin beautifully represents this situation in the ocean. Its marine history has experienced cyclic faunal turnovers from ecosystems enriched in or even dominated by cold-water north-Atlantic elements to ecosystems bearing west-African (penultimate interglacial) warm or at least warm-temperate species (present interglacial, the Holocene). By large, scientists regard at our short-lived interglacial as the normal situation for the Mediterranean biodiversity to be, while diversions from this situation are disturbances and the presence of taxa in response of a different climatic situation is treated as an invasion. The 9/10ths rule would obviously implies that the modal Mediterranean biodiversity is in fact the cold one, known to us only in a fossil status, while the shorter warmer fluctuations, and their biological rearrangements, are to be accounted as somewhat ephemeral perturbations to this scheme.

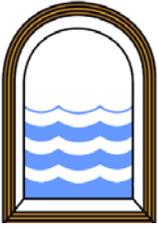
**Biosketch:** His recent research is focused upon marine ecosystems (especially deep water corals), Cainozoic-Recent marine paleontology and paleoecology (Antarctica, Mediterranean, Red Sea, Western Indian Ocean); extreme environments (polar, cold seeps); bio-sedimentology (biogenic carbonate factories); paleoclimatology and paleoceanography based upon sediment cores (Mediterranean, Red Sea), drillholes (Antarctica, Mediterranean), corals (Mediterranean, Red Sea, Atlantic Ocean, Antarctica) and other natural archives, including multiple geochemical approaches. He is very involved in popularizing science through articles, conferences, interviews and films. He co-organized in 2009 the "Field Course on Coral Biogeology" in the Red Sea. Has participated in over 50 oceanographic missions in the Mediterranean, Red Sea, Atlantic Ocean and Antarctica) often as chief-scientist, on major (over 40) and minor vessels, including submersible dives.

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# Associazione Italiana di Oceanologia e Limnologia A.I.O.L.



Fabio Bulleri

**Title:** Good riddance to bad luck: positive species interactions in an increasingly hostile world.

**Author:** Fabio Bulleri

Dipartimento di Scienze Botaniche, Ecologiche e Geologiche, Università di Sassari, Sassari, Italy

**Abstract:** Negative species interactions (i.e. competition and predation) have been traditionally viewed as the main force shaping community structure. However, in the last two decades, there has been growing recognition that positive species interactions (facilitation) underlie the structure and functioning of a plethora of natural systems. Within this context, research stimulated by the formulation of the stress-gradient

hypothesis (SGH) has generated a wide consensus over an increased frequency of facilitative interactions with increasing levels of stress. In the marine environment, alterations of physical conditions, due to either global climate changes (e.g. pH, temperature, UV rays, intensity and temporal variance of extreme weather events) or localized human perturbations (e.g. organic and inorganic pollution, enhanced sediment deposition), can therefore be predicted to cause unprecedented changes in the sign and strength of species interactions. Will harsher environmental conditions promote the occurrence of positive species interactions? To which extent stress-tolerant species will be able to buffer susceptible species from adverse conditions? Will alterations in the biotic compartment (e.g. species loss and introduction) modify the effects of degraded physical conditions? Which will be the implications of altering the balance between negative and positive species interactions for ecosystem functioning? Answering these questions appears crucial to improve our ability to forecast the future of marine biodiversity in compounded scenarios of global climate changes and patchwork human influences. Very likely, a tight integration among different disciplines of marine science will be the fastest way forward to achieve this goal.

**Biosketch:** Fabio Bulleri graduated at the University of Pisa in 1996 and completed his PhD at the Centre for Ecological Impacts of Coastal Cities of the University of Sydney (Australia) in 2003. Later, he has been appointed as a post-doctoral fellow at the Universities of Bologna, Pisa and Sassari (current position). He has conducted research on interactions between marine herbivores and primary producers, the effects of coastal development on benthic communities and the mechanisms regulating the establishment and spread of introduced macroalgae. More recently, his research has focused on the role of positive species interactions in determining ecosystem invisibility and on the interplay between biotic and abiotic forces in driving switches in species interactions. He has published 40 papers in peer-reviewed journals and is currently a member of the editorial board of Marine Biology.

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# Associazione Italiana di Oceanologia e Limnologia A.I.O.L.



Manuela Coci

**Title:** Bacterial and archeal diversity in nitrogen cycle: recent discoveries and future challenges.

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**Abstract:** Nitrogen is an essential component of all living organisms. A typical bacterial cell for example contains about 12-15% nitrogen by dry weight as components of proteins, amino-sugars, nucleic acids and several other constituents of the cell. In nature, the nitrogen occurs mainly in the lithosphere and as inert gas in the atmosphere. Only a small part is found in the biosphere either in reduced forms as ammonium-ammonia and amine groups or in many oxidized forms from nitric oxide to nitrates,

covering a wide range of oxidation states. Reduction-oxidation reactions between the different stages of oxidation offer the potential of energy-generation by microorganisms. Our understanding of the nitrogen cycle is however far from complete with respect to the microorganisms that are involved: new processes and players in the cycle evolve and are just beginning to be investigated and understood. For example, the discovery of anaerobic ammonia oxidation (anammox) by bacteria belonging to Planctomycetales dates back to the early 1990's; the cultivation of mesophilic Archaea able of performing chemoautotrophic nitrification as Bacteria occurred only in 2005. Besides terrestrial, marine, estuarine and freshwater environments are differently investigated and known with respect to the nitrogen cycle.

Over the past hundred years, human activity has dramatically altered the global nitrogen cycle in several ways, for instance by increasing inputs of inorganic and organic nitrogen through severe fertilization, by releasing nitrogen oxides in the atmosphere by industrial combustion of fossil fuels, by acidifying soils, streams and lakes, etc... Consequentially, human activities are altering the tendency of the processes of the nitrogen cycle to balance each other in natural ecosystems. This suggests that important knowledge on the nitrogen cycle is still missing and, even more, that classical knowledge may need a reassessment, finally leading to a better understanding of the overall nitrogen cycle. In this perspective, studies on the microorganisms involved in the nitrogen cycle appeared to be noteworthy.

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### Interessi

- Ecologia microbica di ambienti acquatici:
- Differenziazione di nicchia di Batteri e Archea ammonio-ossidanti
- Comunità microbiche di microrganismi
- Antibiotico resistenza in ambienti naturali

### Attività:

2010/2011: Post-doc al CNR-Istituto per lo Studio degli Ecosistemi, Verbania

2008/2009: Professore a contratto di Microbiologia Ambientale, Università degli Studi di Catania

2008: Assegnista di ricerca presso il CNR- Istituto per l'Ambiente Marino Costiero, U.O di Messina

2007/2008: Professore a contratto di Microbiologia Ambientale, Università degli Studi di Catania

2007: Contratto di collaborazione coordinata e continuativa presso il Dipt. di Scienze Microbiologiche, Università di Catania

2006-2007: Professore a contratto di Microbiologia Ambientale, Università degli Studi di Catania  
Formazione e Titoli

13 ottobre 2007: Conseguimento del dottorato di ricerca presso l'Università di Utrecht. Commissione composta da: Prof. J Prosser, Prof. G. Kowalchuk, Prof. M Jetten, Prof. J Middelburg, Prof.ssa S. Stefani, Dr. P.L. Bodelier, Prof. H. Laanbroek

2003-2006: Dottorato di Ricerca in Ecologia Microbica presso il "Department of Microbial Wetland Ecology" del "NIOO-KNAW Centre for Limnology"

2002- 2003: Borsa di Studio dell'Università di Catania per il perfezionamento all'estero. Supervisor: Prof.ssa S. Stefani and Prof. H.J. Laanbroek. Oggetto della ricerca: "Temporal and spatial dynamics of ammonia-oxidizing bacteria in freshwater-sediment microcosms under environmental perturbation".

Giugno 2002: Abilitazione alla Professione di Biologo

Gennaio-giugno 2002: 6 mesi di perfezionamento in tecniche di biologia molecolare presso il Dipt. Di Scienze Microbiologiche, Università di Catania

1996-2001: Laurea in Scienze Biologiche, indirizzo Biologia Marina presso l'università di Catania.

1999-2000: IV anno accademico svolto con borsa di studio

Erasmus presso la "Universidad de Ciencias del Mar" in Cadiz, Spagna.

2001: Tesi sperimentale di laurea in Microbiologia Marina dal titolo: "Il filtro biologico come modello di studio di microrganismi capaci di metabolizzare ammonia, nitriti e nitrati in ambiente acquatico"

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