

#FRIDAYTALK

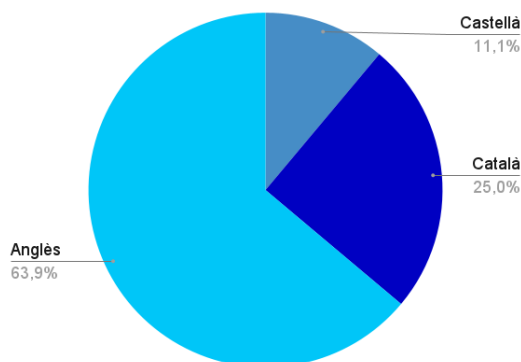
***Xerrades
del divendres
a l'ICM***

ANY 2023

RESUM

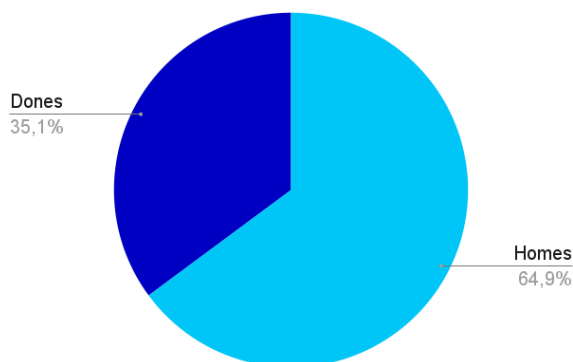
L'any 2023, es van celebrar **34 xerrades** del divendres "Friday Talks". El promig d'assistència a la sala Ramon Margalef va ser aproximadament de 40 persones. Les xerrades van ser presencials, però s'enviava sempre l'adreça electrònica per a fer-ne un seguiment en remot. El promig d'assistència en remot va ser aproximadament de 20 persones.

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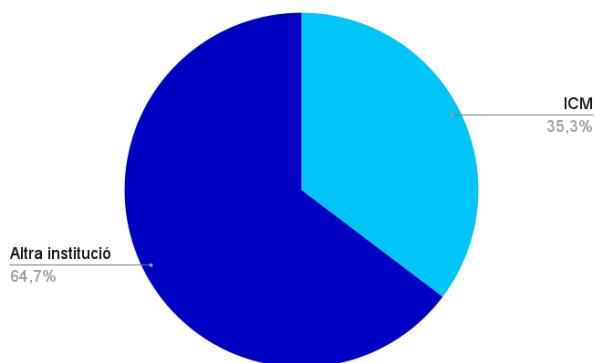


A les 34 xerrades hi va haver **37 ponents** (algunes xerrades hi van intervenir múltiples persones)

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Reconstructing the earliest animal history from genomes and fossils

Dr. Jesús Lozano-Fernández

Facultat de Biologia, Universitat de Barcelona

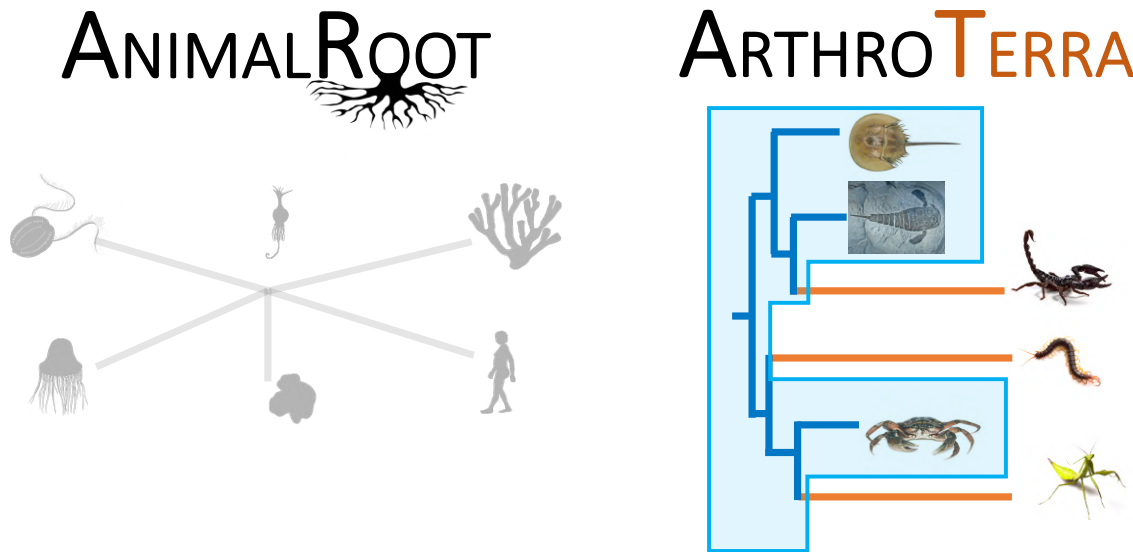
Divendres, 10 de febrer de 2023

Summary

From single-celled marine ancestors, animals diversified into an array of body plans. To understand this process, we need to establish how different groups are related to each other (their tree of life). Genome-scale phylogenies have contributed significantly to reconstruct these relationships. However, these analyses have also led to novel hypotheses that difficultly reconcile with previously held assumptions. One major controversy concerns the root of the tree. Some phylogenomic analyses suggest that ctenophores, and not the morphologically simpler sponges, were the first group to branch from the tree. Similarly, some phylogenomic analyses casted doubt on a single ancestral sea-to-land transition traditionally inferred within arachnids. We are a research group at the forefront of macroevolutionary research integrating genome and fossil data. Our goal is to elucidate the earliest episodes of animal evolution, such the animal origin and the multiple sea-to-land transitions during arthropod evolution. Besides employing tools from phylogenomics, we seek for hidden diversity in databases of environmental DNA, use simulations in our studies, or integrate palaeontological data, that allow us to understand the stepwise evolution of characters and body plans. Our aim is to build a framework for understanding the origins of animal diversity, resolve controversies surrounding the origin of certain traits or groups, and establish a temporal context for their early history

Brief biography

I am a Lecturer in Genetics at the University of Barcelona (Spain) and honorary researcher at the University of Bristol (UK). I obtained a PhD in the Institute of Evolutionary Biology (IBE) of Barcelona, supervised by Xavier Bellés, addressing questions related to the origin of insect metamorphosis under an evodevo framework (2014). In 2015, I obtained a Marie Skłodowska-Curie fellowship at the University of Bristol to study the origin and early evolution of arthropods using a molecular palaeobiological approach, merging fossil and molecular information, supervised by Davide Pisani. Since then, bridging the gap between macroevolutionary studies led by molecular biologists and palaeontologists has become central tenet in my research. I came back to Spain as a Juan de la Cierva-Formación fellow at the end of 2017, and kept my own research line at the University of Barcelona and IBE through two other fellowships (Beatriz de Pinós and Juan de la Cierva Incorporación). I develop a research program on the origin of animals and sea-to-land transitions within arthropods using phylogenomic and palaeontologic approaches.



Main research lines of the group

References

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Link to the talk

<https://www.youtube.com/live/0X-jLgqBvyE?feature=share>

Elucidating the relationships between genomes and phenomes: the importance of biodiversity

Dr. Arcadi Navarro

Universitat Pompeu Fabra

Divendres, 17 de febrer de 2023

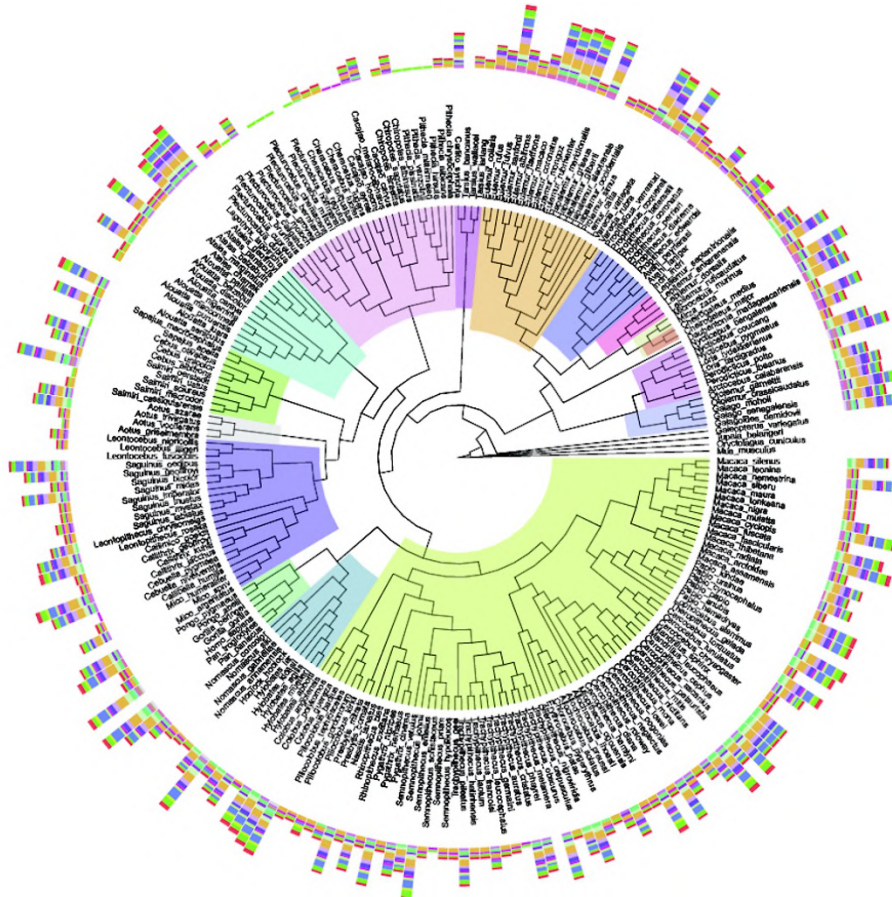
Summary

One of the great challenges of biomedical research in the 21st century is to understand the genetic architecture of all kinds of phenotypes, mainly complex diseases. The relevance of this challenge is such that it was one of the main arguments, more than 20 years ago, for sequencing the human genome and investing in many of the advances that followed. For almost two decades, the main methods of ascertaining the relationship between genomes and phenomes have focused on comparing large numbers of humans who present subtle differences in phenotypes of interest (an example are Genome-Wide Association Studies, or GWAS). In the talk we will review the main results of that research program, and argue the importance of an integrative view of biodiversity: extending the comparative method to other species, beyond humans, is a very promising complementary strategy that may allow overcoming the limitations of current methods.

Brief biography

Arcadi Navarro is Professor of Genetics and ICREA research Professor at Universitat Pompeu Fabra (UPF, in Barcelona, see <http://www.upf.edu>). Also, he is the Director of the Pasqual Maragall Foundation (FPM, <https://fpmaragall.org/>) and its research centre, the Barcelonabeta Brain Research Centre (BBRC, <https://www.barcelonabeta.org/>), devoted to the fight against Alzheimer's Disease and other age-associated dementias. Finally, he co-directs the European Genome-phenome Archive (EGA, <https://ega-archive.org/>) in a collaboration between the Centre for Genomic Regulation (CRG) and the European Bioinformatics Institute (EMBL-EBI). Nowadays, the EGA is the largest world-wide steward and distributor of Medical Genomics data. He has served science in different positions. Of late, he was Secretary for Universities and Research in the Catalanian Government between 2016 and 2018. Also, he was Vice-director of the Institute of Evolutionary Biology (IBE, <https://www.ibe.upf-csic.es/>) from its foundation in 2008 and until 2013. Between 2013 and 2016 he was director of the Department of Experimental and Health Sciences of the UPF. In addition, he was director of the Population Genomics Node of the Spanish National Institute of Bioinformatics (INB) between 2008 and 2020. His research focuses on genomics and evolutionary medicine, areas in which he has more than 200 publications, mostly using computational approaches and covering issues that range from

chromosomal speciation or biodiversity to the biological roots of senescence or how to better predict phenotypes from genomic data.



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Link to the talk

<https://www.youtube.com/live/Pf-4ynOYvvo?feature=share>

Hypatia I: A multi-disciplinary, inter-generational, female Catalan crew travels to Mars

Dra. Laia Ribas

Departament de Recursos Marins Renovables, Institut de Ciències del Mar

Divendres, 24 de febrer de 2023

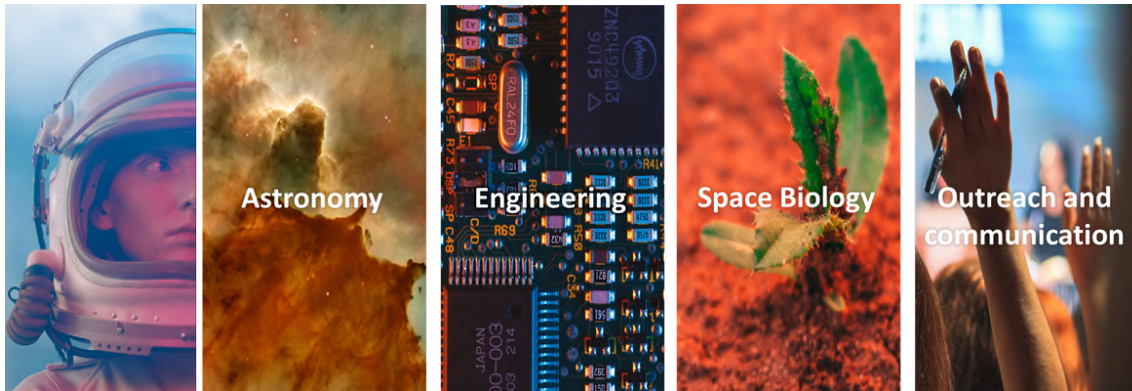
Summary

The low representation of women (~33%) in Science, Technology, Engineering, Arts and Mathematics (STEAM) careers are highly concerning and cultivate male-dominant cultures across various academic and professional disciplines. This social disequilibrium is extreme in the international space sector, where women represent less than ~20% of the workforce. The Hypatia I mission—a multi-generational and multi-disciplinary crew of 9 Catalan female scientists—seeks to help address this problem. In April 2023, the Hypatia I crew will participate in a two-week Martian analog mission at the Mars Desert Research Station (MDRS, Utah, United States) with the goals of (i) performing high-quality space-related research in a simulation environment, (ii) conducting outreach and science communication activities, and most importantly, (iii) promoting female role models in STEAM-related fields and inspiring future generations of scientists, particularly young girls interested in space careers. Hypatia I works in four areas: astronomy, engineering, space-biology, and communication. In particular, biological-related experiments will be presented. First, by studying the developmental alterations of zebrafish (*Danio rerio*), a well-known animal model subjected to hypergravity conditions. Second, by analyzing DNA epigenetic changes by using a portable DNA sequencer. Further, outreach activities will be exposed. The crew members of Hypatia I aims to inspire and promote females and girls in STEAM careers and wish that many more Hypatia's II, III, IV... will be created giving visibility to the relevance of women in science.

Brief biography

Laia Ribas (Terrassa, 1979) defended her doctoral thesis at the Autonomous University of Barcelona (UAB) in 2006 under the supervision of Drs. Simon MacKenzie and Lluís Tort and funded by a predoctoral fellowship awarded by the Catalan Government. In her doctoral thesis, she studied the stress and immune responses in fish in order to find markers for the improvement of aquaculture production. She learned genomic tools, allowing her to secure a postdoc at the Imperial College of London with Dr. Mathew Fisher to study the amphibians' immune response to fungal infections. On her return, she started working in fish reproduction at the Institute of Marine Sciences of Barcelona in the group of Dr. Francesc Piferrer in 2009. Since 2017, Laia Ribas is leading her own research group (Repro Immune Team, RIT) to study the interaction between the immune and the reproductive systems in fish, to improve aquaculture. Since 2000 she is interested in space biology-related science,

in particular in Life Support System. She is an assistant professor since 2021 in Universitat Autònoma of Barcelona (UAB). Laia Ribas is committed to disseminate science by leading projects and publishing outreach articles.



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Link to the talk

https://www.youtube.com/live/_XiPUU4qWjw?feature=share

Utilització d'intel·ligència artificial per localitzar i perseguir objectes mitjançant robòtica submarina

Dr. Ivan Masmitja

Departament de Recursos Marins Renovables, Institut de Ciències del Mar

Divendres, 1 de març de 2023

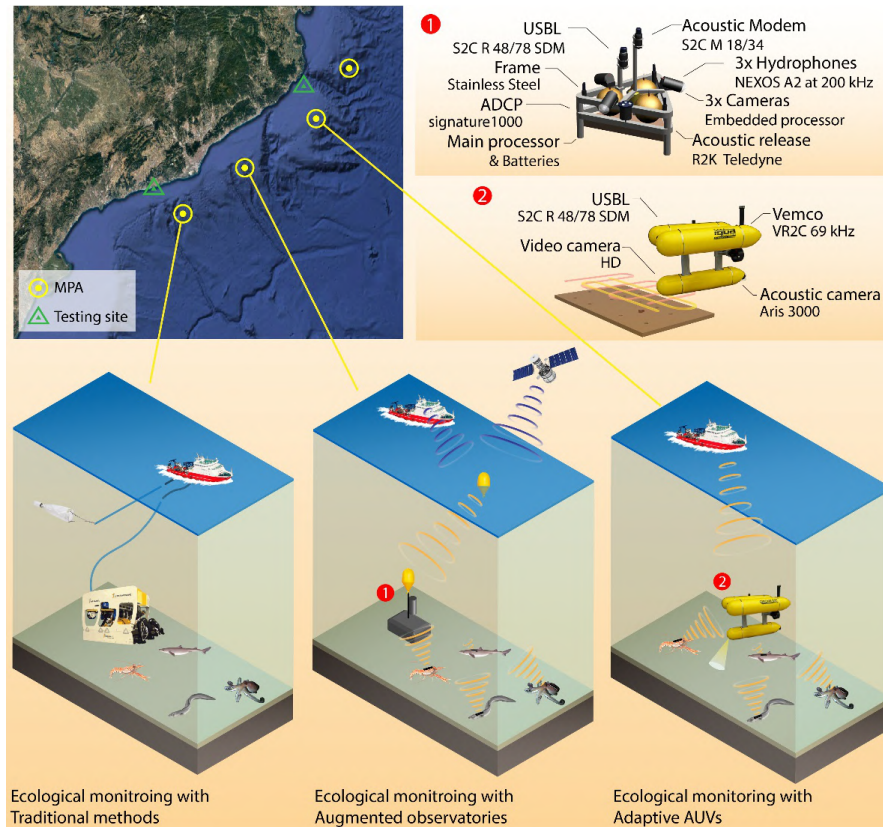
Resum

L'exploració de l'última frontera de la Terra, l'oceà, cada vegada és de més importància a causa de les conseqüències que té l'activitat humana sobre el funcionament dels ecosistemes i la biodiversitat, com ara l'escalfament dels oceans i la disminució de les espècies, en major part relacionada amb el canvi climàtic i la sobrepesca, un problema social important que cal abordar. Des de microbis fins a grans depredadors, hi ha cada cop més evidència que la vida marina està formada per corrents oceànics de curta durada (0,1-10 km) que són difícils d'observar, modelar i explicar teòricament. Com aquests intensos corrents tridimensionals estructurin la productivitat i la diversitat dels ecosistemes marins és un tema de debat actiu. A més, la megafauna marina té un paper clau en el funcionament dels ecosistemes. No obstant això, un terç d'aquests animals estan en risc d'extinció. Estudis recents han demostrat la importància d'utilitzar plataformes robòtiques per avançar en l'estudi d'àrees clau de recerca marina com l'ecologia física i del moviment. Tot i així, hi ha una manca de coordinació total entre els vehicles, reduint-ne el rendiment i limitant-ne l'aplicabilitat, cosa que es podria solucionar amb l'aprenentatge automàtic (reinforcement learning). Un nou enfocament mitjançant l'ús de mètodes d'aprenentatge de reforç multi-agent (multi-agent reinforcement learning) per resoldre els problemes de coordinació de les flotes robòtiques marines, podria suposar un important pas endavant. Estic imaginant un futur on l'ús d'entorns de simulació i el machine-learning potenciarà l'ús de flotes robòtiques marines per abordar algun dels principals problemes socials, aportant noves idees per millorar la salut de l'oceà.

Breu biografia

Investigador postdoctoral a l'Institut de Ciències del Mar (ICM-CSIC) gràcies a l'obtenció d'un contracte Marie Skłodowska-Curie Actions Individual-Fellowship (AlforUTracking - ID:893089) el 2020. Al mateix any, em vaig doctorar en enginyeria electrònica a la Universitat Politècnica de Catalunya (UPC). L'àmbit dels meus estudis ha estat relacionat amb el seguiment d'objectes i espècies submarines utilitzant mètodes només de rang acústic i vehicles autònoms. He estat treballant al grup de recerca SARTI-MAR de la UPC (2011-2020), participant en diferents projectes nacionals i internacionals. He realitzat part de la meua investigació postdoctoral al Monterey Bay Aquarium Research Institute - MBARI (Califòrnia), una de les principals institucions del món relacionades amb la investigació marina i al grup de recerca ViCOROB de la Universitat de Girona,

líders en robòtica submarina al sud d'Europa. Finalment, vaig fer part dels meus estudis de doctorat a Isen Yncréa Ouest - Site De Brest (França), i també al MBARI. He participat en el projecte RESNEP, on vam demostrar com la implantació d'un vedat de pesca podia ser una estratègia de gestió eficaç per recuperar les poblacions de l'escamarlà a la costa Catalana. Actualment, també estic involucrat amb els projectes BITER i PLOME on estem desenvolupant nous sistemes i tecnologies per a la monitorització del medi marí.



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Link to the talk

<https://www.youtube.com/live/QDN3XAmREdA?feature=share>

Presentación de los resultados de la encuesta de percepción sobre la igualdad de género en el ICM

Dra. Sílvia Donoso López

Institut de Ciències del Mar

Divendres, 10 de març de 2023

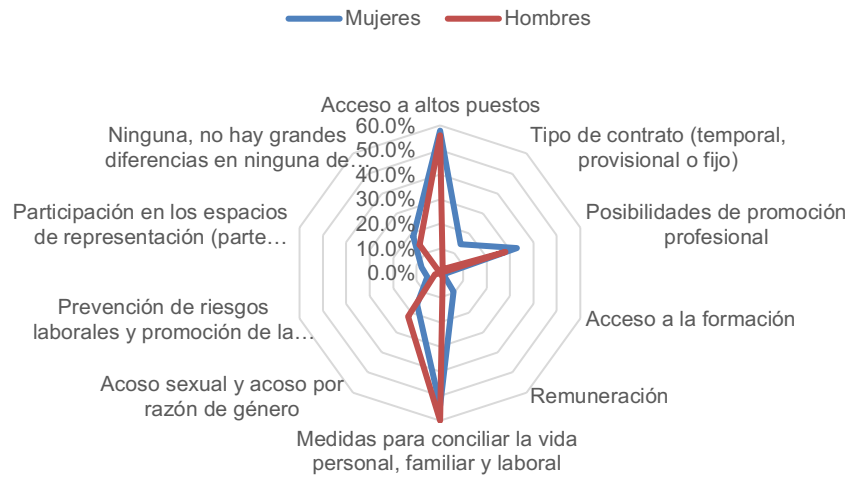
Resumen

Se presentarán los resultados de la encuesta de percepción sobre la igualdad de género entre el personal en el ICM (y personal de administración adscrito al CMIMA), implementada en el marco del Plan de Igualdad de Género del ICM. La encuesta giraba en torno a 8 ámbitos clave: cultura institucional, gestión de recursos humanos, política retributiva, conciliación de la vida laboral, personal y familiar, acoso sexual y acoso por razón de sexo, comunicación inclusiva y no sexista, dimensión de género en la investigación, y prevención de riesgos laborales. Los resultados apuntan a opiniones convergentes de mujeres y hombres sobre algunos aspectos, pero, en general, las mujeres tienen una opinión más crítica en relación con la igualdad entre mujeres y hombres en el ICM. Así, por ejemplo, se producen diferencias y matices de percepción respecto a ámbitos como la progresión de la carrera profesional y las posibilidades de promoción, la conciliación, o el acoso sexual y por razón de sexo. Algunas diferencias están, además, atravesadas por variables como la edad o el colectivo profesional. Los resultados de la encuesta revelan fortalezas y avances en materia de igualdad en el ICM, pero también apuntan a la necesidad de seguir dedicando esfuerzos para alcanzar una igualdad real y efectiva entre mujeres y hombres en todos los ámbitos.

Breve biografía

Sílvia Donoso López es doctora en antropología social y máster en género y políticas de igualdad entre mujeres y hombres. Cuenta con una larga experiencia en América Latina donde ha trabajado como experta en género y políticas de desarrollo para diversos organismos internacionales incluyendo la Comisión Europea, el Banco Interamericano de Desarrollo u ONU Mujeres. Asimismo, ha trabajado como consultora en género y diversidad para diversas administraciones públicas, empresas y organizaciones sociales formulando y monitoreando política pública y Planes de igualdad entre mujeres y hombres. Ha desarrollado una importante actividad formadora en materia de igualdad de oportunidades entre mujeres y hombres y aplicación de la perspectiva de género a personal funcionario, y agentes sociales y económicos en diversos países. En la actualidad trabaja como experta en género en el ICM en el marco del proyecto LeTSGEPs, estando plenamente involucrada en la implementación e las acciones del Plan de Igualdad de Género del instituto.

Ámbitos donde se perciben las principales diferencias entre mujeres y hombres en el ICM



References

Plan de Igualdad de Género del ICM (2021-2024).

Link to the talk

<https://www.youtube.com/live/WCag5bpDcQA?feature=share>

Desarrollo de materiales y estructuras bioinspiradas para la protección, recuperación y regeneración de la biodiversidad marina

Dr. Marco A. Pérez

IQS School of Engineering - Universitat Ramon Llull

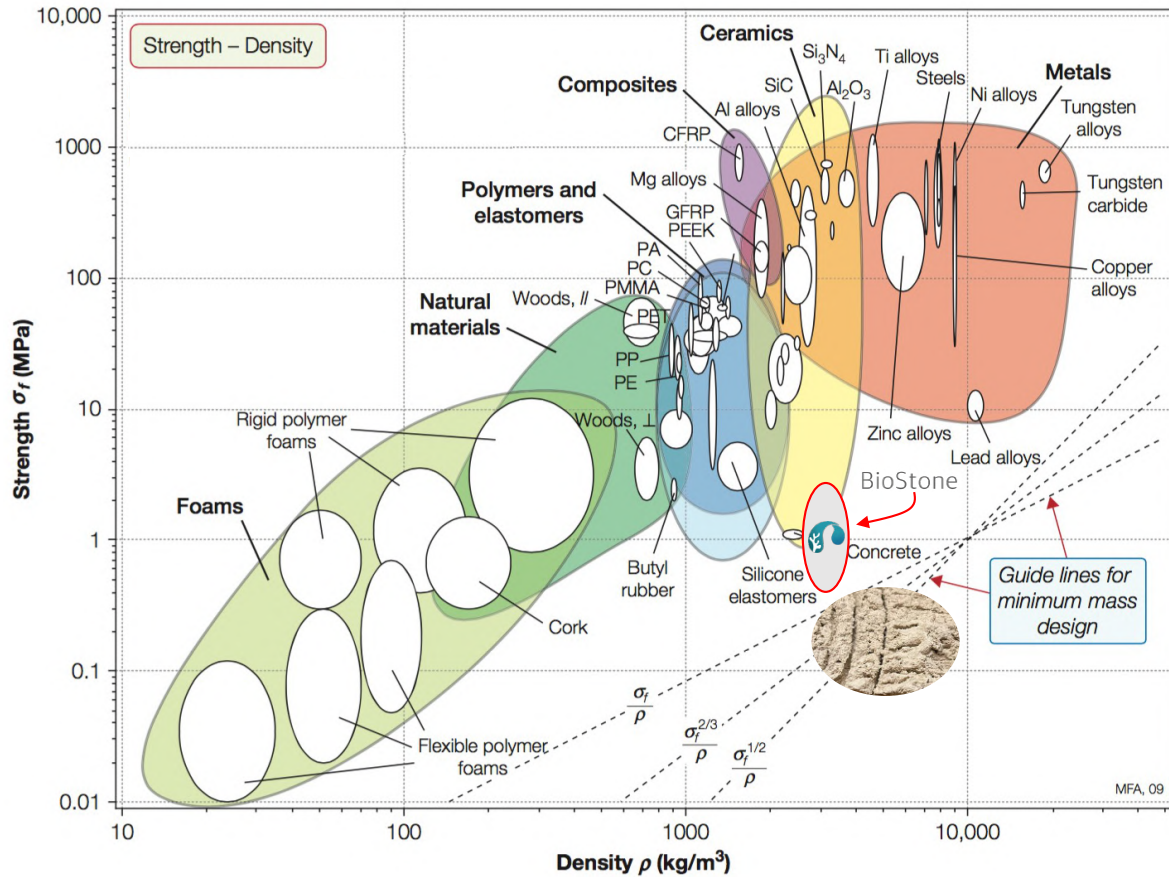
Divendres, 17 de març de 2023

Resumen

BioStone es un proyecto nacido en el Institut Químic de Sarrià (IQS), cuyo objetivo general es ofrecer soluciones de alto valor añadido para fomentar la protección, la recuperación y la regeneración de la biodiversidad marina. El proyecto se basa en una estrategia de biomimética estructural, que consiste en reproducir artificialmente formas estructurales presentes en la naturaleza utilizando materiales sostenibles. El potencial del proyecto se fundamenta en la combinación del desarrollo de materiales junto al diseño para una fabricación escalable. El material desarrollado se caracteriza por su alta capacidad de colonización y por la posibilidad de desintegrarse con el paso del tiempo, llegando a ser absorbido por el lecho marino. BioStone es una iniciativa científico-técnica abierta, con un marcado enfoque interdisciplinar, con vocación de transferencia tecnológica y alienada con varios de los objetivos de desarrollo sostenible.

Breve biografía

Marco A. Pérez es Ingeniero Industrial, Doctor en Análisis Estructural (UPC 2012), y Profesor Titular en el Departamento de Ingeniería Industrial de la IQS School of Engineering, Universitat Ramon Llull, donde desarrolla actividades de investigación en el campo de los materiales, la fabricación y las estructuras avanzadas. Ha sido profesor en el Departamento de Resistencia de Materiales y Estructuras de la Universitat Politècnica de Catalunya-BarcelonaTech, donde desarrolló una actividad docente e investigadora en el área de conocimiento de la mecánica de materiales compuestos, e investigador visitante en Department of Aerospace Engineering Sciences en la University of Colorado en Boulder, EEUU. Es el investigador principal del Applied Mechanics and Advanced Manufacturing Research Group en el IQS-URL. Sus líneas de investigación actuales se centran en el desarrollo de materiales y estructuras biomiméticas con funcionalidades avanzadas, entre otras para favorecer la proliferación de la vida marina.



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Understanding the adaptive role of epigenetics in naturally inbred fish

Dra. Sofia Consuegra del Olmo

Swansea University, UK

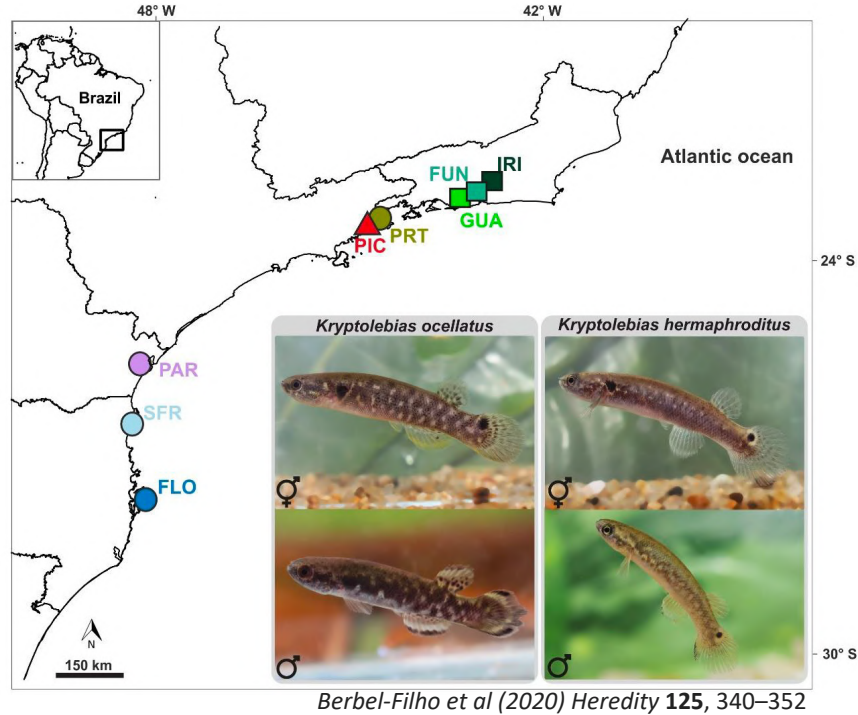
Divendres, 14 d'abril de 2023

Summary

Epigenetic variation represents a potential mechanism to generate adaptive responses in the presence of low genetic diversity and could be an alternative source of adaptive plastic phenotypes which may explain the persistence of highly inbred populations in variable environments. Although epigenetic modifications can arise independently from variation in the underlying DNA sequence, the adaptive relevance of the epigenetic variation and its heritability is still unclear and seems to depend to some extent on genetic variation. To what extent epigenetic modifications act independently from genomic variation is key to understanding their potential role in evolution. Inbred organisms provide a uniquely opportunity to detangle genetic from epigenetic variation, but naturally inbred vertebrate models are difficult to find. Mangrove killifishes from the *Kryptolebias* genus are ideal for these studies. *Kryptolebias marmoratus* and *K. hermaphroditus* are the only two known self-fertilising vertebrates, consisting mainly of selfing hermaphrodites, with very few males and high homozygosity. We have used this genus to analyse the relationships among genetic and epigenetic (DNA methylation) variation, microbiome composition, behaviour and response to parasite loads (as proxies for fitness) in lab and wild populations. We found evidence that DNA methylation patterns depend on the dynamic interaction between the genotype and the environment but epigenetic diversity does not seem to be a substitute for genetic diversity in populations with low genetic variability. Yet, we also found epigenetic parental effects related to the rearing environment which, if maintained, could have long-term evolutionary and act as an evolutionary bet-hedging strategy for species with low genetic diversity under environmental change. Our results also indicate that the skin microbiome, together with host genetics and environment, are associated with the host methylation profile, highlighting the importance of considering the interaction between the microbiome and the host genome as a potential epigenetic mechanism (the holoeypigenome) to understand host adaptation to environmental change.

Brief biography

Currently professor of evolutionary ecology at Swansea University. My work is primarily focused on conservation genetics, molecular ecology and resource management (fisheries and aquaculture), mainly but not exclusively, on aquatic organisms. Degree in Biology at the University of Oviedo and six years as a Scientific Advisor for the Cantabrian Government before being awarded a PhD in Conservation Genetics from the University of Cantabria. Then postdocs at the Institute of Zoology in London and the University of St Andrews before being a Lecturer at the University of Aberystwyth.



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Link to the talk

https://www.youtube.com/live/PAAIVE_cmR0?feature=share

The ocean particle microbiome

Dr. Josep M. Gasol

Departament de Biologia Marina i Oceanografia, Institut de Ciències del Mar

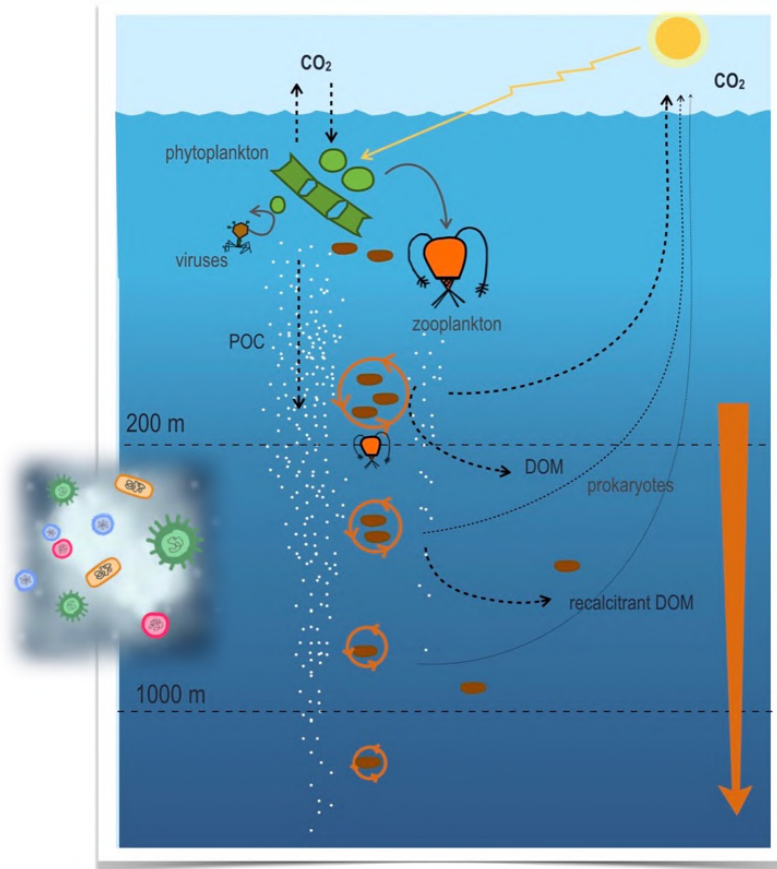
Divendres, 21 d'abril de 2023

Summary

Ocean microbes develop not only in the free-living state but they also thrive on living organisms and on organic and inorganic substrates. When they do so on sinking organic particles, they are key in the so-called biological carbon pump, regulating the rate of particle decomposition and sinking. Recent research done at the ICM has shown that some groups of microbes prefer to develop on particles, to the point that a strong phylogenetic signal can be observed in particle microbes, that they harbor differential sets of genes, and that particles are colonized in the surface ocean, functioning as vectors of diversity into the deep sea. Particles, in turn, feed a relevant part of the deep ocean metabolism although other mechanisms exist for deep ocean microbes to grow and reproduce. I will review what we know about the particle microbiome, highlighting our research on ocean particles and their microbiomes, research done within projects Malaspina, Blanes Bay and beyond and I will also elaborate some of the hypotheses that derive from these results and that form the basis of the recently started projects Micolor and Pre-Pap, to gather knowledge on ocean particle microbiome dynamics and their relationships to ocean particle flux and carbon sequestration.

Brief biography

I'm a Research Professor at the ICM. My research focuses on the factors that determine the abundance of microorganisms in plankton and their activity, as well as the effects of that activity on the ecosystem. I consider myself a microbial ecologist with a special interest in biogeochemistry (which is the result of microbial activity) and oceanography (as the framework in which microbial activity occurs). Prokaryotes are the main focus of my activity and consequently I have been interested in how predation and the availability of resources regulate their abundance, use of dissolved organic carbon, and how the composition of the microbial black box is regulated in terms of size structure, metabolic characteristics of the community, community structure or composition in genes. I work with empirical analysis of databases, generated mainly in cruises; mesocosm and microcosm experiments, and in the combined use of image analysis and flow cytometry with fluorescent and metabolic probes. On top of research papers and outreach books, I have coedited the last edition of the textbook *Microbial Ecology of the Ocean* (Wiley, 2018). I believe my work has been somehow useful at postulating and developing highly used tools and concepts that are now considered reference in the field of aquatic microbial ecology and biogeochemical oceanography. I also love to play Satanàs in the Pastorets (-:-).



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Link to the talk

https://www.youtube.com/live/Uf_SvxMzWU?feature=share

Ornitografies, mostrant la bellesa oculta del vol de les aus

Xavier Bou

Fotògraf i col·laborador de SCI-ART, una nova iniciativa de l'ICM-CSIC

Divendres, 28 d'abril de 2023

Resum

El projecte va néixer de la inquietud per captar aquells moments que passen desapercebuts i de l'interès per qüestionar els límits de la percepció humana. Ornitografies plasma en un únic espai de temps les formes que generen les aus en volar, fent visible l'invisible. Amb aquest projecte Xavi Bou ens mostra des de la simplicitat de l'aletge d'una gavina a la complexitat d'un estol d'estornells. Ornitografies s'allunya de l'anàlisi purament científic del moviment que proporciona la cronofotografia, un gènere que van dur a terme al segle XIX fotògrafs com Eadweard Muybridge i Étienne-Jules Marey. El projecte rebutja l'estudi fred de la forma, aportant, al seu lloc, imatges de formes orgàniques per tal d'estimular la imaginació. Tecnologia, ciència i creativitat s'ajunten per crear imatges suggerents que mostren la sensualitat i bellesa del moviment de les aus a la vegada que proporcionen les pistes per als que volen identificar-les i / o reconèixer-les.

Breu biografia

Es llicencia en Geologia a la Universitat de Barcelona mentre compaginava amb els estudis de Fotografia. En completar els seus estudis el 2003, va començar la seva carrera professional al món de la fotografia de moda i publicitat com a assistent de fotògrafs i retocador. El 2009 va fundar un estudi de retoc especialitzat en campanyes per a importants marques i revistes nacionals i internacionals. La seva passió per la natura i la fotografia l'ha fet portar a ser el mitjà vehicular pels seus projectes artístics. Explorant els límits de les possibilitats de la fotografia i amb la natura com a protagonista. L'autor pretén crear un resultat que ens faci qüestionar la nostra percepció, creant un nou punt de vista del nostre entorn. Des que el 2015 va presentar el seu projecte Ornitografies immediatament va despertar l'interès internacional, el que l'ha portat a publicar en els principals diaris i revistes de més renom com **The Guardian**, Der Spiegel, **National Geographic**, Geo o Granta entre moltes d'altres i a exposar a 10 països. Fet que ha pogut fer possible el seu somni de dedicar-se plenament a aquest projecte i a la recerca d'altres. A finals de 2022 publica "Onithographies" el llibre sobre el seu projecte amb la editorial Lynx.



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www.xavibou.com

https://ca.wikipedia.org/wiki/Xavi_Bou

Link to the talk

<https://www.youtube.com/live/TPRaXpWLwo0?feature=share>

Del coneixement científic a les polítiques i mesures de conservació a la Mediterrània

Dra. Purificació Canals

Presidenta de MedPAN, Xarxa de gestors d'àrees marines protegides de la Mediterrània

Divendres, 5 de maig de 2023

Resum

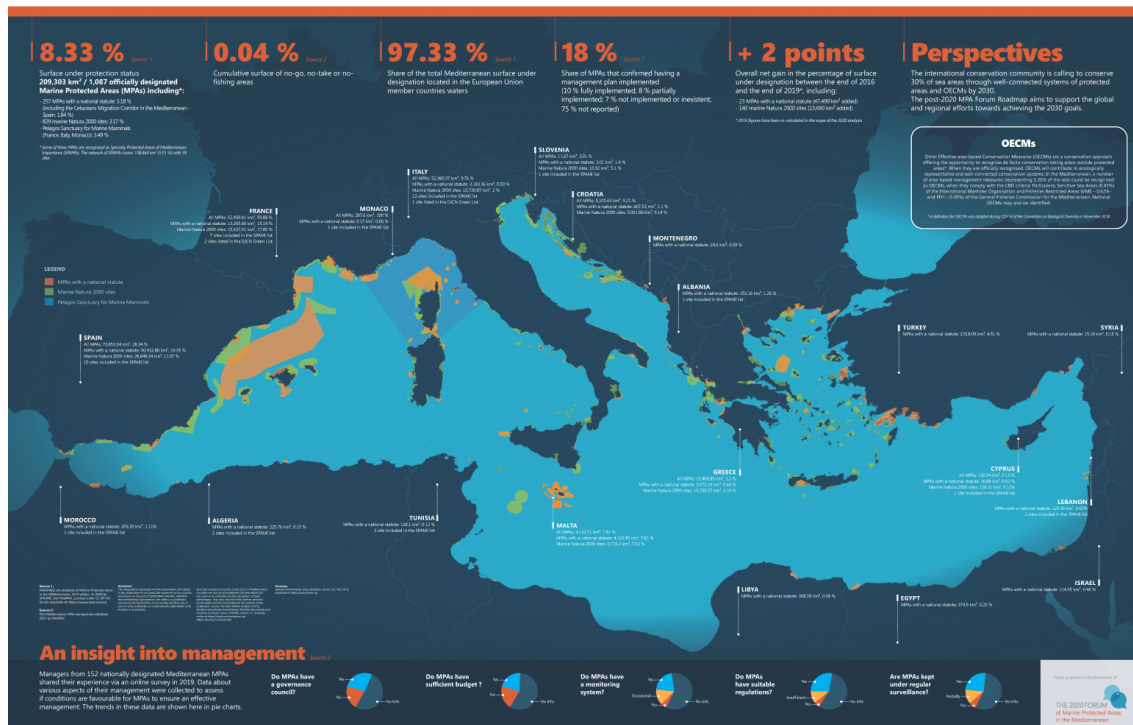
Si bé el coneixement científic és il·limitat, a dia d'avui, la quantitat de dades i d'informació existents, així com la comprensió de la importància de l'oceà per a la vida al planeta, són ja impressionants i ens permeten entendre i explicar bona part dels processos que hi tenen lloc, i identificar les causes de la majoria de problemes que amenacen la continuïtat d'aquesta vida. No obstant, el fet de que tot això sigui ben conegut pel món científic, no té una repercussió immediata ni efectiva en la presa de decisions polítiques ni en els canvis de comportaments socials que caldria posar en pràctica. El model de societat "desenvolupada" -en que el coneixement està infinitament compartimentat, no és valorat per se sinó en funció de la seva aplicació pràctica i sobretot productiva, i que es planteja com un element de competició en comptes de cooperació- dificulta enormement la seva aplicació en les dimensions social i política i, per tant, no aconsegueix aportar el suport que podria, i caldria, per tal de conservar la vida marina. Així i tot, existeixen eines i processos oficials a diferents escales (nacionals, regionals i internacionals) que s'encarreguen justament de connectar aquests mons tan distants i fer possible que el coneixement científic sigui tingut en compte en les negociacions i en l'establiment de nous acords (Convenis de les NNUU sobre Canvi climàtic i sobre Diversitat biològica, Conveni de Barcelona per a la protecció de la Mediterrània, ...) i també eines i processos menys oficials, que utilitzen el coneixement científic per donar suport directe a les persones i institucions que gestionen diferents aspectes de la vida marina, com és el cas de la Xarxa de gestors d'àrees marines protegides (AMP) de la Mediterrània (MedPAN) i d'altres xarxes de gestors d'AMP arreu del món.

Breu biografia

Puri Canals (Tarragona, 1962) és llicenciada i doctora en Ciències biològiques per la UB (1986 i 1996). Des de que va completar la seva llicenciatura, ha combinat permanentment l'activitat professional en diferents camps de coneixement de les ciències biològiques, amb el compromís social en temes ambientals i especialment de conservació de la natura. Va ser presidenta de DEPANA (Barcelona, 1996-2010) i Vicepresidenta de la UICN (Gland-Suïssa, 2004-2008). Des del 2009 és la Presidenta de la Xarxa Mediterrània de gestors d'àrees marines protegides (MedPAN). És professora associada de Fisiologia a la URV des de 1996 i va ser professora titular de Medicina aeronàutica (CESDA-URV, 2000-2004). Des del 2011 treballa com consultora internacional en conservació marina i costera. Va promoure la connexió de les xarxes de gestors d'AMP a través de l'Atlàntic com a coordinadora del projecte de xarxa transatlàntica d'AMP de la UE (2016- 2019) connectant AMP

d'Europa, Àfrica i Amèrica, feina que continua fent des del 2020 com a team leader del projecte EU Ocean Governance, que amplia la seva acció també al Sud-est asiàtic. Des d'aquesta activitat associada a la gestió d'AMP col·labora sovint amb el Secretariat del Conveni de Diversitat Biològica de les NNUU. És membre del CADS des del 2014, del Consell científic del Conservatoire du Littoral del Govern de França, des del 2004, i també ho ha estat del Consell assessor de la Fundación Biodiversidad del Ministeri per a la transició ecològica (2018-2022). Entre d'altres, ha rebut la Creu de Sant Jordi de la Generalitat de Catalunya (2020) i la Medalla Alfred Toepfer de la Federació EUROPARC (2022) per la seva contribució a la conservació de la natura a Europa.

The system of Mediterranean Marine Protected Areas in 2020



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Link to the talk

<https://www.youtube.com/live/9bZ4iKR6Fws?feature=share>

ONE HEALTH: the concept and synergies at ICM

Dr. Francesc Peters

Departament de Biologia Marina i Oceanografia, Institut de Ciències del Mar

Divendres, 12 de maig de 2023

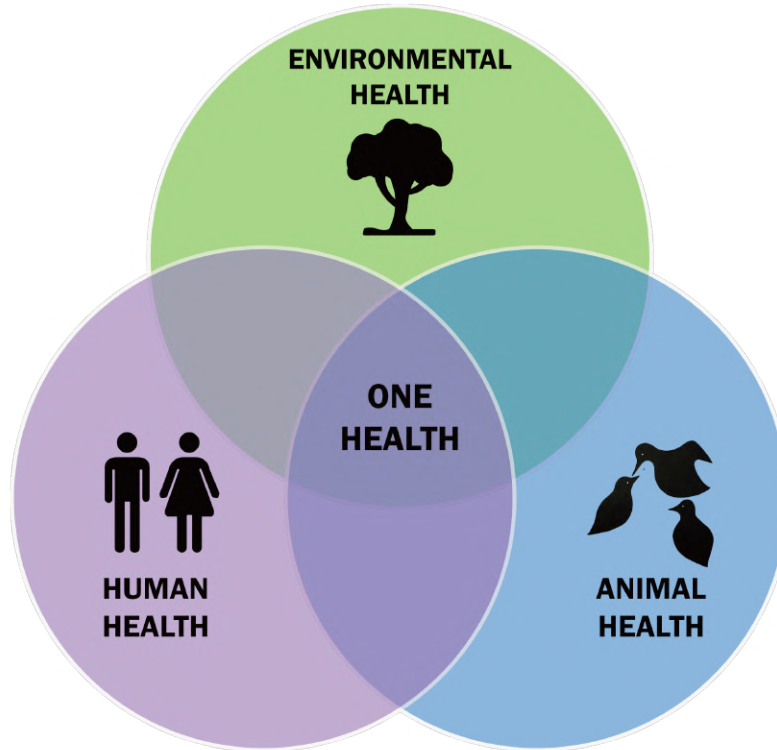
Summary

Factors external to our bodies affect our health; Humankind has probably always been conscious of this fact. At the same time, when human settlements grew into villages and cities, the accumulated activity altered significantly the surrounding environment. However, in ancient times, the consciousness that these alterations were backfiring on human health was rarely made. The studies of Rachel Carson and the publication of *Silent Spring*, sparked mainstream consciousness of the loop connecting human activity with environmental affectation and backfiring on human health. In parallel, the concept of One Health has mainly grown in the early years of the 21st century after the multiple zoonotic disease outbreaks and pandemics. It also includes “environmental health”, to address the multiple links between the three areas to “sustainably balance and optimize the health of people, animals and ecosystems”. In Spain, the Plataforma One Health was established in 2021 to help disseminate this idea to society at large as well as to promote the concept in the different legislation initiatives. Studies of the links between global-scale ocean alteration, animal and human health clearly need to be promoted in a society that growingly expands into the planets’ oceans for food, resources and economic activity in general.

Brief biography

Franz (Francesc, Cesc) Peters és Investigador Científic del CSIC. Va estudiar Ciències Biològiques a la Universitat Autònoma de Barcelona (1989). En acabar, va marxar al Institute of Ecology de la Universitat de Georgia (USA) a fer un doctorat en oceanografia (1989-1994) sota la supervisió del Dr. Larry Pomeroy. El 1994 es va incorporar com a investigador post doctoral amb la Dra. Cèlia Marrasé a l'Institut de Ciències del Mar (CSIC) a Barcelona per estudiar interaccions entre la turbulència i el plàncton. Després d'un període com a investigador Ramon y Cajal, s'incorpora a l'ICM amb una plaça fixa. Els seus interessos principals són la dinàmica del microbis marins i el plàncton, especialment des d'una perspectiva biogeoquímica. Ha estudiat els efectes de la temperatura i la turbulència sobre el plàncton, la depredació de protistes, la dinàmica dels nutrients en àrees costaneres i els efectes de la deposició atmosfèrica en sistemes marins. Ha desenvolupat sistemes per estudiar de manera controlada en el laboratori els efectes de la turbulència sobre el plàncton. Ha fet campanyes oceanogràfiques al Mediterrani, a l'Atlàntic, al Golf de Mèxic, a l'Antàrtida i a l'Àrtic. Ara mateix investiga els efectes de l'increment de temperatura sobre la producció i la diversitat oceànica, la relació entre la clorofil·la marina i la presència de balenes a la costa catalana i diversos processos en el continu dissolt-particulat de la matèria orgànica al mar. Està involucrat en

activitats de divulgació científica i història de la ciència. Ha estat cap del Departament de Biologia Marina i Oceanografia (2014-2022). És el director de la revista científica Scientia Marina i secretari de la recentment creada Plataforma One Health.



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Link to the talk

<https://www.youtube.com/live/BSpzovPk8H8?feature=share>

Highlights from the POLAR-CHANGE Antarctica

Dr. Manuel Dall'Osto

Departament de Biologia Marina i Oceanografia, Institut de Ciències del Mar

Divendres, 19 de maig de 2023

Summary

Polar northern and southern regions are at forefront of changes in climate forcing and climate-biogeochemical-ecological interactions. It is critical that we understand the rate and magnitude of the changes in ocean-atmosphere-cloud-climate interactions likely to occur, and their impact on local and global ecosystems. POLAR-CHANGE (Aerosol emissions from POLAR CHANGing Environments) aims to study the sources, composition and dynamics of aerosols in Arctic and Antarctic environments. After briefly presenting the background of the project, this talk will focus on the POLAR CHANGE cruise. An international team of researchers travelled around Antarctica in February-March 2023 in order to study in depth the role of marine aerosols in the regulation of the Earth's climate. 23 researchers of 14 different nationalities from 5 continents took part in the expedition on board of the oceanographic vessel Hespérides. I will focus on the interdisciplinary ocean-atmosphere aspects of the cruise, including some hints about dealing with Antarctiness.

Brief biography

I am a biogeochemist working at the ICM in the CSIC. I define myself as a scientist who investigates air quality, climate regulation and the ocean-atmosphere interactions. My research focuses on elucidating what the biogeochemical mechanisms that influence aerosol exchanges between the ocean and the atmosphere are, how polar ecosystems affect the production of marine aerosols, and how marine biogeochemistry regulate cloud properties via aerosols. I have an atmospheric chemistry research background, and leading experience in international field campaigns at sea, remote land stations and urban areas.



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Link to the talk

<https://www.youtube.com/live/ZUnYyE7MAEM?feature=share>

Hacia la igualdad LGTBQA+ en centros de investigación y entornos CTI

Simon Perera del Rosario

PRISMA, Asociación para la Diversidad Afectivo-Sexual y de Género en Ciencia, Tecnología e Innovación

Divendres, 26 de maig de 2023

Resumen

Algunas personas LGTBQA+ en entornos científicos, tecnológicos y de innovación (CTI) sufren experiencias de acoso, exclusión o intimidación por motivos de orientación sexo-afectiva o identidad de género, especialmente las que se identifican como personas trans o no binarias, y también las mujeres por encima de los hombres. Esto se da en todas las etapas de la carrera científica, desde los estudios universitarios hasta las posiciones de dirección de investigación, comprometiendo la salud mental y llevando incluso a abandonos de los estudios y de las carreras científicas. Por otro lado, está descrito que la investigación científica ofrece mejores resultados en entornos diversos. Además, las personas LGTBQA+ sufren de una aplicación o divulgación errónea de conceptos científicos, que ignora la no binariedad de aspectos como la identidad de género o el sexo biológico. PRISMA es una asociación española que moviliza a las personas LGTBQA+ en CTI para poner en valor la diversidad (especialmente LGTBQA+) a través de las capacidades y metodologías propias de nuestro ámbito: construyendo una comunidad de apoyo para personas LGTBQA+ en CTI; dando visibilidad a las personas LGTBQA+ como reconocimiento de nuestra realidad; aportar datos y evidencias científicas para responder a acciones discriminatorias; promoviendo una perspectiva que incluya la diversidad en las prácticas y metodologías tanto en el ámbito académico como empresarial, etc. Desde PRISMA, creemos que nuestros centros de investigación pueden ser un referente de justicia, igualdad y diversidad. Queremos construir entornos en los que todas las personas, independientemente de su orientación y su identidad, puedan desarrollar su trabajo sin miedo al rechazo y la discriminación. Queremos una ciencia llena de miradas diversas, capaces de expandir nuestro conocimiento y aportar nuevas soluciones a los grandes problemas de nuestro tiempo. Queremos igualdad de oportunidades, espacios seguros, visibilidad, producción científica de calidad. Por todo ello, proponemos diez medidas para mejorar la realidad LGTBQA+ en nuestros centros de investigación y entornos CTI. Diez medidas básicas sustentadas por datos estadísticos que demuestran su necesidad urgente, y que confiamos en que ayudarán a construir espacios científicos mejores y más justos, así como una guía de implementación de estas medidas; y un trabajo constante con centros de investigación para ayudarles a implementarlas.

Breve biografía

Licenciado en Biotecnología y MSc en Antropología Biológica. Director de desarrollo de negocio en ProtoQSAR (SME de química computacional, diseño y desarrollo de fármacos,

bioinformática estructural), doctorando por la UPF (Lab. Genómica de la Individualidad, Instituto de Biología Evolutiva). Previamente ha sido project manager y business developer en Anaxomics (bioinformática, biología de sistemas), profesor asociado en la UAB (U. Antropología Biológica), responsable de proyectos europeos y coordinador de Bioinformatics Barcelona (asociación de entidades relacionadas con la bioinformática). Es secretario general de PRISMA "Ciencia LGTBI+", codirige el evento de divulgación científica en Barcelona "BCNspiracy" y el proyecto expositivo "Una Mirada LGTBI+", y es miembro de las juntas directivas de la Asociación Española de Comunicación Científica (AEC2) y la Asociación de Comunicadores de Biotecnología (ComunicaBiotec); y miembro de Ciencia en el Parlamento, la Asociación Catalana de Comunicación Científica, y las asociaciones de divulgación científica "Hablando de Ciencia" y "Scenio".



<https://prismaciencia.org/10-medidas-prisma/>



PRISMA
Asociación para la **DIVERSIDAD** afectivo-sexual
y de género en **CIENCIA, TECNOLOGÍA E INNOVACIÓN**

References

Exploring the workplace for LGBT+ Physical Scientists (UK, 2019)

LGBT Climate in Physics (Lgbt+physicists, USA 2016)

10 medidas PRISMA para la igualdad LGTBIQA+ en centros de investigación y entornos de Ciencia, Tecnología e Innovación): <https://prismaciencia.org/10-medidas-prisma/>

PRISMA, guía de implementación: https://prismaciencia.org/wp-content/uploads/2022/10/10medidasPRISMA_guia_implementacion.pdf

Link to the talk

<https://www.youtube.com/live/w0kyP1ctFtE?feature=share>

Examining the potential of marine renewable energy: A net energy perspective

Dr. Roger Samsó

Centre de Recerca Ecològica i Aplicacions Forestals (CREAF)

Divendres, 2 de juny de 2023

Summary

It is often claimed that marine renewable energy alone could meet the electricity demand of current and future human societies. However, such claims are based on highly uncertain estimations of the global potentials of marine renewable energy sources (including tidal, ocean currents, wave, offshore wind and salinity and thermal gradients), and do not take into account the embedded energy of current technologies. To better understand the effective potential of marine energy, in this work we conducted a literature review of its gross, technical, economic and sustainable potentials, as well as the energy return on investment (EROI), and estimated the net energy potential. The results of this work suggest that the contribution of marine renewable energy to the future energy mix may be important, but not be as significant as generally thought.

Breu biografia

Enginyer Geòleg per UB-UPC (2009) i doctor Enginyer Ambiental per la UPC (2014). L'eix conductor de la seva recerca ha estat la programació científica i la modelització, inicialment del tractament d'aigües residuals i la digestió anaeròbia, i des del 2018 en models d'Avaluació Integrada per la transició energètica. Ha desenvolupat la seva recerca entre Catalunya i França, i tan en l'àmbit públic com en el privat. Entre 2018 i 2019 va treballar a l'ICM, en el marc del projecte Europeu MEDEAS, liderat pel Jordi Solé. Actualment treballa al CREAF, i participa en el projecte H2020 *LOCOMOTION*, el projecte Horizon Europe *ToBe* i el projecte *pymedeas_cat*, que és un encàrrec de l'Oficina Catalana de Canvi Climàtic.



El Pelamis Wave Energy Converter (WEC) és una tecnologia utilitzada per produir electricitat a partir del moviment de les ones de la superfície de mars i oceans. Va ser la primera tecnologia marina offshore en injectar energia a la xarxa, quan es va connectar a la xarxa elèctrica del Regne Unit al 2004.

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Link to the talk

<https://www.youtube.com/live/ZqwcHFbIUzs?feature=share>

Cold-Water Coral ecosystems in the Alboran Sea. Highlights from the Eurofleets+OASIS Cruise

Dr. Claudio Lo Iacono

Departament de Geociències Marines, Institut de Ciències del Mar

Divendres, 9 de juny de 2023

Summary

I will present the research highlights of the EU Eurofleets+OASIS expedition, and the scientific rationale behind it. Cold-Water Corals (CWCs) are ecosystem engineers with a paramount importance in maintaining high biodiversity in the ocean and in providing several ecosystem services. The high vulnerability of these slow-growing systems to increasing human threats has brought to define specific directives aimed to protect and conserve them. Yet, we still miss comprehensive information on their exact distribution, and on the hydrodynamic constraints providing suitable nutritional bridges between surface productivity and these deep-sea communities. Whereas the Mediterranean Sea hosts several CWC provinces with sparse colonies in a variable state of conservation, Alboran is the unique basin to host uncommon thriving CWCs, building extensive reefs and mounds in space and time. The reason for such a unique near-pristine state is still under debate. OASIS Cruise (Thriving Cold-Water Coral Reefs in the Mediterranean Sea), funded by EU H2020 Eurofleets+ Project, has been aimed to explore and monitor these coral assemblages, located on Cabliers and Catifas provinces, in the eastern Alboran Sea. Through the acquisition of ROV footage along with the deployment of benthic landers and moored instruments, we unveiled new flourishing CWC assemblages and will adopt this region as a natural environmental deep-sea laboratory to (hopefully) advance the understanding of their functioning, monitoring long-term hydrography and hydrodynamics across interacting spatial scales.

Brief biography

I am a senior scientist at ICM-CSIC and I previously worked for several years as research scientist at the National Oceanography Centre of Southampton, UK. My current research implies the use of high-resolution seafloor mapping, video imaging, seafloor and sub-seafloor samples and benthic landers to understand the spatio-temporal interactions between biotic and abiotic components of Cold-Water Coral reefs on ecologically-relevant geo-forms, such as submarine canyons, seamounts and coral mounds. My deep-sea research has been mainly conducted in the Mediterranean Sea and on the NE Atlantic and Pacific Margins using oceanographic vessels of several research institutions, remotely operated vehicles (ROVs) and autonomous underwater vehicles (AUVs). I participated in over 50 oceanographic expeditions and served as Chief Scientist on 10 of them.



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Link to the talk

<https://www.youtube.com/live/ZMaoJTSXrp0?feature=share>

Tracking the pumice rafts from the Fukutoku-Okanoba submarine volcano with Satellites and Lagrangian Particles tracking

Dr. Young-Gyu Park

Korea Institute of Ocean Science and Technology, South Korea

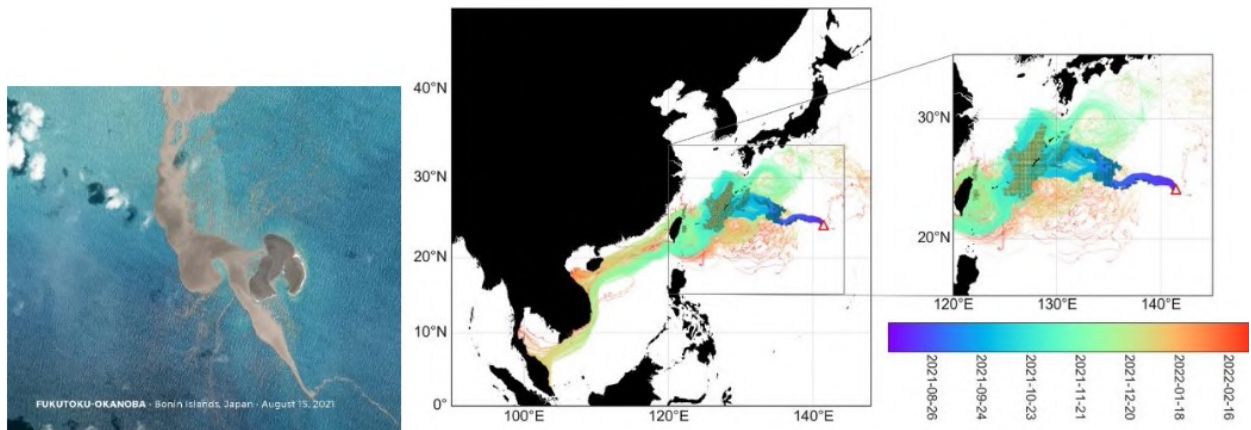
Dimarts 13 de juny 2023

Summary

On August 13th, 2021, the Fukutoku-Okanoba, a submarine volcano in the Northwest Pacific Ocean, erupted. Satellites detected various pumice rafts that had drifted westward to reach southern Japan over two months. To cope with the potential danger from pumice rafts, predicting their trajectories is crucial. Using a Lagrangian particle tracking model, the trajectories of the rafts were investigated. The model results showed strong sensitivity to the windage coefficient of pumice rafts, which is uncertain and could cause significant errors. An optimal windage coefficient was estimated by comparing the model results with satellite images using a skill score based on the distance between simulated particles and the nearest observed rafts divided by the travel distance of the particles. The optimal windage coefficients ranged between 2-3% and produced pathways comparable to the observations from satellites. The simulation results showed that the pumice rafts moved from Fukutoku-Okanoba toward the Ryukyu Islands for approximately two months prior to being pushed by the north-easterly wind toward Taiwan against the Kuroshio. The methods presented here may become a valuable tool in managing coastal hazards due to diverse marine debris.

Brief biography

Young-Gyu Park is a Professor at the Ocean and Climate Research Center of the Korea Institute of Ocean Research Center. He is as well Adjunct Professor at the University of Science and Technology and the Ocean Science and technology School, Korea Maritime University. He did his undergraduate studies at Seoul National University. He obtained his PhD at the MIT-WHOI Joint Program in Oceanography and Ocean Engineering. After doing two postdoctoral stays at Princeton University and George Mason University, he joined the Research Institute of Oceanography at Seoul National University. He has taught courses on physical oceanography, numerical ocean modeling, large scale ocean circulation and geophysical fluid dynamics. His interests are large scale ocean modeling, thermohaline circulation, coastal and regional ocean modeling, geophysical fluid dynamics, climate change, carbon cycle and marine debris.



Pumice rafts from the volcano and their trajectories

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- Seongbong Seo, Young-Gyu Park, Kwangseok Kim. (2020). Tracking flood debris using satellite-derived ocean color and particle-tracking modeling, *Marine Pollution Bulletin*, 161, 111828.

Link to the talk

<https://www.youtube.com/live/vacIRywyUIk?feature=share>

Placing value on environmental impacts from (coastal and nautical) tourism

Dr. Hrvoje Caric

Institute for tourism, Zagreb, Croatia

Dimarts, 20 de juny de 2023

Summary

It has never been easy to assign value to environmental degradation, especially when it comes from tourism, due to its low, clean perception and economic importance. Inter and cross disciplinary cooperation based on critical thinking is needed to move us ahead from overtourism and its pitfalls. The presentation will provide an overview, frameworks and examples for assessing, valuing and interpreting tourism-related environmental impacts (waste, wastewater, air pollution, noise, biocides, dust, etc.). Examples include tourism use of coastal and marine protected areas, UNESCO sites, nautical tourism, and especially the phenomenon of large-scale cruise tourism in the Adriatic and Dubrovnik. The above is intended to serve as food for thought for discussion of possible future activities and cooperation in the above areas regarding the environmental, social, economic and health impacts of maritime tourism in the context of the Blue Economy.

Brief biography

Researcher, policy analyst and project manager with 30 years of experience in sustainable development practices (tourism, community development, nature conservation and pollution impacts). Research focus: pollution assessment and prevention, cost-benefit analysis, risk assessment, environmental indicators and valuation methodologies, carrying capacity and nature conservation.



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Link to the talk

<https://www.youtube.com/live/D9JAqmcAHJQ?feature=share>

Ocean processes in Antarctic Ice shelf cavities plus an overview of New Zealand physical oceanographic research

Dr. Craig Stevens

NZ National Inst Water and Atmospheric Research and University of Auckland

Divendres, 30 de juny de 2023

Summary

Antarctic ice shelf cavities are some of the least explored parts of the planet's oceans, yet they are highly relevant to future sea level projections. Here I will talk about several recent expeditions to directly observe the oceanography of the largest of these systems - the Ross Ice Shelf. Our work uses hot water drill boreholes to melt through ice shelves through which we are able to deploy sensors to monitor some of the physical processes operating in these rarely observed systems. I will also present an overview of oceanographic research in New Zealand including some of the key topics under investigation at the moment - this ranges from tidal mixing in Straits, Deep Argo, ocean impacts of tropical cyclones and potential effects of offshore wind farming.

Brief biography

Professor Craig Stevens is an oceanographer based in New Zealand with a joint position as Principal Scientist Marine Physics at NIWA (a government-funded research institute) and in the Physics Department at the University of Auckland. His research focus is on the ocean's role in climate with a focus on mixing in extreme environments. He grew up in Kurna country in South Australia and studied in Australia and Canada before moving to New Zealand in the 1990s. He is currently PI on the NZ Antarctic Science Platform Ocean Mechanics Project and is on the Scientific Steering Committee for the Southern Ocean Observing System. In addition, he has in the past held roles of the President of the New Zealand Association of Scientists and Chair of the Aotearoa Wave and Tidal Energy Association.



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Making Sense of Changing Seas: On addressing crises of climate change and its paradigms through artist-scientist collaborations

Dr. Roderick Coover

Temple University, Philadelphia, US

Dimecres, 5 de juliol de 2023

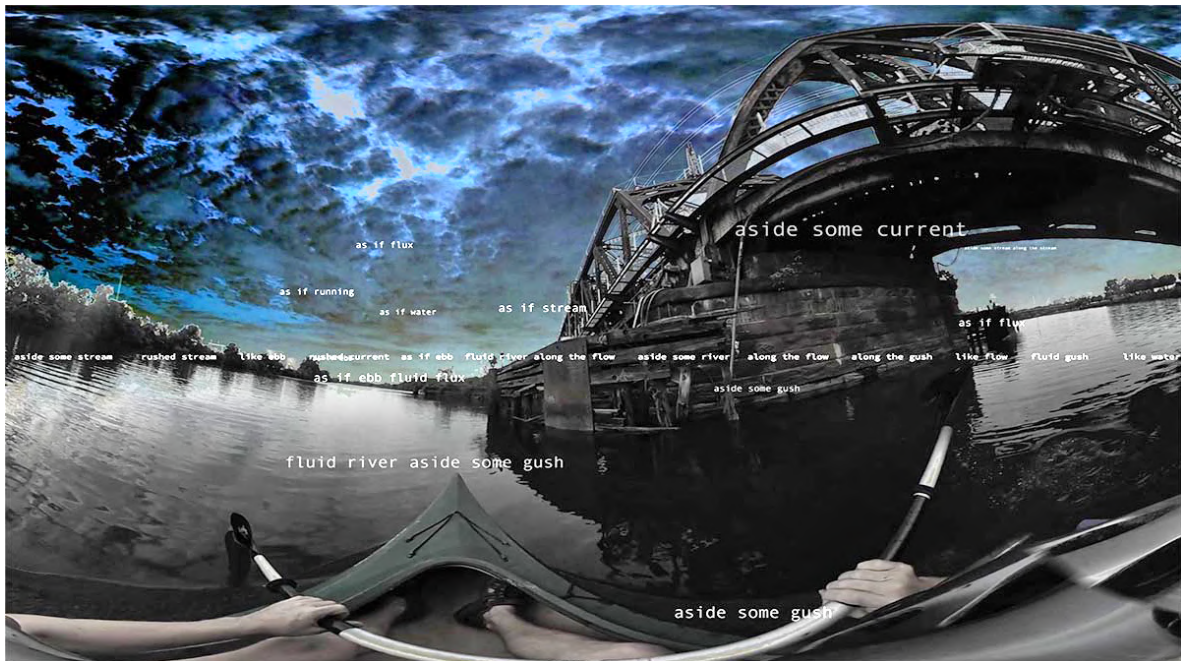
Summary

American artist and visual researcher Roderick Coover offers models for artists and scientists to collaborate in order to expand public understanding of major environmental issues of our time including global warming, contamination and extinction. The presentation demonstrates ways that emerging visualization technologies like VR, AR and AI might help create experiences that will make large, abstract concepts like "global warming" more tangible and meaningful. Coover's examples are interdisciplinary, immersive and based on research. His approach follows the premises that we can do little to alter the human response to current environmental conditions if we do not address the underlying paradigms of industrialization at levels of perception, cognition, and imagination, and that collective resilience is built through language, story and direct human interaction. The talk will reflect on his recent works and introduce specific new areas of research including possible points of connection with ICM. Coover's large-scale installations like "The Floods" and "It Will Happen Here In Barcelona" immerse viewers in a kaleidoscope of climate futures. These works use data-driven cinema, performance and language to respond to the question: what happens to human senses of place when sites of memory are erased or transformed by rising waters? In his current work, Coover also ventures underwater to look for ways to build understanding of how human actions impact ecologies above and below the waterline. This includes attention to sound and vibration, temperature change and flow, human infrastructure and contamination. Attention is given to differing ways humans have interacted with estuaries, seas and oceans over time and the often obscure lessons that might be learned from past floods. He is also interested in how species communication, movement and migration might help us understand the human condition in the face of environmental catastrophe.

Brief biography

Roderick Coover is professor and founding director of the Ph.D.-M.F.A. Program in Documentary Arts And Visual Research at Temple University, Philadelphia, and he also holds visiting posts at the University of Bergen and the University of Lille. He uses emerging technologies like VR, AR and AI to create works that address issues of global warming and industrialization. His large-scale video installations are immersive and poetic. The works bridge art and science to help humans

interpret the consequences of global warming and industrialization upon story, memory, and the senses of place. In the 2000s, his works focused land-use along the Colorado River. Since 2011, his work has particularly focused on industrial shorelines of the Atlantic and North Sea. The approaches are interdisciplinary and grow collaborations between the arts and sciences. His artworks are shown internationally in art venues like the Venice Biennale Pavilions but also history and science museums. His books such as *Switching Codes* (Chicago) and *Digital Imaginaries* (Bloomsbury) expand dialog on ways emerging technologies can transform interdisciplinary understanding. He holds a Ph.D. in the History of Culture from the University of Chicago and other degrees from Brown University and Cornell University. He is currently a 2022-2024 Fulbright Award fellow, and he is in Europe to create new art-research projects related to sea-level rise.



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www.unknownterritories.org

Link to the talk

<https://www.youtube.com/live/IlaNbS2YglU?si=JbYsNVc7jajdkYHR>

Chemical ecology of coral reef host-microbe interactions: The key to understanding coral (reef) health and functioning?

Dra. Claudia Pogoreutz

Université de Perpignan, France

Divendres, 7 de juliol de 2023

Summary

Tropical coral reefs are hotspots of marine biodiversity and productivity. Coral reef formation and functioning is attributed to their main ecosystem engineers, the reef-building corals, and their intimate symbiosis with intracellular dinoflagellate algae. This efficient nutrient-exchange symbiosis forms the functional foundation for the ecological success of coral reefs over millions of years. Unfortunately, the effects of global climate change increasingly undermine the benefits of this important symbiosis, resulting in a phenomenon commonly referred to as 'coral bleaching', which is responsible for the unprecedented large-scale degradation of coral reefs around the globe. In addition to the widely studied coral-algae symbiosis, a plethora of other microbes are associated with corals, including other microeukaryotes, prokaryotes, and viruses. While this 'coral microbiome' is proposed to contribute to the health, resilience, and adaptation of corals to global environmental change, we still have only a poor understanding of the potentially complex interactions of coral associated microbes with their hosts, with each other, and their implication for coral and reef functioning. As such, integrating chemical ecology approaches into traditional culture-dependent and Next-Generation 'omics' applications will help further our understanding of complex host-microbe and microbe-microbe interactions in corals, and may inform meaningful management actions to help coral reefs persist in the Anthropocene.

Brief biography

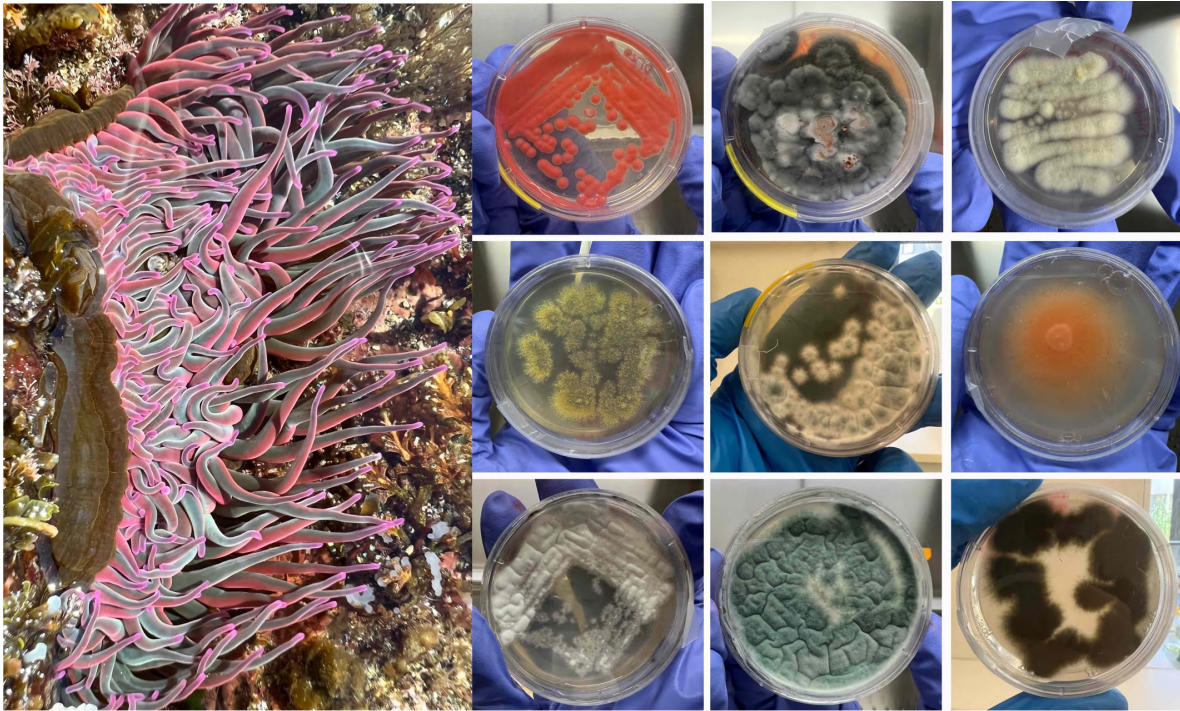
2013-2016 PhD in Marine Biology (University of Bremen, Germany): responses of coral ecophysiology, biogeochemistry, and the associated microbiome to excess organic carbon pollution.

2017-2019 Postdoc: King Abdullah University of Science and Technology (KAUST), Saudi Arabia; coral host-microbe interactions: the role of *Endozoicomonas* in host health and adaptation.

2019-2021 Postdoc: University of Konstanz, Germany; coral host-microbe interactions: the role of *Endozoicomonas* in host health and adaptation.

2021-2023: Postdoc: École Polytechnique Fédérale de Lausanne (EPFL), Switzerland; the role of osmoregulation in symbiotic nutrient cycling in Cnidaria.

Since 2023: TT Junior Full Professor at the CRIOBE, Université de Perpignan Via domitia, France: Molecular and Chemical Ecology of marine host-microbe interactions.



References

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Roik, A., Reverter, M., & Pogoreutz, C. (2022). A roadmap to understanding diversity and function of coral reef-associated fungi. *FEMS Microbiology Reviews*, 46(6), fuac028.

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<https://www.youtube.com/live/ptbkGTLKmP0?si=ZGSZJlqQ2DY8eqYm>

Mud volcanism, fluid flow and seismicity: new discoveries and results from recent expeditions in the Gulf of Cadiz

Dr. Walter Menapace

Departament de Geociències Marines, Institut de Ciències del Mar

Divendres, 8 de setembre de 2023

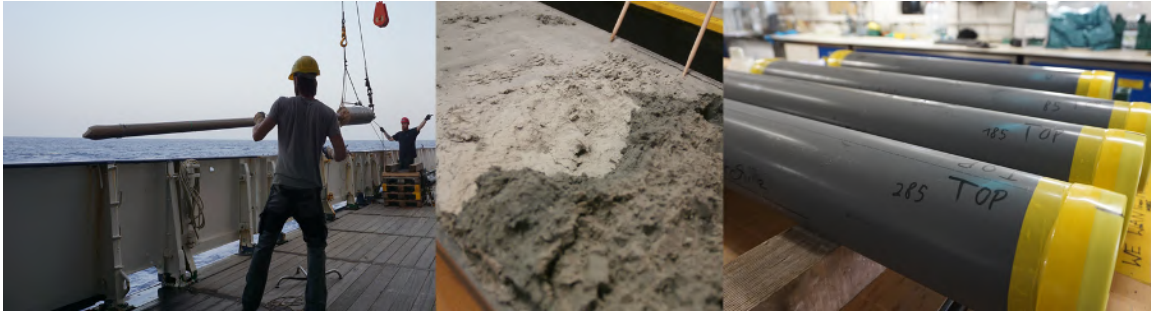
Summary

Mud volcanoes (MVs) are expulsion features ubiquitously present in areas of tectonic convergence both on land and on the seafloor. Due to their km-deep feeding channels, MVs are highly episodic structures, acting as valves to dissipate excess pore pressure building up at depth. Eruptions are deemed crucial to understand the regional geology and fluid-sediment interactions. However, the main drivers behind these sporadic bursts in activity still remain fairly obscure. It is hypothesized that different events can trigger MVs eruptions (e.g. gas accumulation, diagenetic processes, pore pressure build up), therefore originating a plethora of different effects with corresponding ejecta, channelled through the main conduits. Of all the MVs triggers, earthquakes (EQs) are the only ones for which a direct cause-effect relationship has been already established. The Gulf of Cadiz (GoC) is arguably one of the best playgrounds for the study of MVs and paleoseismology, due to the presence of an accretionary wedge with active fluid and solid expulsion structures (>90 MVs, at least three major transform faults, several pockmarks fields) and because of the numerous large magnitude EQs happened in the past, which are well preserved in the sedimentological record. Recently, three major seagoing expeditions led by MARUM (University of Bremen) and the ICM-CSIC set out to investigate the episodicity and nature of mud volcanism in the GoC, as well as its relationship with the tectonic and seismic history of the region. This talk will explore the main results from the aforementioned expeditions, which contributed to shed new light on the fluid and solid cycles of the SW Iberian Margin with an unprecedented level of detail, highlighting how a plethora of different processes is, in fact, fuelled by and contributing to the GoC mud volcanism.

Brief biography

Since his PhD at MARUM (University of Bremen), Dr. Menapace has been investigating different world regions affected by mud volcanism (Eastern Mediterranean, Gulf of Cadiz, Kumano Basin-Japan), mainly focusing on topics such as the activity of submarine MVs (mud volcanos) and their relationship with seismicity, but also aiming to explain the broader link between MVs and the subduction zone fluid and solid cycles. After his PhD, Dr. Menapace further expanded his knowledge on mud volcanism thanks to a DFG-related project where he studied, as PI, timing and evolutionary dynamics of the Mariana Forearc MVs following his participation to IODP366. In October 2020, Dr. Menapace was chief scientist onboard RV Meteor (M167) to retrieve long-term monitoring devices

left on the Atlantic seafloor during the M149, two years before. The data collected during these expeditions led to him to explore a new branch of marine science, i.e. turbidite paleoseismology, for which he was awarded a Marie Curie scholarship. Despite the early stage of his career, Dr. Menapace has participated to 10 expeditions at sea with 6 different RVs and has already been two-times chief scientist.



Different phases of sediments cores collection and description during a marine expedition in the Gulf of Cadiz with a German Research Vessel.

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Link to the talk

https://www.youtube.com/live/MacmGLDbErU?si=0kA_fwzDWZtrM7Rg

El CSIC en el Espacio Europeo de Investigación

Dra. Elena Domínguez

Delegación del CSIC en la UE, Bruselas

Dijous, 14 de setembre de 2023

Resumen

El Espacio Europeo de Investigación (ERA por sus siglas en inglés: European Research Area) es la ambición de crear un mercado único y sin fronteras para la investigación, la innovación y la tecnología en toda la UE. Iniciativa lanzada en el 2000 y con un intenso proceso de revitalización desde el 2018 que ha cristalizado en una agenda política 2022-2024 con acciones concretas. En el ámbito de estas acciones se desarrollan múltiples iniciativas enmarcadas en cuatro pilares de actuación. A lo largo de este encuentro se plantearán dichas acciones con especial énfasis en la reforma del sistema de evaluación de la investigación y las iniciativas que el CSIC está llevando a cabo.

Breve biografía

Directora de la Delegación del Consejo Superior de Investigaciones Científicas (CSIC) ante la UE en Bruselas desde Mayo 2021. Vicepresidenta de Relaciones Internacionales del CSIC en el periodo 2018-2021. Doctora en Farmacia. Catedrática de Química Analítica de la Universidad de Alcalá en Alcalá de Henares, 2002. Su carrera científica se centra en la Bioelectroquímica con especial interés en el desarrollo de sensores y biosensores químicos y su transferencia al sector empresarial. Co-fundadora de la start-up Ibersens Innova SL. Ha trabajado durante 4 años en el Chemical Centre de Lund (Suecia) como investigadora y 3 años en la Comisión Europea, en la Dirección General de Investigación e Innovación como Experta Nacional Destacada en el ámbito de las tecnologías medioambientales. En el periodo 2009-2017 ha sido presidenta de la Sociedad Española de Química Analítica.



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https://commission.europa.eu/system/files/2021-11/ec_rtd_era-policy-agenda-2021.pdf

<https://coara.eu>

The structure of subduction zones and its relevance on the dynamics of megathrust earthquakes

Dr. Manel Prada

Departament de Geociències Marines, Institut de Ciències del Mar

Divendres, 15 de setembre de 2023

Summary

The largest earthquakes on Earth occur along the megathrust fault in subduction zones. When these events reach the shallow portion of the fault, close to the trench, they generate large fault displacement (slip) and seafloor uplift, which in turn, triggers the generation of devastating tsunamis. The dynamics of these tsunamigenic (i.e. generate tsunamis) earthquakes are controlled, to a great extent, by the tectonic structure of the subduction zone and by the distribution of elastic rock properties of the upper plate. In this talk, Dr. Prada will highlight a set of ICM studies that explain the dynamics of megathrust earthquakes from geophysical observations and 3D numerical dynamic rupture simulation tools.

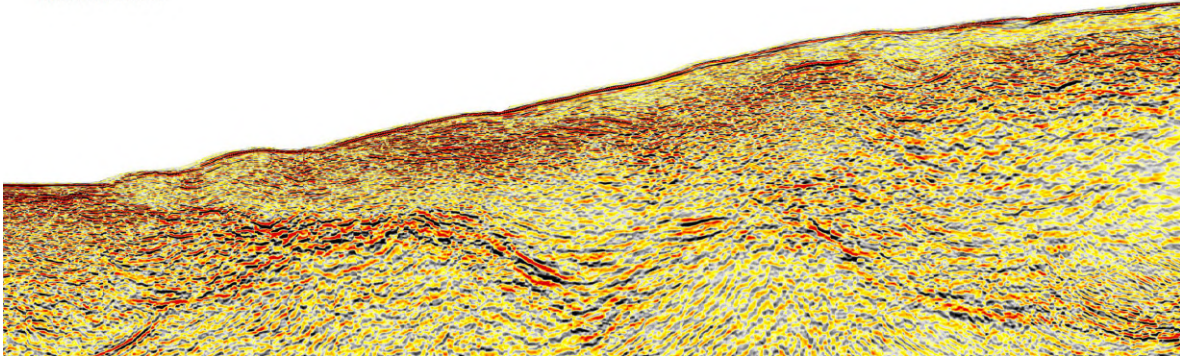
Brief biography

Dr. Manel Prada obtained his PhD in Marine Geophysics in 2014 from the University of Barcelona. After his PhD, he moved to Dublin where he spent 5 years at the Dublin Institute for Advanced Studies as a postdoctoral fellow. In 2019, he was awarded a Beatriu de Pinós postdoctoral grant at ICM and more recently, in 2021, he obtained a permanent position as a researcher in the same institution. His research interest focuses on the structure and formation processes of continental margins, and more recently on the main factors controlling the dynamic properties of megathrust earthquakes in subduction zones. To this end, Dr. Prada applies processing and modelling techniques to controlled-source seismic data sets recorded with ocean-bottom seismometers and/or multichannel seismic data to obtain the distribution of physical properties of the subsurface and integrate them into earthquake dynamic rupture numerical simulations.



The structure of subduction zones and its relevance on the dynamics of megathrust earthquakes

Manel Prada



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Link to the talk

<https://www.youtube.com/live/RmzRL2IB9pY?si=Bsd2HQLdO065W1qZ>

A Call to Science - Understanding fisheries, wildlife and ecosystem impacts in a new era of offshore wind development and marine industrialization

Andrew Lipsky

Northeast Fisheries Science Center, NOAA, USA

Dimarts, 19 de setembre de 2023

Summary

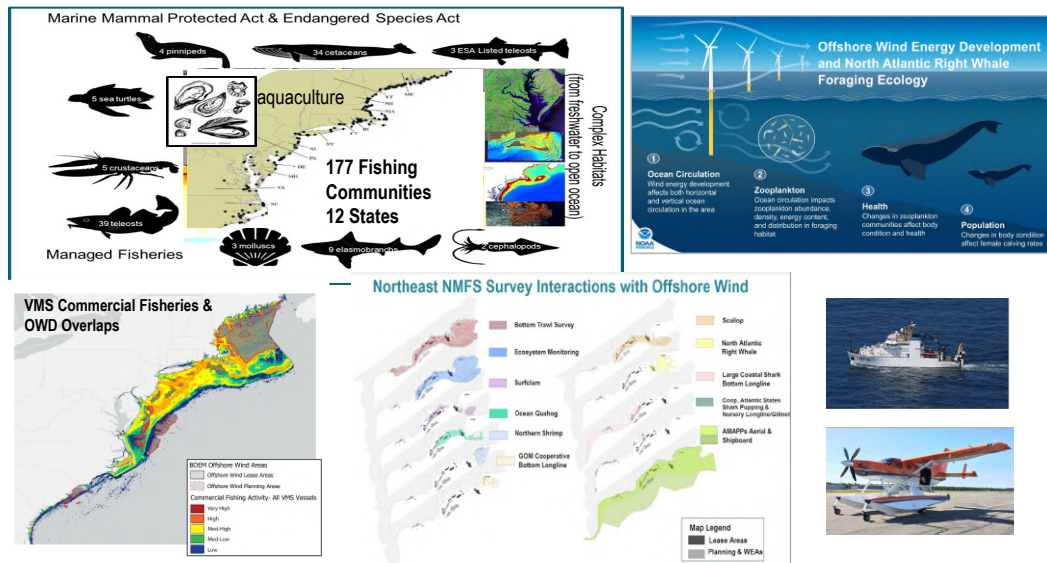
To meet state and federal renewable energy targets offshore wind development is rapidly expanding in the Northwest Atlantic, Gulf of Mexico, and Pacific regions of the United States. By 2030 to meet U.S. national goal of 30 gigawatts of energy, the Northeast large marine ecosystem will be occupied by over 2.4 million acres of leases, 3400 turbines, and 10,000 miles of submarine cables with an additional 18.87 million acres under consideration for further development. Offshore wind development is also scheduled for the U.S. Pacific coast and the Gulf Mexico. At a global scale, Europe, Asia, and North and South America will add over 177 gigawatts of cumulative offshore wind development over the next five years. This development will consist of a 3.5 fold increase in fixed turbine technologies in waters less than 60 meters and 68 fold increase of first of its kind floating offshore wind technologies in waters over 1,000+ meters in depth. This change may likely represent the greatest single marine industrialization event across our global oceans. The pace, scale, and scope of this development creates scientific demands for regulatory and scientific missions at NOAA Fisheries and our international partners. Addressing the interaction of wind on fisheries, fishing communities, wildlife, marine habitats, and ecosystems requires deepening our collaborations and for the international scientific community to urgently increase our scientific capabilities and to move to ecosystem based approaches if we are to be successful in meeting our mandates. This presentation will provide an overview of these scientific needs and how fishing communities, academic partners, managers and international scientific community can work together to meet them.

Brief biography

With over 25 years of fisheries experience, Andy has worked at the NGO, private industry, State, Tribal, and Federal levels. Andy joined NOAA and the Northeast Fisheries Science Center in 2016 and now serves as the Center's Offshore Wind Team Lead. In this role, he has overseen the Center's growing offshore wind science program to meet the scientific needs of the regulatory process, develop a federal survey mitigation program, and advance research on the interactions of offshore wind on NMFS trust resources. He currently co-chairs the ICES Fisheries and Offshore Wind Working Group composed of scientists focused on offshore and fisheries research in the North Sea,

Baltic, Mediterranean, and the Atlantic. Prior to joining NOAA, Andy served as a managing partner for SeaPlan, a private resource planning startup, where he led efforts to design and execute the first collaborative fisheries studies to evaluate the effects of the Block Island Wind Farm on groundfish and lobster resources and supported fisheries mitigation efforts. Andy began his federal career in 2002 as a fish and wildlife biologist with USDA's Natural Resources Conservation Service and from 2009-2011 served as USDA's ocean policy advisor to the White House Council on Environmental Quality. Andy began his fisheries career in 1992 working on endangered desert fishes in the Southwestern United States. He is a graduate of the USDA Graduate School leadership Development Program, holds an MS in natural resources sciences from the University of Rhode Island and a BA from the University of Vermont, and served as visiting researcher at Brown University.

Interactions of Wind on Northeast U.S. Fisheries Scientific Enterprise



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Link to the talk

https://www.youtube.com/live/HCCPRx_rdeg?si=u76M1EYRvf0Mntfh

Global ocean biogeography - latitude, depth, climate change, 20°C Effect

Dr. Mark Costello

Nord University, Bodø, Norway

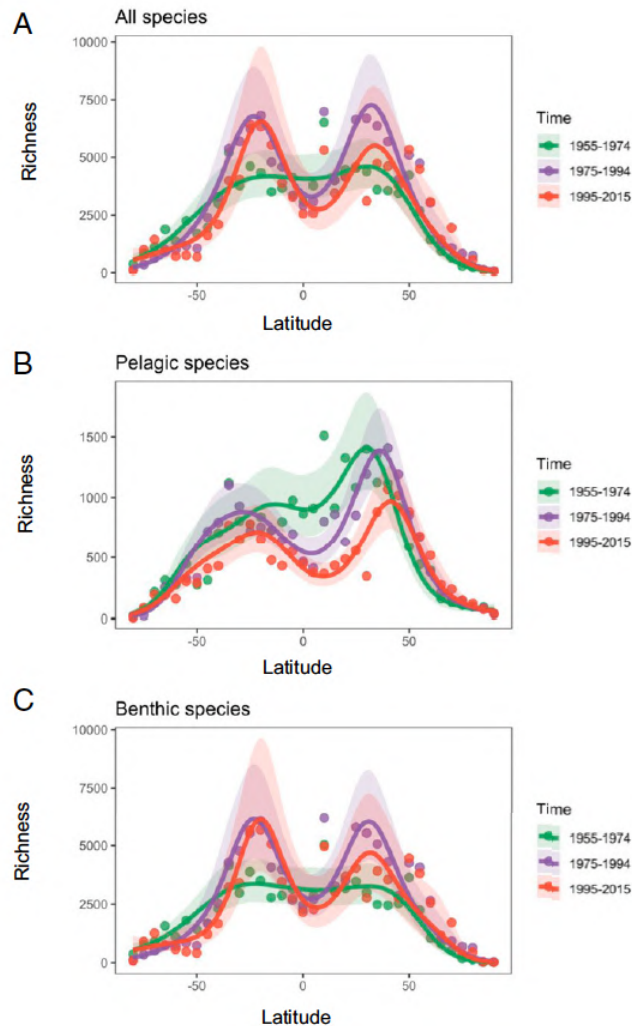
Divendres, 13 d'octubre de 2023

Summary

The extent of marine biodiversity is best understood in the context of knowing the geographic barriers to species dispersal and environmental gradients that limit species richness; i.e., biogeography. Trends in the discovery of species on Earth, including the ocean, indicate about two thirds of species have been named. Thus, we have a representative sample of ocean life. Maps of environmental variation and habitat explain why coastal seas have far greater species endemism and richness than the deep-sea. Analyses of latitudinal gradients show how temperature is the primary driver of marine species richness globally. This gradient is increasingly bimodal due to climate range shifts of species away from the equator, leading to a doubling of fish species richness in parts of the Arctic. Moreover, cell biochemistry energetics, across all Domains of life, shows that the optimal (most energetically stable and efficient) temperature for life is 20°C. There is evidence for this “20°C Effect” on biodiversity at ecosystem levels in the ocean. This suggests fundamental biochemical constraints to life being able to evolve to adapt to a warmer planet.

Brief biography

My interests are in biodiversity, biogeography and ecology, especially in the ocean, with applications in relation to nature conservation, climate change, invasive species, and aquaculture. I am from Kildare in Ireland. I studied in Galway (BSc Hon. Zoology NUIG) and Cork (PhD UCC), followed by postdoc's at the Marine Biological Association Plymouth, and jointly with the Marine Laboratory Aberdeen and Napier University Edinburgh (where I was based at Poolewe, a remote field station on the west coast). After being a lecturer in Trinity College Dublin for 6 years my group set up a research and consulting company called EcoServe (Ecological Consultancy Services Ltd) of which I was Managing Director. I was Executive Director of the Huntsman Marine Science Centre in St Andrews, New Brunswick, Canada for almost 4 years, and then became a professor at the University of Auckland, New Zealand until joining Nord University in 2020.



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<https://www.youtube.com/live/zWd9EyVoWP4?si=5u7xudZh6k1SsazX>

Unveiling ocean secrets: Utilising artificial radionuclides to decode Arctic and Atlantic circulation

Dra. Núria Casacuberta Arola

Institute of Biogeochemistry and Pollutant Dynamics, Laboratory of Ion Beam Physics,
ETH Zürich, Switzerland

Divendres, 20 d'octubre de 2023

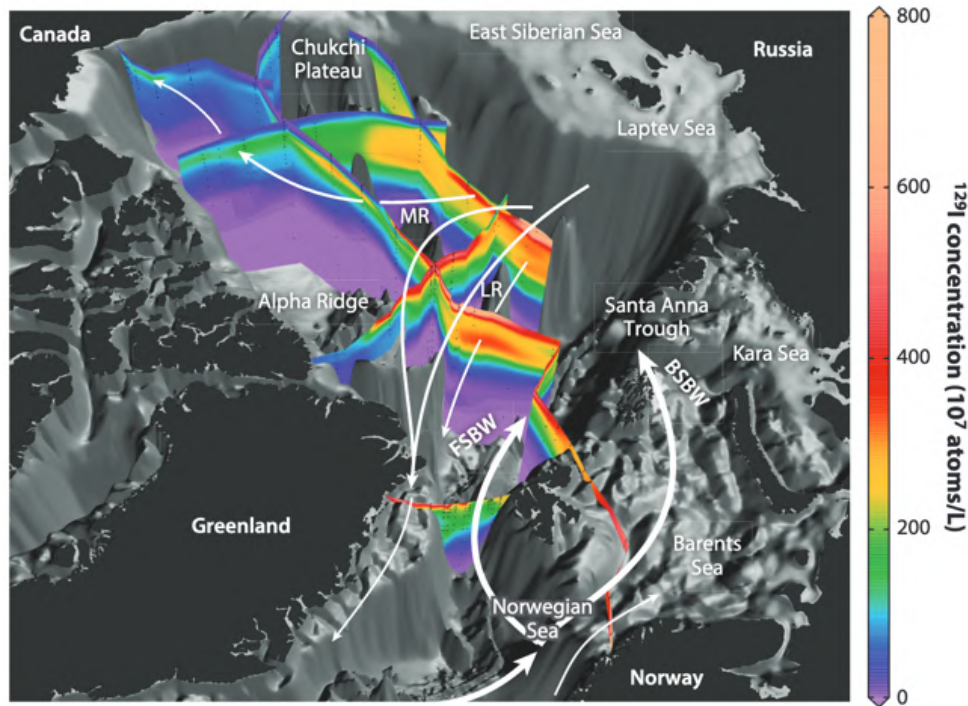
Summary

Radionuclides of both natural and artificial origin are very valuable tools to understand ocean circulation. In particular, anthropogenic radionuclides released from European nuclear fuel reprocessing plants enter the surface circulation of the high-latitude North Atlantic and are transported northward into the Arctic Ocean and Nordic Seas, thereby providing tracers of water circulation, mixing, ventilation, and deep-water formation. Recent work has benefited from advances in accelerator mass spectrometry to enable the measurement of the conservative, long-lived radionuclide tracers ^{129}I and ^{236}U , that added to the former use of ^{137}Cs . In addition, the naturally occurring ^{39}Ar and ^{14}C are re-emerging today as a powerful tracer pair to understand ventilation scales of deep (and old) waters in the central Arctic Ocean. Latest studies of these four tracers include the use of transit time distributions (TTDs) to accommodate circulation timescales and mixing, providing a rich inventory of transport data for circulation in the Arctic and North Atlantic Oceans that are of great importance to global thermohaline circulation. The employment of radionuclides as transient tracers serves the ultimate purpose of estimating the ocean's capacity to sequester greenhouse gases, such as anthropogenic carbon (C_{ant}), and thus monitoring the impact of climate change on the ocean. In this talk I will present a summary of the work we have been doing in the last decade at ETH Zürich, and the future plans within the TITANICA project.

Brief biography

I was born and raised near the sea in Barcelona and I graduated in Environmental Sciences at Autonomous University of Barcelona (2005), where I also obtained my PhD in 2011. My passion for the ocean was sparked when, already as a postdoc, I had the opportunity to join a research expedition to the Pacific Ocean to study the effects of the 2011 Fukushima nuclear disaster. In 2013 I was awarded an ETH postdoctoral fellowship to explore the potential of the long-lived ^{236}U as a new ocean tracer. Since then, I have been developing my scientific career in Switzerland. First, I worked in the Laboratory of Ion Beam Physics, a world leading group in the use and development of accelerator mass spectrometers. This allowed me to investigate the combination of several long-lived radionuclides (i.e. ^{236}U , ^{129}I and ^{14}C) to understand different processes and timescales in ocean

dynamics. Since 2021, I am an Assistant Professor at ETHZ and my research is based in the Department of Environmental Systems Science.



3D figure representing the distribution of ^{129}I in the Arctic Ocean and Fram Strait during several expeditions that took place between 2012 and 2016. Colors represent different concentrations of ^{129}I , expressed in 10^7 atoms/liter. FSBW stands for Fram Strait Branch Water and BSBW stands for Barents Sea Branch Water.

LR means Lomonosov Ridge and MR Mendeleyev Ridge.

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Link to the talk

<https://www.youtube.com/live/VJpiK48IMDM?si=DzYJ5fopcMJ4s-2W>

Climate Optimism, Pessimism and Hope

Dr. Marten Scheffer

Center for Water and Climate, Wageningen University, The Netherlands

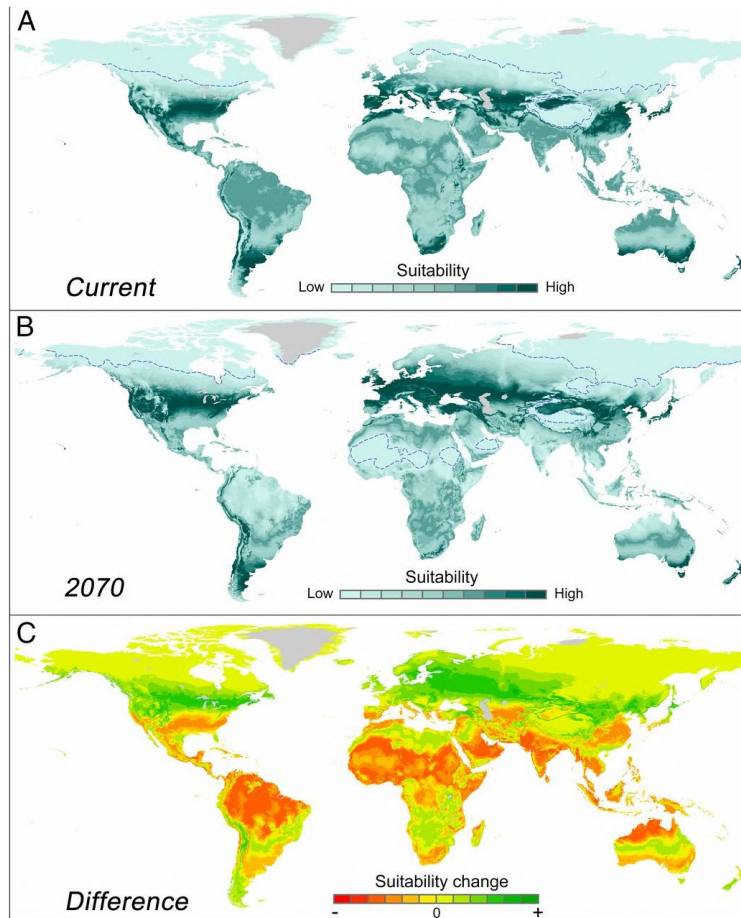
Dimecres, 25 d'octubre de 2023

Summary

As global warming proceeds the world will become a different place for many organisms. Climate niches shift towards the poles, and that is true for the human climate niche as well. We have shown that humans have stuck to the same preferred climate conditions for millennia. The good news is that this niche will not disappear. The bad news is that climate conditions will shift geographically. We have estimated that to keep humanity within the historical climate niche, ~three billion people would have to move by the end of the century. Unlike other species, humans have created borders that make such a form of climate adaptation challenging. But even the passport-free biomes of rainforests and coral reefs cannot easily move to a better place as the climate keeps warming. While some people have great faith in technological solutions, others are deeply pessimistic. Climate depression is increasing, especially among ecologists and their students. However, as I will argue, between pessimism and optimism there is a niche for something quite different: 'Hope'.

Brief biography

Professor Scheffer is a distinguished professor at Wageningen University (The Netherlands). He contributed significantly to the development of ecology by his theory of alternative stable states and abrupt shifts in ecosystems, but he also influenced the way we think about other complex systems such as the climate system and societies. Abrupt shifts can reshape complex systems. Such shifts represent critical transitions in the sense that they happen at tipping points where runaway change propels the system towards an alternative contrasting state. The work of Scheffer in helping us to understand and anticipate such transitions. First, he has spearheaded the research showing how catastrophic shifts in ecosystems work, invoking entirely novel approaches to the protection and restoration of a wide range of ecosystems. In a second wave of groundbreaking work, Scheffer has demonstrated that it is possible to anticipate critical transitions using universal principles that are valid across complex systems including not only ecosystems but also the climate and society. This work revealed that even if we do not understand a complex system, there may be ways to detect if it is close to a critical transition based of universal mathematical laws. Not surprisingly, the idea that there can be such generic early warning signals invoked broad excitement and quickly triggered an avalanche of follow-up publications including many articles in *Nature* and *Science*. Importantly, while tipping points in complex systems may imply risks of unwanted collapse, they can also imply opportunities for positive change. Marten Scheffer is an inspiring scientist, who repeatedly crosses and pushes back the boundaries between various scientific disciplines.



Projected geographical shift of the human temperature niche. Geographical position of the human temperature niche under the current situation (A) and the RCP8.5 projected 2070 climate (B). (C) Difference between the maps, visualizing potential source (orange) and sink (green) areas for the coming decades if humans were to be relocated in a way that would maintain this historically stable temperature distribution.

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Link to the talk

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Coexistencia

Ai Futaki

Mensajera subacuática, Embajadora del Océano por el Ministerio de Medioambiente de Japón

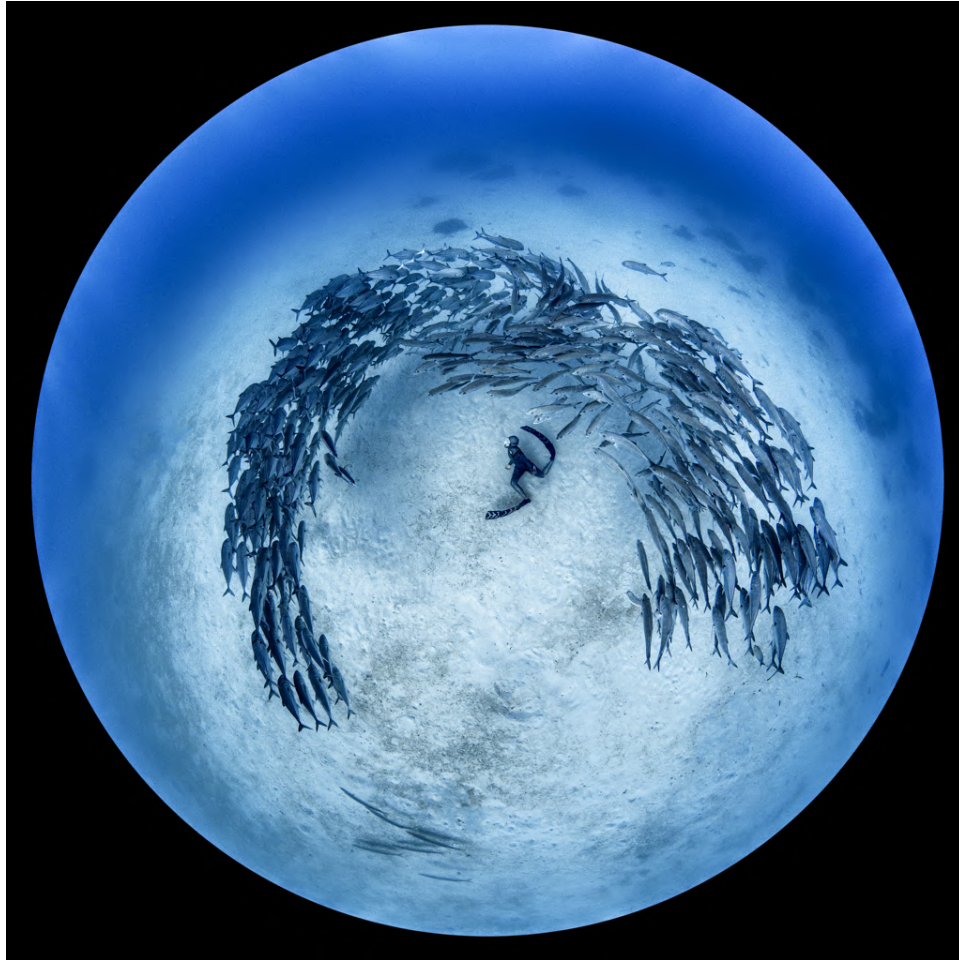
Divendres, 27 d'octubre de 2023

Resumen

Ai Futaki, que ostenta el récord mundial femenino de distancia buceada en apnea, nos visita para compartir su conocimiento y su perspectiva sobre los mares y océanos de todo el mundo, mostrando la cara y la cruz de un ámbito cuyo estado es cada vez más crítico, para el que los seres humanos constituimos su mayor amenaza. A partir de las sugerentes imágenes que capta en sus inmersiones, la submarinista y fotógrafa compartirá con el público sus vivencias y emociones en ecosistemas que es necesario preservar, poniendo de relieve en este contexto las ideas de sostenibilidad y responsabilidad.

Breve biografía

Nacida en Japón y doble poseedora del récord Guinness mundial de apnea, Ai Futaki es una de las pocas personas en el mundo que nos transmite el esplendor de los océanos de manera interdisciplinar. Ai forma realmente parte del mundo submarino. Representa el reino acuático de una manera nunca vista antes, resaltando el significado la expresión de la conexión Humano-Agua. Sus historias, películas e imágenes aparecen en programas de televisión, anuncios publicitarios o exposiciones en todo el mundo. Ha sido ponente de TEDx Tokio en varias ocasiones y ha participado en programas de la serie documental "Precious Blue" de NHK, además de colaborar con artistas como el diseñador Issey Miyake o la fotógrafa Isabel Muñoz. Su propia obra fotográfica ha sido exhibida en exposiciones como "Naka-Ima" (Aquí y Ahora) en Madrid y Tokio; o como su proyecto actual, "Coexistencia", el cual pudo visitarse en 2022 en el Instituto Cervantes de Tokio.



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<https://aifutaki.com/>

<https://aifutaki.com/gallery/tedxtalks/>

Link to the talk

<https://www.youtube.com/live/OSZRT6k-r1w?si=FiiyGhBMpoYqbDWE>

Hypatia I: la vida en simulació marciana

Laia Ribas, Carla Conejo

Departament de Recursos Marins Renovables, Institut de Ciències del Mar
Freelance: biòloga i comunicadora científica

Divendres, 3 de novembre de 2023

Resum

Hypatia I (<https://hypatiamars.com>) és un projecte de divulgació i ciència de nou dones catalanes, multidisciplinars, multigeneracionals i multisectorial, amb l'objectiu principal de promoure les dones i les nenes en l'àmbit de les carreres de ciència, tecnologia, enginyeria, art i matemàtiques (sigles en anglès: STEAM). La tripulació Hypatia I va estar seleccionada per a la Mars Society per conèixer a una estació anàloga de Mart, la Mars Desert Research Station (MDRS), al desert de Utah (Estats Units) durant 15 dies el mes d'abril del 2023. Durant la seva estada, cadascuna de les tripulants va desenvolupar els seus propis projectes de recerca. Els àmbits en que es desenvolupen els projectes d'Hypatia I són quatre: Astronomia, Enginyeria, Biologia i Comunicació. Les Drs. Ribas i Sabaté, explicaran les seves vivències durant la simulació marciana i els seus projectes de recerca desenvolupats durant la seva missió. Aquests van des de generació de bateries usant l'orina de les tripulants per a generar energia lumínica per a créixer germinats, fins a l'aqüicultura marciana i cerca de vida marciana. Durant els dos anys des del naixement de Hypatia I, s'han creat entre totes les tripulants 30 projectes de divulgació i recerca. Hypatia I s'ha fet possible gràcies a la captació econòmica de més de 36 patrocinis i col·laboracions.

Breu biografia

Laia Ribas (Terrassa, 1979) va defensar la seva tesi doctoral a la Universitat Autònoma de Barcelona (UAB) l'any 2006 gràcies a una beca predoctoral atorgada per la Generalitat de Catalunya. En la seva tesi doctoral, va estudiar l'estrès i les respostes immunes en peixos per tal de trobar marcadors per a la millora de la producció aquícola. Va aprendre eines genòmiques, que li van permetre obtenir un postdoctorat a l'Imperial College de Londres per estudiar la resposta immune dels amfibis a les infeccions per fongs. Al seu retorn, va començar a treballar en reproducció de peixos a l'Institut de Ciències del Mar de Barcelona. Des de 2017, Laia Ribas lidera el seu propi grup de recerca (Repro Immune Team, RIT) per estudiar la interacció entre els sistemes immunitari i reproductor dels peixos, per millorar l'aqüicultura. Des de l'any 2020 està interessada en la ciència relacionada amb la biologia espacial, en particular en Life Support System. Laia Ribas aposta per la difusió de la ciència liderant projectes i publicant articles de divulgació i per impulsar la igualtat de gènere en el àmbit científic.

Carla Conejo González (Lleida, 1993) és biòloga i comunicadora científica. És graduada en Biologia Humana i màster en Indústria Farmacèutica i Biotecnològica per la Universitat Pompeu Fabra. També ha realitzat estudis de postgrau en Comunicació Científica a la Universitat de Vic –

Universitat Central de Catalunya, i en Catalització de la Innovació a la Barcelona School of Management. Durant la seva carrera com a investigadora, ha fet recerca en neurobiologia al Centre de Regulació Genòmica i a la Universitat de Bolonya. Des del 2015 es dedica a la comunicació científica, liderant nombroses iniciatives per acostar la ciència a la societat i fomentar les vocacions científiques entre els i les joves. Ha estat responsable dels programes de ciència de la Fundació Catalunya La Pedrera fins al 2022. Ha treballat en els programes de divulgació científica Quèquicom i Xplorers de TV3. Ha participat en projectes editorials de divulgació en àmbits com l'astrofísica i la psiquiatria. Ha cofundat l'aplicació de turisme científic Polaris, així com l'Associació Hypatia Mars, que pretén visibilitzar el paper de la dona en la ciència.



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Link to the talk

https://www.youtube.com/live/Kvr_Jt87tVc?si=BxqUP0LXZBjPKmZ7

Navigating uncharted oceans with biomolecular simulations

Dr. Francesco Colizzi

Departament de Biologia Marina i Oceanografia, Institut de Ciències del Mar

Divendres, 10 de novembre de 2023

Summary

Molecular simulations serve as a computational microscope to observe and characterize key processes in biology, material sciences, and assist molecular design campaigns. Simulations have proven valuable in deciphering functional mechanisms of biomolecules, in uncovering the structural basis for disease, and in the design of novel therapeutics and biotechnological solutions. Whereas molecular simulations have dramatically impacted the advancements of the biomedical field, their applications in marine sciences have been traditionally overlooked. The recent advancements in protein structure prediction by deep learning are however unlocking new avenues for their application. During this seminar I will present, in a very general way, some recent work to understand the working of plastic-degrading enzymes, and I will provide a personal perspective on the future of molecular simulations in marine sciences, skimming molecular ecology, evolution and intrinsic water properties.

Brief biography

The central theme of my research revolves around unraveling the connections between the structure, dynamics, and functions of various molecular systems, using primarily biomolecular simulations. These systems span from small organic molecules and pharmaceutical ligand-target complexes to complex protein-protein assemblies and large nucleic-acid processing machinery. My scientific journey has taken me through different geographical and thematic domains, and I have traversed fields such as drug discovery, computational chemistry, computational biophysics, and ultimately enzyme engineering. This diverse experience has enriched my ability to amalgamate knowledge from diverse disciplines, facilitating the development of interdisciplinary projects. Currently, my focus is on addressing questions related to plastic-degrading enzymes. In 2021, I joined the ICM-CSIC and I started discovering the wonders of marine research. It was at this juncture that I established a biomolecular simulations framework that I affectionately refer to as the "Molecular Ocean Lab". In 2022, I secured a permanent position at CSIC.



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Link to the talk

https://www.youtube.com/live/knpupTfl2cE?si=__m7wfhLC_A24ZoB

Impacts of wildfire ash deposition on marine biogeochemistry

Dr. Joan Llort

Barcelona Supercomputing Center

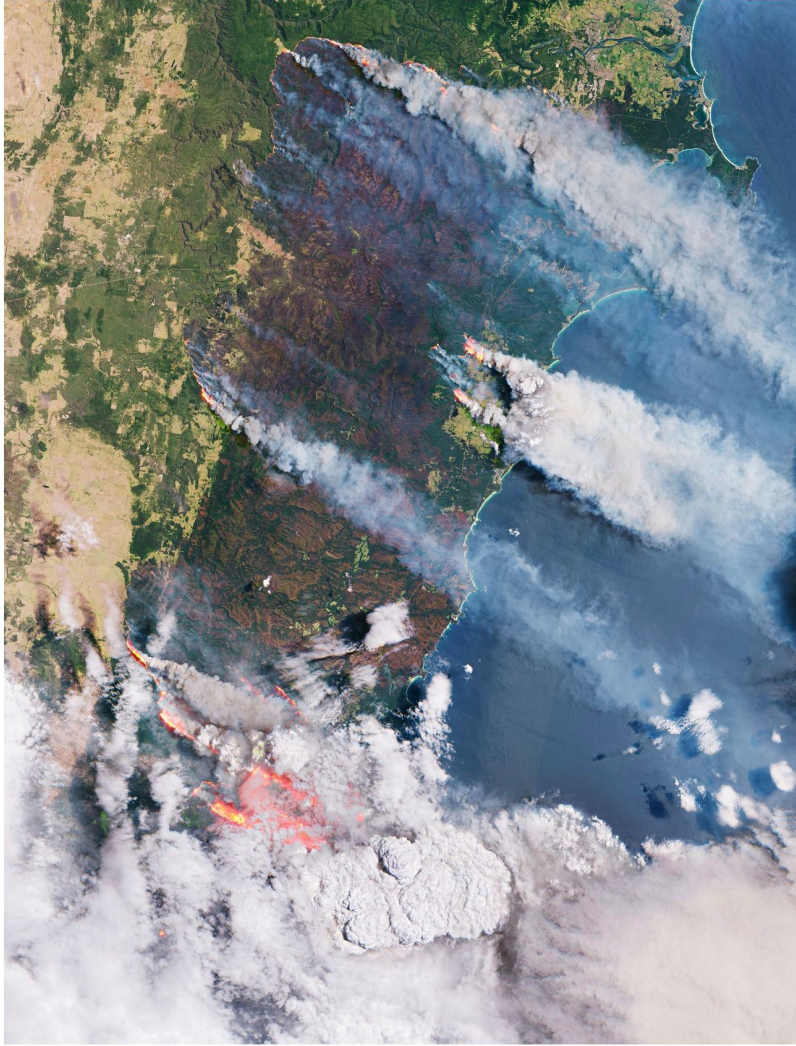
Divendres, 17 de novembre de 2023

Summary

Droughts and warming are leading to more frequent and intense wildfires worldwide. Modelling studies suggest that aerosol emissions from wildfires can lead to the atmospheric transport of bio-essential trace metals. Several observational pieces of evidence have recently shown the boost of marine primary production after the deposition of wildfire aerosols. Yet only a few studies have focused on the dissolution of wildfire ash compounds in seawater and its interaction with marine organic compounds at plankton-relevant scales. These aspects are critical to characterising ash's impact on marine primary production and its potential to influence the biological carbon pump. In this seminar, I will present a state-of-the-art of the topic, emphasizing the observational studies published so far and the disparities of responses observed. I will then describe my project PYROPLANKTON, and detail some of its results. In particular, I will present the ambitious mesocosm experiment we conducted in July 2022 to analyse the impact of wildfire ash on marine ecosystems. I will share some of the results from this experiment and the ongoing observational and modelling work of PYROPLANKTON.

Brief biography

Joan Llort is a marine biogeochemist working at the Barcelona Supercomputing Center in Spain. He obtained his PhD at Sorbonne Université, under the supervision of Dr. Marina Lévy (LOCEAN-IPSL) and, after that, he spent more than 3 years at the Institute for Marine and Antarctic Studies (IMAS) in Tasmania, Australia. Joan is an expert in marine primary production variability and the dynamics of the biological carbon pump using models and in-situ and remote observations, with a particular focus on iron-limited oceans. He is currently focused on the impacts of aerosol deposition on phytoplankton and carbon export and is leading the project PYROPLANKTON, funded by the ESA and the BSC, which aims at generating a mechanistic understanding of the impact of dust and wildfire aerosol on the marine carbon cycle. In addition, Joan is the chair of the Early Career Scientists Committee of SOLAS and is actively involved in collaboration with artists to explore new ways of communicating and interpreting scientific data.



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Link to the talk

<https://www.youtube.com/live/QasUWpVb01c?si=6ydzC9VAxh1ZTMkA>

Nous horitzons en la recerca dels desbordaments d'aigua a través de les geociències marines. El projecte FAR-DWO

Drs. David Amblàs i Anna Sanchez-Vidal

Facultat de Ciències de la Terra, Universitat de Barcelona

Divendres, 24 de novembre de 2023

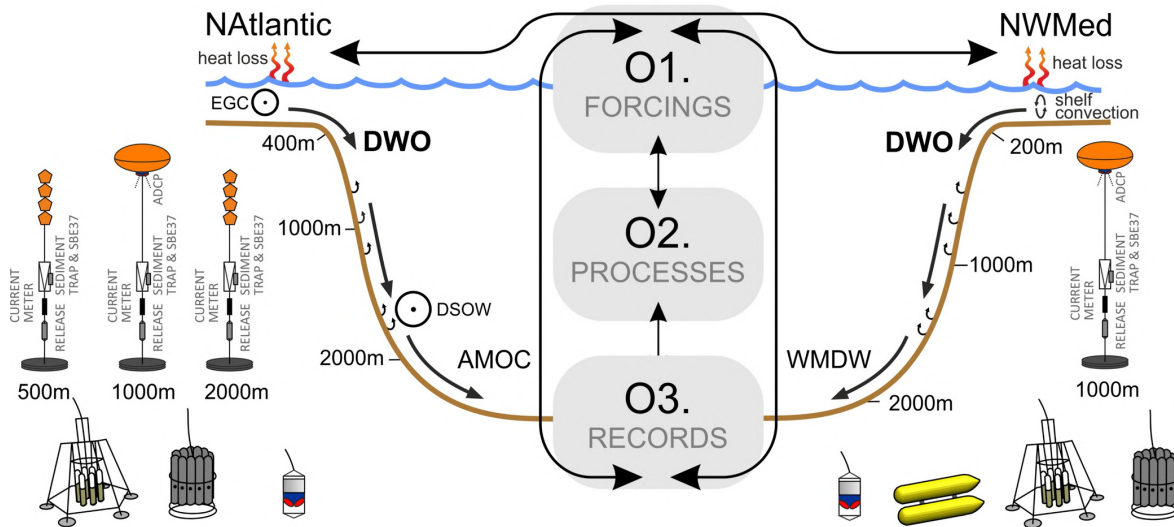
Summary

Dense water overflows (DWOs) play a vital role in deep-ocean ventilation, contribute to the global thermohaline circulation, and facilitate large-scale transfer of energy and matter, including sedimentary particles, organic carbon, and pollutants. The substantial volumes involved in DWOs can result in significant sediment transport and erosion, impacting deep-sea ecosystems. In this talk we will present the FAR-DWO project that aims to advance understanding of DWO behaviour and its extensive impacts. This is being achieved by intensifying, amplifying, and diversifying the monitoring efforts that the GRC Geociències Marines (Universitat de Barcelona) has been doing in Cap de Creus Canyon (CCC) during almost two decades, together with colleagues at ICM and CEFREM, while concurrently monitoring DWOs in the Denmark Strait (DS) in the North Atlantic Ocean. The two target zones, one temperate (CCC) and one polar (DS), provide an ideal framework to investigate the physical and biogeochemical evolution of DWOs, given their pivotal roles in the oceans' thermohaline circulation systems. Beyond studying present-day DWOs, FAR-DWO aims to analyze their variability in response to ongoing and past climate changes. This involves examining historical observations, reanalyzing ocean and atmospheric models, and utilizing sedimentological and geochemical proxies in marine sediment cores to reconstruct the physical and biogeochemical evolution of DWOs in DS and CCC under key past climatic scenarios.

Brief biography

Anna Sanchez-Vidal is a marine biogeochemist. Her research career has been centred on the role that particles play in the biogeochemical cycling of major and minor elements in the ocean. Based on a detailed geochemical characterisation of marine snow and the seabed (bulk geochemical composition and stable isotopes, lipid biomarkers, trace elements), and the understanding of the external (climatic/meteorologic) and internal (oceanographic) forcing conditions, her major research achievement has been the understanding of the natural drivers that control sediment transfer and the functioning of deep ecosystems. In addition, during the last decade she focuses on the study of the impact of anthropogenic activity on marine ecosystems, including persistent organic pollutants and plastic pollution. Since 2017, she is associate professor at the University of Barcelona's Department of Earth and Ocean Dynamics, following a Ramon y Cajal research contract from 2012 to 2017. **David Amblàs** is a marine geoscientist specialized in seafloor geomorphology, hydrosedimentary

processes, and underwater acoustics. His expertise lies in the integration of data and insights obtained through interdisciplinary fieldwork, laboratory experiments, and numerical modelling to explore the interplay between oceanography and geology across diverse temporal and spatial scales, from seconds to geological times and from centimeters to margin-scales. He has taken a leading role in Spanish and European projects focused on examining the seafloor imprint of dense water overflows in key regions such as the Southern Ocean, Mediterranean and North Atlantic. Since 2018, he is associate professor at the University of Barcelona's Department of Earth and Ocean Dynamics, following a postdoctoral contract at the Scott Polar Research Institute, University of Cambridge (UK) from 2016 to 2018.



References

See the objectives of the FAR-DWO project and the Storymap of the cruise done at the Denmark Strait, during the summer of 2023, aboard the RV Sarmiento de Gamboa, at the following address: <https://arcg.is/1i0jiz2>

Link to the talk

<https://www.youtube.com/live/Kp7f5bQ1QrA?si=nw6BgydGo5gmBPSP>

Fins on hem arribat amb el nostre GEP?

Assoliments i reptes de futur

Dres. Esther Garcés i Sílvia Donoso

Institut de Ciències del Mar

Divendres, 1 de desembre de 2023

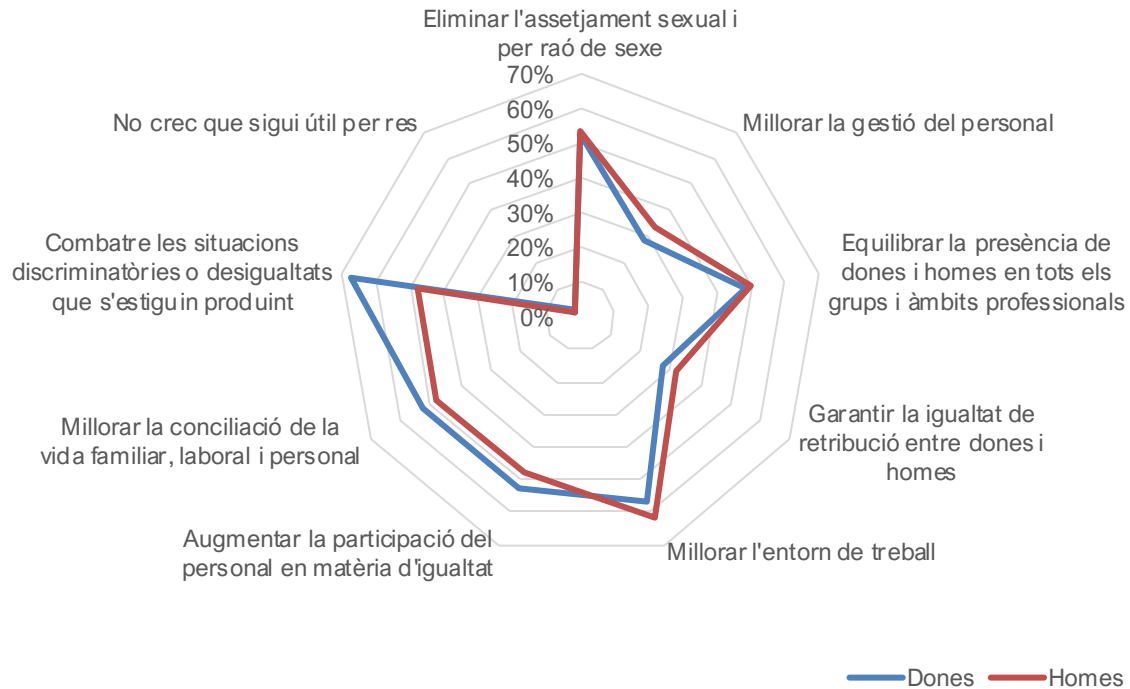
Resum

El projecte europeu LeTSGEPs, que tenia com a objectiu connectar diferents organitzacions de recerca i universitats en el disseny i implementació de plans d'igualtat de gènere (GEP) finalitza al desembre 2023. Amb aquesta motiu ens hem avaluat col·lectiva i individualment. El consorci ha fet assoliments importants i comptem amb bones pràctiques que han quedat recollides en un Manual que tot just acabem de publicar. Els assoliments de l'ICM són més que significatius. Moltes de les mesures implementades han estat transformadores i han propiciat canvis institucionals sistèmics que estan contribuint a reduir els biaixos de gènere al centre. Comptem amb noves eines i instruments, com per exemple el protocol per a l'abordatge de l'assetjament sexual i per raó de sexe, la Guia de llenguatge inclusiu, un equip amb capacitats reforçades en matèria de gènere, i procediments institucionalitzats que garanteixen la igualtat d'oportunitats (convocatòries SO) entre d'altres. Amb el nostre GEP ens hem posicionat com a referents per a altres ICUs del CSIC (hem fet al voltant de 30 assessoraments) i col·laborem amb altres nombroses organitzacions de l'ecosistema de recerca nacional. També queden reptes pendents. Hem de dur a terme l'anàlisi de la bretxa salarial de gènere i finalitzar el manual per a la integració de la variable sexe/dimensió de gènere als continguts de la recerca. Tenim un repte més gran, garantir la sostenibilitat de les intervencions i avançar cap a un GEP més interseccional i inclusiu.

Breu biografia

Esther Garcés. Doctorat en Biologia. Actualment sóc investigadora a l'ICM, dirigint el grup de recerca Processos Biològics Litorals des del 2013. Com a biòloga marina, els meus interessos són la dinàmica del plàncton en els sistemes costaners i els efectes ecosistèmics de les seves proliferacions. Paral·lelament a l'activitat científica, estic molt involucrada en la igualtat de gènere a l'ICM, liderant el grup de treball sobre igualtat i el projecte LeTSGEPs de la UE SWAFS per al CSIC i participant en RESBIOS, centrat en la investigació responsable i la innovació en ciències marines.

Sílvia Donoso. Doctora en Antropologia Social i màster en Polítiques de Gènere i Igualtat entre Dones i Homes. Tinc una llarga experiència en la formulació i avaluació de polítiques i plans d'igualtat destinats a erradicar la discriminació per raó de sexe i promoure la igualtat d'oportunitats entre dones i homes en el mercat laboral per a administracions públiques, empreses, organitzacions socials i diferents organismes internacionals. Com a experta d'Igualtat de Gènere de LeTSGEPs, estic plenament implicada en la formulació del pla d'igualtat de gènere de l'ICM.



Il·lustració. Percepció sobre les avantatges de tenir un Pla d'Igualtat de gènere

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Link to the talk

https://www.youtube.com/live/Or_4VELsbiY?si=ZKoY4tRyaSkVuTxM

Climate and fisheries: Decadal-scale bottom-up control in the Northwest Atlantic

Dr. Frédéric Cyr

Fisheries and Oceans Canada

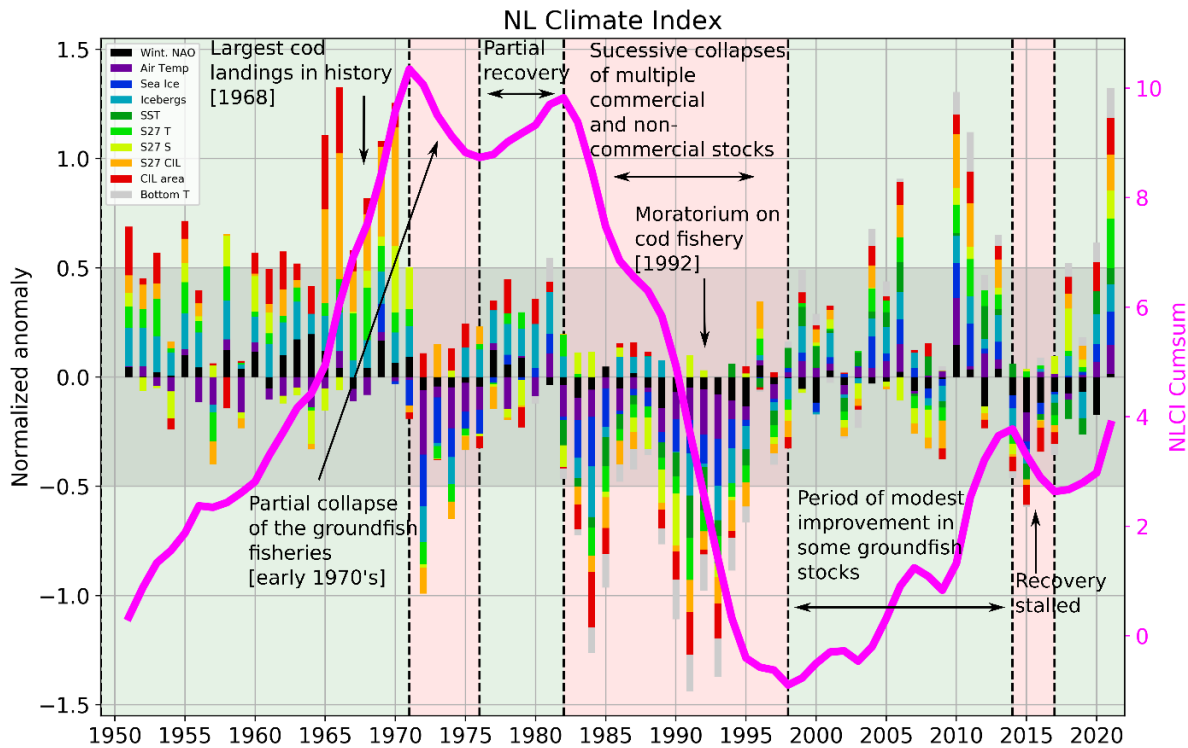
Divendres, 15 de desembre de 2023

Summary

Sustainable fisheries management requires an understanding of the links between environmental conditions and fish stock populations, especially in the context of climate change. However, governments often fall short of explicitly incorporating knowledge of environmental conditions into fishery decision-making processes. Identifying phases where ocean climate fluctuations and changes in ecosystem productivity coincide could provide a powerful tool to help inform fisheries management. For example, setting more conservative extraction targets, or ecosystem quotas, during periods when environmental conditions are deemed less favorable for productivity is an easy and immediately applicable solution. Conversely, in periods of more favorable conditions strict conservation efforts might be relaxed. Using 70 years of climatic data from the Newfoundland and Labrador (NL) ecosystem and the northwest Atlantic as a whole, we document a series of turning points in the environment that also correspond to shifts in ecosystem productivity from primary producers to piscivorous fish. We provide a framework for incorporating environmental conditions into fisheries management on the NL shelf, that can be applied to other regions and ecosystems facing similar challenges.

Brief biography

Dr. Frédéric Cyr is a multi-disciplinary physical oceanographer with strong research interests in physical-biogeochemical interactions, ocean climate and fisheries. He works as a research scientist for Fisheries and Oceans Canada (DFO), based at the Northwest Atlantic Fisheries Centre in St. John's, Newfoundland. He holds a B. Eng. degree in Engineering Physics (Montreal Polytechnic, Canada, 2008), a MSc in Climate Sciences (UVSQ, France, 2008) and a PhD in Oceanography (ISMER-UQAR, Canada, 2014). After postdocs in the Netherlands (NIOZ) and France (MIO-AMU), where he explored topics as broad as Turbulent Mixing and Ocean Chemistry, he joined DFO in 2017 and now mainly focuses on the Northwest Atlantic ocean climate. His research activities are strongly related to DFO's Atlantic Zone Monitoring Program (AZMP) which aims to provide environmental considerations in support of fisheries sciences and management.



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Link to the talk

<https://www.youtube.com/live/VSJ8eBe7Be0?si=a3vgySPAoGrI34Ff>