

Simposio Internacional: **El Ártico: oportunidades y riesgos derivados del cambio climático**

Madrid, 12 de noviembre de 2015

*International Symposium: **The Arctic: opportunities and challenges deriving from climate change***

Madrid, November 12, 2015

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PANEL 1: LA CIENCIA ANTE EL DESHIELO DEL ÁRTICO: PRINCIPALES HALLAZGOS

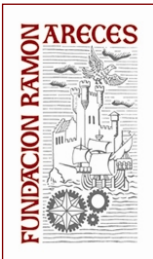
- **Hielo marino y clima / *Sea Ice and Climate*, JULIENNE STROEVE**

The decline in sea ice is one of the most striking examples of a changing Arctic. Since the late 1970s, ice extent has declined during all calendar months, with the largest reductions at the end of the melt season. This ice loss has been accompanied by a shift from thick multiyear ice to more easily navigable first-year ice. If current trends continue, the Arctic will transition towards a seasonally ice-free Arctic state, with the prospect of opening up new shipping lanes, extraction of oil and gas from previously inaccessible regions and increased national security concerns. In addition, Arctic warming from loss of sea ice may impact on mid-latitude weather patterns. While these changes are in qualitative agreement with hindcast climate model simulations forced with observed changes in greenhouse gases, models remain conservative with respect to ice loss and fail to capture processes important to the evolution of the ice cover. Nevertheless, climate models provide valuable insights into the future evolution of sea ice and its direct coupling with increasing greenhouse gas emissions. A binding treaty that keeps global CO₂ emissions on par with a 2 degree warming by the end of this century could help to avoid complete loss of Arctic summer sea ice.

- **Los glaciares, las capas de hielo y el nivel del mar / *Glaciers and Ice Sheets and sea level*, FRANCISCO NAVARRO**

La pérdida de masa de los glaciares y mantos de hielo, por fusión o por descarga al océano en forma de icebergs, es actualmente uno de los mayores contribuyentes a la subida del nivel del mar, que se estima en 3,2 mm/año durante el periodo 1993-2010. El quinto informe del Panel Intergubernamental de Cambio Climático (IPCC), de 2013, atribuye a la pérdida de masas de glaciares y mantos de hielo el 48% de las contribuciones estimadas al aumento del nivel del mar, superior a la expansión térmica del océano, que contribuye con el 39%, estando el restante 13% atribuido a las variaciones en el almacenamiento de agua en tierra (presas, lagos y ríos, aguas subterráneas).

Aunque la multitud de pequeños glaciares y casquetes de hielo situados en las regiones de alta montaña y en amplias zonas del Ártico contiene un volumen de hielo más de 100 veces menor que el almacenado en los grandes mantos de hielo que cubren Groenlandia y la Antártida, su contribución actual a la subida del nivel del mar es superior (27% vs 21%), debido a su respuesta



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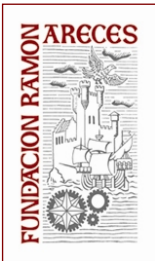
más mucho más rápida al calentamiento climático. Análogamente, aunque el manto de hielo de Groenlandia contenga un volumen de hielo más de 10 veces inferior al de la Antártida, su contribución actual a la subida del nivel del mar es ligeramente superior (11,5% vs 9,5%). Analizaremos en esta conferencia las contribuciones actuales al aumento del nivel del mar, con énfasis en las de los casquetes de hielo en el Ártico insular y Groenlandia, así como sus previsiones de evolución hasta finales del siglo XXI. Destacaremos las problemáticas que presentan las distintas técnicas de observación y plantearemos los desafíos a los que se enfrentan los modelos numéricos en los que se basan las predicciones de evolución futura.

- **Impactos globales y regionales de un permafrost cambiante/ *Global and regional impacts of a changing permafrost environment*, GONÇALO VIEIRA**

Permafrost is the ground that remains frozen for periods of over two years, but more frequently, for thousands or even hundreds of thousands of years. It occupies more than 20% of the continental area of the Northern Hemisphere, most of the ice-free areas of Antarctica and many mountain areas from the high latitudes to the tropics. Even submerged continental shelves in the high latitudes still host permafrost, which is a relic from the last glaciation, when the sea-level was some 120 m lower than today. Permafrost is therefore a central element of the Arctic terrestrial environments, but also influences marine areas.

Permafrost science has been a strong research topic for decades, but in the last 20 years it has experienced a significant increase in interest and today permafrost is one of the hottest topics in Global climate research. The Global Climate Observing System (GCOS) acknowledges permafrost and the active layer as Essential Climate Variables due to their major influence in the biogeochemical cycle of carbon. In fact, the upper layers of Arctic permafrost have been active sinks of organic carbon for thousands of years, with organic matter derived from vegetation rapidly becoming integrated in the frozen ground. However, following the atmospheric warming of the last decades, permafrost temperatures increased and in many regions permafrost started to warm and even to thaw. From sink, permafrost regions became sources of carbon. Organic matter that was once frozen is becoming available for decomposition by microorganisms, giving origin to an increase in methane and carbon dioxide fluxes from the ground to the atmosphere. Such processes induce a positive feedback in the climate system, since warming is inducing thaw and an increase in greenhouse gases, which further contribute to a stronger warming. Besides the complex interactions with the atmosphere affecting the whole planet, the changing Arctic permafrost environment also impacts ecosystems, the hydrological cycle, geomorphic dynamics and infrastructure.

Arctic permafrost is changing and this talk aims at providing a first insight into its characteristics, dynamics, recent advances and challenges in permafrost research.



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PANEL 2: EL DESHIELO DEL ÁRTICO: LA VERTIENTE JURÍDICO POLÍTICA INTERNACIONAL

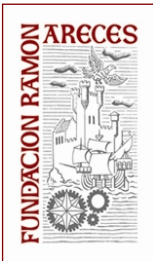
- **El Ártico cambiante: implicaciones para la gobernanza y la población / *The changing Arctic: Implications for Governance and People*, DAVID SCOTT**

Unlike the Antarctic continent, the Arctic is an ocean surrounded by continental landmasses and sovereign states; the governance of the two polar regions are therefore fundamentally different. Growing recognition that with warming comes a decline in sea ice has led to an increased interest in the resource potential of the region, creating expectations globally, and concerns locally. International markets and national economies are currently fragile, reducing enthusiasm for economic development in the region, at least in the short term. This provides an opportunity for deeper consideration of local interests and aspirations, specifically those of indigenous peoples of the Arctic. In Canada, as a result of a series of modern, constitutionally protected land claims agreements, Arctic peoples have a greater voice in where and how development activities can take place, and how local people will benefit and risks will be reduced. In the offshore, Arctic states are advancing their knowledge of the natural extensions of their submerged continental land masses, and will use it to inform dialogue where sovereign rights interests overlap. In the open ocean areas, multilateral approaches will continue to emerge and gain strength, creating opportunity and demand for new knowledge of these areas and their possible resources. Application of the knowledge must be used to inform decisions that will have profound implications, locally as well as globally.

- **El papel de las poblaciones indígenas en la gobernanza del Ártico/ *Indigenous peoples role in the governance of the Arctic*, TIMO KOIVUROVA**

This presentation will look into the role of indigenous peoples in their home region. It is important to first review what in general is the status and role of indigenous peoples in the Arctic region. Particular emphasis will be laid on what is the role of indigenous peoples in the Arctic governance in general, given that Arctic indigenous peoples have a special status in the Arctic Council as permanent participants. Here it is of interest to examine the role of transnational indigenous peoples, in particular the Sami and Inuit. Currently, Sweden, Finland and Norway are negotiating the so-called Nordic Sami Convention, which, if negotiated successfully, will guarantee the self-determination of Sami. Inuit Circumpolar Council has issued declarations by which the organization tries to influence Arctic international co-operation.

- **El interés de la Unión Europea en el Ártico/ *EU interests in the Arctic*, MAR CAMPINS**



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La UE ha manifestado tradicionalmente un interés periférico hacia la región del Ártico (carece de línea costera con el Océano Ártico y solo parte del territorio de tres de sus Estados miembros forma parte de la misma) Sin embargo, su ampliación hacia el norte del continente a partir de 1994 abrió a la organización a los nuevos retos que afronta esta región, principalmente los de carácter geoestratégico y político propiciados por el cambio climático. Desde entonces, son diversos los ámbitos que se han abordado desde la UE: la exploración y explotación de los recursos naturales, la protección ambiental, la defensa y la seguridad, la pesca y la captura de mamíferos marinos, la cooperación científica y cultural o la protección de los pueblos indígenas. Ahora bien, la aproximación que la UE ha hecho hasta ahora a la región ártica sigue siendo poco sistemática y abundante en limitaciones. Además, para confirmar su presencia en los foros árticos y sub-árticos debe circunscribirse necesariamente a las competencias que le han otorgado los Tratados.

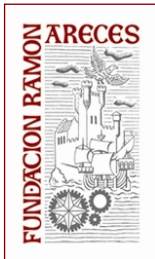
PANEL 3: ¿UN MUNDO DE NUEVAS OPORTUNIDADES O DE RIESGOS?

- **Navegación trans-ártica: causas y obstáculos / *Trans-arctic shipping: Drivers and obstacles*, ARILD MOE**

Trans-Arctic shipping is not a new phenomenon. The two existing passages, the Northeast Passage (NEP) and the Northwest Passage (NWP) are both intriguing and tempting for international shipping, since their usage would reduce the sailing distance between ports in Europe and Asia and between the US East Coast and the Pacific considerably. However, neither passage has so far become important in international shipping. Nevertheless, the prospects must be re-assessed in light of new circumstances in the Arctic, especially the changing sea ice situation. Focus in this presentation will be on NEP as the most relevant passage. It will review recent developments and discuss economic drivers as well as commercial, legal and political obstacles to further expansion of shipping along the passage.

- **Industrias extractivas y pueblos indígenas / *Extractive industries and indigenous peoples*, PETER SKÖLD**

The Sami of Sweden are protected by international law as an indigenous people and have a unique culture and language and a traditional economy in which the history of reindeer husbandry goes much further back in time than when farmers in the south of Sweden, during the Iron Age, began congregating in the present-day farmstead locations. Great changes have overtaken Sami society and reindeer husbandry in Sweden during the past hundred years. There are many factors impacting on the feasibility of sustaining this traditional form of landscape use. In this presentation, reindeer husbandry will be discussed in the perspective of national government policy, Sami political organisation, co-operation, extraneous threats, socio-economic conditions, modernisation processes and vulnerability aspects. A certain focus is put on extractive industries such as hydropower stations, windmill parks, mining, and forestry.



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- **Intereses españoles en el Ártico / Spanish interests in the Arctic, IGNACIO J. GARCÍA**

Mi comunicación pretende abordar el Ártico como una región geopolítica extrema, por su clima y condiciones medioambientales, pero en la que confluyen los tres grandes dominios geoestratégicos: el Marítimo, dependiente del comercio en los océanos Atlántico y Pacífico; el Continental euroasiático, con Rusia como su tierra corazón; y la simbiosis Continental-Marítimo del extremo oriente.

El más pequeño de los cinco océanos del mundo, el océano Glacial Ártico, con un área helada de poco más de 14 millones de kilómetros cuadrados y más de 45 mil kilómetros de costa, parece que se ve abocado a dejar de ser la última e infranqueable frontera para la voracidad humana. El panel Intergubernamental para el Cambio Climático, en su quinto informe, para uno de sus cuatro modelos teóricos y con una confianza media, alerta que a mediados de siglo el Ártico podría considerarse libre de hielo.

En este, cada vez más accesible, círculo polar ártico se encuentran los tres pesos pesados geopolíticos de la actualidad, las tres primeras potencias, muy lejos del resto, económicas del mundo: China, la Unión Europea y los Estados Unidos. Además, por su imponente geografía, historia y cultura, y con el primer arsenal nuclear del mundo, el oso ruso no quiere dejar ningún género de dudas sobre su soberanía y hegemonía en la región.

Por su parte, España, observador del consejo Ártico desde 2006, tiene una larga tradición de exploradores y pescadores atraídos por sus posibles rutas y la riqueza de sus recursos marinos. Nuestra condición marítima, ser miembro de la Unión Europea y la Alianza Atlántica y, además, ocupar un puesto en el Consejo de Seguridad de Naciones Unidas durante el bienio 2015-2017; nos debe hacer participar en todos los ámbitos geopolíticos de esta región que abarca el quinto océano del globo.

¿Vieja o nueva Geopolítica? ¿Realismo o idealismo? ¿La inevitabilidad de los ciclos históricos con su recurrente equilibrio de poderes? ¿Contención o cooperación? ¿El dilema kantiano de la paz perpetua? En suma, el conflicto del siglo XXI, ante el que abre un nuevo horizonte de posibilidades geoestratégicas en un entorno extremadamente sensible e incierto que sellará la viabilidad de un mundo en continuo y sostenido progreso.

This communication addresses the Arctic as an extreme geopolitical region, because of its climate and environmental conditions, but at the crossroads of three major geo-strategic domains: Maritime, dependent on trade in the Atlantic and Pacific oceans; Eurasian Continental, with Russia as the heartland; and the Continental-Maritime symbiosis of East Asia.

The smallest of the five oceans of the world, the Arctic Ocean, with an area of just over 14 million square kilometers of ice and more than 45 thousand kilometers of coastline, it seems that is doomed to leave being the last stop and impassable frontier for human greed. The Intergovernmental Panel on Climate Change, in its fifth report, for one of its four theoretical models and with a middle confidence, warns that by mid-century the Arctic could be considered free of ice. In this increasingly accessible Arctic Circle, the three main geopolitical actors of today, the first three economic powers, far from the rest of the world: China, the European Union and the United States are questioned. Furthermore, with its imposing geography, history and culture, and having the first nuclear arsenal in the world, the Russian bear doesn't want to leave any doubt about its sovereignty and hegemony in the region.



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Just for Spain, as observer of the Arctic Council since 2006, with a long tradition of explorers and fishermen attracted by the possible routes and the wealth of its marine resources; also, because her well recognized maritime status, membership in the European Union and the Atlantic Alliance and, for the biennium 2015-2017, with a seat on the Security Council of United Nations; It should engage in all areas of this geopolitical region covering the globe fifth ocean. Old or new Geopolitics? Realism or idealism? Does the inevitability of historical cycles with the recurrent balance of power? Containment or cooperation? Does the Kantian perpetual peace dilemma? In sum, the conflict of the century, with a new window for a geostrategic course of action in an extremely sensitive and uncertain environment that will seal the feasibility of a world in continuous and sustained progress.