TOWARDS AN ITALIAN STRATEGY FOR THE ARCTIC

NATIONAL GUIDELINES

MINISTRY OF FOREIGN AFFAIRS

AND INTERNATIONAL COOPERATION

2015

(Updated May 2016)

1. ITALY IN THE ARCTIC: A CENTENARY HISTORY

The history of the Italian presence in the Arctic dates back to 1899, when Luigi Amedeo di Savoia, Duke of the Abruzzi, sailed from Archangelsk with his ship (christened *Stella Polare*). His plan was to use the Franz Joseph Land as a stepping stone for his journey to the North Pole on sleds pulled by dogs. His expedition missed the target, though it reached previously unattained latitudes. In 1926, Umberto Nobile managed to cross for the first time the Arctic Sea from Europe to Alaska, taking off from Rome together with Roald Amundsen (Norway) and Lincoln Ellsworth (USA) on the *Norge* airship (designed and piloted by Nobile). They were the first to reach the North Pole, where they dropped their three national flags[1]. Two years later Nobile attempted a new feat on another airship, called *Italia*. Based in Kings Bay (Ny-Ålesund), *Italia* flew four times over the Pole, exploring unknown areas for scientific purposes. On its way back, the airship crashed on the ice pack north of the Svalbard Islands and lost nearly half of its crew[2]. The accident was caused by adverse weather, notably by a high wind blowing from the northern side of the Svalbard Islands to the Franz Joseph Land. This wind stream, previously unknown, was named *Italia* after the expedition that discovered it[3].

Nobile's expeditions may be considered the first Italian scientific missions in the Arctic region. His research activities laid the foundations for further Italian achievements in Arctic oceanography, meteorology, geography and geophysics. Thanks to Nobile, Italy discovered its own "Nordic dimension". Moreover, the efforts of both Arctic and non-Arctic States to rescue the victims of the *Italia* shipwreck are the first example of international cooperation in extreme weather conditions – so harsh that Amundsen himself lost his life while attempting to rescue the survivors. Nobile continued working in the Arctic, as he was invited to Russia in order to take part in the expedition of the icebreaker *Malyghin* in the region of Franz Joseph Land. Nobile then returned to Moscow, where he stayed for six years and supervised the building of various *Aeroflot* airships[4].

Another example of the manifold, early Italian presence in the Arctic is Silvio Zavatti, an explorer and anthropologist who devoted his life to the study of Nordic populations, especially the Inuit. He founded the *Istituto Geografico Polare* (*Geographical Polar Insitute*), which comprises the *Museo Polare* (*Polar Museum*) in Fermo, the first and only museum in Italy entirely devoted to the Arctic, and publishes the specialized review *Il Polo* (*The Pole*)[5]. Between 1961 and 1969, he organized five Arctic expeditions: three in Canada, one in Lapland and one in Greenland. The evidence of his ethnographic researches enlarged the museum's collection.

[1] Nobile U., *Gli Italiani al Polo Nord*, Arnoldo Mondadori Editore, 1959.
[2] Six crewmen and the airship shell were never found. The survivors in the famous *Red Tent* were Nobile, Malmgren (who died while searching for rescue) Cecioni, Mariano, Behounek, Trojani, Viglieri, Zappi and Biagi.
[3] Nobile U., *Addio Malyghin !*, Arnoldo Mondadori Editore, 1948.
[4] Nobile U., *Storia aggiornata della spedizione polare dell'"Italia" - L'epilogo del dramma*, Roma, 1962.
[5] See the Institute's website www.istitutopolarezavatti.it

Also Guido Monzino, a businessman from Milan, carried out several polar expeditions in the 1960s, starting from Greenland, where he is remembered with affection. In 1970, he went from Qaanaaq to Cape Columbia (Canada), and in 1971, after a six-month expedition, with the support of local Sherpas he reached the North Pole. His achievements are displayed in the Museum of Expeditions at Villa Balbaniello, on Lake Como[6].

The Italian presence in the Arctic, therefore, dates back to more than a century ago and the Italian Arctic footprint has steadily increased over time. Thanks to Nobile's work, to the later establishment of a Svalbard scientific base (*Dirigibile Italia*) by the National Research Council (CNR), to the Arctic oceanographic research of the *OGS Explora* research ship and to the activities of various Italian companies, such as Eni and Finmeccanica, Italy may be considered one of the most active non-Arctic States in the area.

Today, Italian presence in the Arctic is motivated also by global warming, which has severe repercussions on the region, and the new, urgent challenges it poses.

2. ITALY IN THE ARCTIC: THE POLITICAL DIMENSION

Italy was admitted to the Arctic Council as Observer country in May 2013. The Arctic Council ministerial meeting in Kiruna acknowledged the size and importance of Italian Arctic activities. Italy's contribution to scientific research in the Arctic includes the building of important observation platforms in Ny Ålesund, such as the *Amundsen-Nobile Climate Change Tower*[7], and a number of other research projects, including OGS *Explora*'s cruises in the Arctic waters[8]. As for Italian economic activities, Eni has extraction programs in Norway and Russia and is implementing some remarkable projects aimed at improving safety conditions of transport by sea (against oil spills), mitigating its environmental impact and safeguarding indigenous communities in a rapidly changing ecosystem hit by climate change[9].

The challenge posed to the Arctic environment by global warming needs to be tackled globally by the international community in close coordination with Arctic States. The most important dialogue forum on this issue so far is the Arctic Council[10].

Italy considers the Arctic Council, with its wide range of members (Member States, Permanent Participants, Observers, Task Forces, Working Groups,…), the main debate forum for the Arctic, where the different features and issues of this complicated region and all viable forms of cooperation are discussed. Twenty years after its establishment, the Arctic Council today goes beyond its original concept of an inter-Arctic consultation forum. It has become indeed a vehicle for regional stability, whose increasing relevance is proved not least by the growing number of

[6] See the Museum website http://www.visitfai.it/villadelbalbianello/le-collezioni
[7] See the CCT website www.isac.cnr.it/~radiclim/CCTower
[8] See https://sites.google.com/site/ipynicestreams/home
[9] See Eni website http://www.eni.com/it_IT/home.html
[10] See the Arctic Council website http://www.arctic-council.org/index.php/en/

its Observer countries – including some European Union Member States and various Asian countries[11].

Changes in the Arctic region depend mainly on phenomena occurring at different latitudes and are likely to have tangible repercussions on a global scale. Therefore, a common approach is needed to deal with the new challenges arising, from global warming to the opening of Polar navigation routes. Global phenomena call for a global approach, implying new responsibilities not only for the Arctic States but for the whole international community.

The recognized national jurisdictions of the Arctic States are completed and integrated by customary international sea law and by a number of Treaties. The most important is the United Nations Convention on the Law of the Sea (UNCLOS) [12]. As a State party to UNCLOS, Italy abides by its clauses, including those related to a responsible management of the Arctic Ocean. Italy also abides by the rules of other legal instruments that indirectly concern the Arctic region: the Convention on Biological Diversity (CBD)[13], the Convention on Long-Range Transboundary Air Pollution (CLRTAP)[14], the International Convention for the Prevention of Pollution from Ships (Marpol 73/78)[15] and the International Convention for the Safety of Life at Sea (SOLAS)[16]. Moreover, Italy is one of the original signatories to the Svalbard Treaty[17].

In the Arctic, large areas are subject to national sovereignty. Italy fully respects these sovereign rights and is ready to play its role to confront global challenges with its scientific and technological expertise and with its leading companies, thus contributing to a sustainable Arctic development while respecting the ecosystem and indigenous peoples. Given the primary relevance of the human dimension, Italy considers it to be extremely important to raise awareness on such issues. This should be done through a growing, internationally coordinated effort, working in concert with the Arctic States.

[11] The Arctic Council Member States are: Canada, Denmark, Finland, Iceland, Norway, the Russian Federation, Sweden and the U.S.A.. The Observer States are: Germany, Poland, United Kingdom, Netherlands, France, Spain, Italy, China, Japan, Republic of Korea, India, Singapore. The EU takes part in the works as observer, even though its status is still to be confirmed. (*cf*: http://www.arctic-council.org/index.php/en/about-us)

[12] United Nations Convention on the Law of the Sea, United Nations, New York, UNTS vol. 1833 p. 3, as available on https://treaties.un.org/Pages/UNTSOnline.aspx?id=1

[13] Convention on Biological Diversity, United Nations, New York, UNTS vol. 1760 p. 79, as available on https://treaties.un.org/Pages/UNTSOnline.aspx?id=1

[14] Convention on Long-Range Transboundary Air Pollution, United Nations, New York, UNTS vol. 1302 p. 217, as available on https://treaties.un.org/Pages/UNTSOnline.aspx?id=1

[15] International Convention for the Prevention of Pollution from Ships, United Nations, New York, UNTS vol. 1340 p. 184, as available on https://treaties.un.org/Pages/UNTSOnline.aspx?id=1

[16] International Convention for the Safety of Life at Sea, United Nations, New York, UNTS vol. 1184 p. 278, as available on https://treaties.un.org/Pages/UNTSOnline.aspx?id=1

[17] Treaty between Norway, The United States of America, Denmark, France, Italy, Japan, the Netherlands, Great Britain and Ireland and the British overseas Dominions and Sweden concerning Spitsbergen, Paris, as available on http://www.sysselmannen.no/en/Toppmeny/About-Svalbard/Laws-and-regulations/Svalbard-Treaty/

In this context, the European Union, that in practice takes part in the work of the Arctic Council as observer[18], has been playing an increasingly important role with its policies to stop global warming. In 2008 the European Commission adopted a document entitled *The EU and the Arctic region*[19], which highlights the impacts of climate change and of unprecedented human activity in the Arctic. It was followed in 2012 by a Commission/EEAS Joint Communication[20], whose contents are espoused by Italy. A new Commission/EEAS Joint Communication on the topic was issued on April 27th, 2016[21].

In order to add value to its Arctic scientific and economic footprint and to prove its commitment to a gradual process of enhanced integration in the region, Italy has embarked on a number of initiatives on both a national and international level.

On a multilateral scale, Italy takes part in the *Senior Arctic Officials* (SAO) meetings (the Italian Ministry of Foreign Affairs and International Cooperation appointed to this end a specialized diplomatic representative). We also take part in some Working Groups through the Italian SAO, our Embassies or by means of experts selected by the CNR or other Italian scientific agencies such as ENEA (*National Agency for New Technologies, Energy and Sustainable Development*)[22], INGV (*National Institute for Geophysics and Volcanology*)[23] and OGS (*National Institute of Oceanography and Experimental Geophysics*)[24]. Italy cooperates with the Arctic Council at all levels, from the Task Forces to the Working Groups, where it provides an active contribution in different fields of research thanks to the considerable expertise of its scientific community. Furthermore, in the EU framework Italy has recently promoted an initiative to foster relations and dialogue between the Baltic Region Strategy's stakeholders and those of the Adriatic-Ionic Strategy. The Italian project aims at the exchange of experiences and best practices, and could potentially develop into a process of increasing integration between the actors of said Strategies[25].

Italy considers the Arctic Ocean highly relevant also to the European Union. In this respect, Italy played an active role in the drafting of Directive no. 30/2013/EU of June 12, 2013 on safety of offshore oil and gas operations, expressing remarks and proposals aimed at consolidating safety standards in the upstream offshore field. The Directive states that *"the serious environmental concerns relating to the Arctic waters require special attention to ensure the environmental protection of the Arctic in relation to any offshore oil and gas operation, including exploration,*

[18] At the 2015 Iqaluit Ministerial meeting, the Arctic Council did not come to a decision on the admission of the EU and other countries as Observer states. The issue was postponed to the next Ministerial meeting in 2017.
[19] COM (2008) 763 final: Communication from the Commission to the European Parliament and the Council *The European Union and the Arctic Region*
[20] JOIN(2012) 19 final: Joint Communication to the European Parliament and the Council *Developing a European Union Policy towards the Arctic Region: progress since 2008 and next*
[21] JOIN(2016) 21 final: Joint Communication to the European Parliament and the Council *An integrated European Union policy for the Arctic*
[22] See http://www.enea.it/it
[23] See http://www.ingv.it/it/
[24] See http://www.ogs.trieste.it/
[25] See http://www.balticsea-region-strategy.eu/; http://www.adriatic-ionian.eu/.

taking into account the risk of major accidents and the need for effective response"[26]. To this end, Italian institutions are ready to put their expertise at Arctic States' disposal, by cooperating in the framework of the Arctic Council to ensure that the highest standards of safety and environmental protection are applied to exploration and extraction of oil and gas in the Arctic.

At bilateral level, Italy is holding informal consultations with the Arctic Council Member States in order to define possible fields of scientific and economic cooperation. Such consultations shall be followed by the establishment of "bilateral working tables" composed by representatives of the scientific and business communities of each country and meeting at regular intervals. Informal contacts are being kept also with the Saami Council[27], with a view to launching new studies on the culture of Arctic inhabitants in concert with Italian academic institutions.

At domestic level, many initiatives have been taken to increase awareness of the Italian presence in the Arctic region and to reinforce our proactive approach. In addition to our current scientific programs, other projects by the Ministry of Foreign Affairs and International Cooperation (MFAIC) include: the *International Conference on Climate Change in the Arctic* in December 2014 at Venice International University attended by the SAOs of Arctic Council member States and representatives of CNR, Eni and Finmeccanica[28], the conference on *Ice and resources: the Arctic as a new geopolitical scenario*[29] organized in the Chamber of Deputies by IsAG (*Institute of Advanced Studies in Geopolitics and Auxiliary Sciences*) with the participation of all the Ambassadors to Italy of Arctic Council States, and the conference on *Environmental Sustainability and Use of Resources in the Arctic Region,* hosted by the Ministry itself and organized by the review *Diplomacy* in the framework of the 6th *Festival of Diplomacy*[30].

From March 7th to September 30th SIOI (*Italian Society for International Organization*), in partnership with the MFAIC and the Ministry of the Environment and Protection of Land and Sea, will be offering the first Italian Master course dedicated to Arctic issues (Master in Sustainable Development, Geopolitics of Natural Resources and Polar Studies). The course is designed to develop knowledge and competence pertaining to the green economy, energy geopolitics and responsible use of natural resources[31].

An informal, open-ended consultation group on the Arctic, the *Tavolo Artico* (Arctic Table), has recently been reactivated. It aims at the exchange of information and coordination of activities of the main Italian actors active in the region under the aegis of the MFAIC. Today, it has 25 members from academic, scientific and business communities. Diffusion and divulgation activities by private actors are also encouraged and supported by the Italian institutions, with the purpose of fostering a more widespread interest in Arctic issues on a national scale.

[26] Directive 2013/30/EU of the European Parliament and of the Council of 12 June 2013 on safety of offshore oil and gas operations and amending Directive 2004/35/EC, OJ L 178/66
[27] See www.saamicouncil.net
[28] Conference Program: http://www.univiu.org/images/stories/Arctic_Conference_Program.pdf
[29] Conference Program: http://www.geopolitica-rivista.org/cms/wp-content/uploads/locandina190214.pdf
[30] See http://festivaldelladiplomazia.eu/
[31] See http://www.sioi.org/en/activity/international-training/master-in-sustainable-development/

3. ENVIRONMENTAL AND HUMAN DIMENSION

The Italian Strategy for the Arctic identifies actions and key instruments to be deployed in the relevant frameworks. It envisages the promotion of "lessons learned" and the exchange and sharing of knowledge on specific environmental topics. It also stresses the critical role of taking targeted actions and raising awareness among the main stakeholders in the relevant discussion forums, notably, international negotiations and political processes regarding environmental issues. A major role is also played by activities aimed at identifying and giving access to proper European and international funds. Such activities, if properly managed, will be instrumental in improving and strengthening current bilateral relations with Arctic States and in fostering new cooperation opportunities, with positive outcomes for Italy as well as for the Arctic environment and tangible benefits on a global level.

Cooperation and exchange of experiences with Arctic States can and must also offer development opportunities for Italy in some fields, such as sustainable urban environment, which is one of the priorities of the Italian Ministry of Environment[32].

In this framework, a major role is to be played by scientific and technological research, in which Italy excels. Italian experts collaborate with Arctic Council Working Groups and other international specialist bodies promoting Italian expertise and competence and creating new opportunities for bilateral and multilateral cooperation and exchange.

Actions and strategies shall be focused on crucial Arctic environmental issues, such as: protection of biodiversity, prevention of air pollution, reversal of climate change, marine conservation and integrated management of coastal zones, including supervising water quality and the exploitation of natural resources as well as addressing environmental risks posed by transport by sea, tourism, mining and harbor operations.

3a. ENVIRONMENT

Italy bears a number of similarities with the Arctic region, first of all for the features of its seas and mountains, especially the Alps, which are particularly fragile and vulnerable to climate change and to all factors liable to alter their delicate equilibrium (such as fishing, hunting, pollution and tourism). More specifically, the Baltic and the Adriatic sea have similar characteristics, peculiar to closed seas, such as scarce water circulation and renewal. On the other hand, the Italian mountain areas and the Arctic region both suffer from geographical, social and technological isolation.

- *Marine environment*

The analogies between the Baltic and the Adriatic sea (and, to a certain extent, the whole

[32] See http://www.minambiente.it/

Mediterranean) include the delicate balance of their ecosystem, the low resilience to continuous or sporadic polluting events and the severe impacts of global phenomena, such as sea level rise. In addition, the growing sea trade in Northern waters poses a major challenge as it entails a growing risk of accidents and environmental damage connected to possible oil spills. In this respect, the Marpol Convention on the prevention of pollution from ships stands as the key international instrument for its parties, including Italy[33].

Directive 2013/30/EU on offshore safety is another relevant operative tool in this field. It establishes strict rules for the construction and management of extraction facilities as well as technical and financial requirements for the granting of licenses to oil & gas operators (insurances, bail bonds)[34].

- *Air pollution and climate change*

Fighting climate change in the Arctic is clearly a priority for regional actors. It is altogether crucial that it is recognized as a global priority. To this purpose, awareness-raising activities targeting public opinion and all relevant stakeholders should be encouraged.

In recent years, most Arctic countries have increasingly promoted policies aimed at curbing *Short Lived Climate Forcers* (SLCFs) levels. SCLFs are methane, tropospheric ozone, hydrofluorocarbons (HFC) and black carbon. Locally, most black carbon emissions come from wood burning and diesel engines. At international level, current policy actions mainly aim at reducing ship emissions. Indeed, as accessibility to Arctic shipping routes improves, this vulnerable region is more and more exposed to those pollutants. Furthermore, because of atmospheric circulation patterns SLCFs typically accumulate in the Arctic region even when emitted at lower latitudes (most black carbon found in the Arctic comes from mid-latitudes). According to the Intergovernmental Panel on Climate Change (IPCC), reducing SLCFs concentration would significantly improve the situation of ice and snow cover in the Arctic region[35].

Italy plays an active role in applying the main international instruments dealing directly or indirectly with atmospheric pollution and climate change, namely:

- the United Nations Framework Convention on Climate Change (UNFCCC)[36];

- the Vienna Convention for the Protection of the Ozone Layer[37] and the Montreal Protocol on

[33] International Convention for the Prevention of Pollution from Ships, United Nations, New York, UNTS vol. 1340 p. 184, as available on https://treaties.un.org/Pages/UNTSOnline.aspx?id=1

[34] Directive 2013/30/EU of the European Parliament and of the Council of 12 June 2013 on safety of offshore oil and gas operations and amending Directive 2004/35/EC, OJ L 178/66

[35] Edenhofer O., R. Pichs-Madruga, Y. Sokona, E. Farahani, S. Kadner, K. Seyboth, A. Adler, I. Baum, S. Brunner, P. Eickemeier, B. Kriemann, J. Savolainen, S. Schlömer, C. von Stechow, T. Zwickel, J.C. Minx (eds.), *Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*, IPCC, 2014, Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

[36] United Nations Framework Convention on Climate Change, United Nations, New York, UNTS vol. 1771 p. 107, as available on https://treaties.un.org/Pages/UNTSOnline.aspx?id=1

Substances that Deplete the Ozone Layer[38]; and

- the already mentioned Convention on Long-Range Transboundary Air Pollution (CLRTAP) [39].

- *Biodiversity*

Arctic biodiversity is one of the most vulnerable of our planet. Various international instruments for biodiversity conservation exist, and their effectiveness has been proved over the years. Each one of them should be employed in the Arctic area through tailored actions and measures and implemented through international cooperation and partnerships. The main international conventions on this subject, to which Italy is party, are:

- the already mentioned Convention on Biological Diversity aiming at preserving biodiversity and ensuring the sustainable use of its components and the fair and equitable sharing of benefits arising from the use of genetic resources, also through international cooperation[40];

- the Bern Convention on the Conservation of European Wildlife and Natural Habitats to preserve plants, animals and their habitats, to promote cooperation among States and to monitor endangered and vulnerable species[41];

- the Paris International Convention for the Protection of Birds in the wild state[42];

- the Bonn Convention on the Conservation of Migratory Species of Wild Animals for the protection of terrestrial, marine and avian migratory species throughout their range[43]. In the framework of this Convention, it is worth mentioning the African-Eurasian Migratory Waterbird Agreement (AEWA)[44];

- the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES), regulating the international trade of plant and animal species on the verge of extinction[45].

[37] Convention for the protection of the ozone layer, United Nations, New York, UNTS vol. 1513 p. 323, as available on https://treaties.un.org/Pages/UNTSOnline.aspx?id=1
[38] Montreal Protocol on Substances that Deplete the Ozone Layer, United Nations, UNTS vol. 1522 p. 3, as available on https://treaties.un.org/Pages/UNTSOnline.aspx?id=1
[39] Convention on Long-Range Transboundary Air Pollution, United Nations, New York, UNTS vol. 1302 p. 217, as available on https://treaties.un.org/Pages/UNTSOnline.aspx?id=1
[40] Convention on Biological Diversity, United Nations, New York, UNTS vol. 1760 p. 79, as available on https://treaties.un.org/Pages/UNTSOnline.aspx?id=1
[41] Convention on the Conservation of European Wildlife and Natural Habitats, Council of Europe, CETS No. 104, as available on http://conventions.coe.int
[42] International Convention for the Protection of Birds, Paris, UNTS vol. 638 p. 185, as available on https://treaties.un.org/Pages/UNTSOnline.aspx?id=1
[43] Convention on the Conservation of Migratory Species of Wild Animals, UNEP, Bonn, UNTS vol. 1651 p. 333, as available on https://treaties.un.org/Pages/UNTSOnline.aspx?id=1
[44] Agreement on the Conservation of African-Eurasian Migratory Waterbirds, UNEP CMS, The Hague, as available on http://www.unep-aewa.org/
[45] Convention on International Trade in Endangered Species of Wild Fauna and Flora, Washington, UNTS vol. 993 p. 243, as available on https://treaties.un.org/Pages/UNTSOnline.aspx?id=1

3b. HUMAN DIMENSION

- *Urban Areas*

Considering the distinctive features of Arctic areas and their vulnerability, urban development has a role of remarkable importance. Some Arctic States are pioneering in this field. Sweden for instance promotes a holistic approach to sustainable urban development, involving not only architectural and urban design, but also the careful planning of interactions among all relevant subsystems (waste cycle management, energy, heating, etc.). Such planning ensures cities' effectiveness and sustainability, thus improving the quality of life of citizens. This holistic approach has become an integral part of the *smart-city* concept.

Urban sustainable development is one of Italian national priorities, which shall be pursued in the framework of relevant international instruments, notably the *Transport, Health and Environment Pan-European Programme*[46] and the *United Nations Conference on Housing and Sustainable Urban Development* (HABITAT III) to be held in Ecuador in 2016[47]. Also the global negotiation process in the framework of the Paris Climate Agreement showed the growing interest for urban development and city planning[48].

- *Indigenous peoples*

Many Arctic territories are highly fragile due to their natural isolation and vulnerability. Local communities are facing ecosystem alteration, biodiversity loss, changing availability of arable lands and the side effects of unregulated hunting and fishing. Also, shortage of connections in human settlements engenders social problems that should not be underestimated, as it jeopardizes socialization, career development and business opportunities. The same happens in some Alpine areas. In this respect, it is worth mentioning the actions taken under the Alpine Convention[49] and aiming at improving access to basic services for highly isolated Alpine settlements, through the promotion of innovative organizational structures in scarcely populated areas.

4. THE SCIENTIFIC DIMENSION

4a. CONTEXT AND CHALLENGES

Against a backdrop of growing concern for climate change, the scientific community is attempting to keep pace with the complex processes, interactions and feedbacks underlying such phenomenon. It is necessary to expand our knowledge of the Earth system in order to

[46] See http://www.thepep.org/en/welcome.htm
[47] See https://www.habitat3.org/
[48] See http://unfccc.int/paris_agreement/items/9485.php
[49] Alpine Convention, Berchtesgaden, as available on http://www.alpconv.org/en/convention/default.html

identify reliable and sustainable solutions. In particular, Arctic observation should be reinforced through coordinated monitoring, aimed at improving the predictive capability of meteorological and climatic models and our general understanding of the Arctic and of its role in an Earth system perspective, and through experimental studies and oceanographic research expeditions.

Permanent ice sea cover, large glaciers and permafrost are unique features of the polar regions and amplify, on a regional level, the impacts of global climate change. High-latitude radiation characteristics further increase the system climate sensitivity and amplify ongoing changes. Arctic distinctive features produce strong and complex interrelations among physical, chemical, geological and biological components, reinforced by feedback loops and by systemic complexity. The problem is so complex that it calls for a broad and strong effort of international cooperation to combine national observation capabilities, databases and analytical methods for a better comprehension of the Arctic reality. Such knowledge would be instrumental to guide policy choices on economic development, use of natural resources as well as mitigation of climate change. International cooperation in this field is the key to foster opportunities to promote political and economic national interests.

Italian Base *Dirigibile Italia* – Ny-Ålesund[50]

Since the 1960s, the former mining village of Ny-Ålesund on the Svalbard Islands has been transformed into an important center for research on the Arctic environment and its components (atmosphere, hydrosphere, cryosphere, biosphere). In Ny-Ålesund, international cooperation enables and enhances the study of the complex interconnections between biological phenomena and physical, chemical, dynamical and radiation processes. Ten countries, including Italy, currently have stations in Ny-Ålesund[51]. Research projects and continuous monitoring activities are conducted all the year round. Scientific activities in Ny-Ålesund are coordinated by NySMAC (*Ny-Ålesund Science Manager Committee*), a scientific and technical committee composed by the managers of each station[52]. Italy served as Chair for two terms, from 2001 to 2005.

Dirigibile Italia, whose name recalls the 1928 expedition by Umberto Nobile, was opened in 1997 as a multidisciplinary research station. It is managed by the CNR and its research activities are coordinated by the CNR Department for Earth-system Sciences and Environmental Technologies.

It has a surface of 330m^2, of which 170 are covered by offices and laboratories. The base is open all the year round, even though it is inhabited only while research activities are taking place. It can host up to seven researchers, working on atmospheric chemistry & physics, marine biology, physics of the high atmosphere, technological research, geology and geophysics, glaciology, snow studies and *permafrost*, paleoclimate, oceanography/limnology, terrestrial ecosystems, environmental studies, humane biology and medicine. From 2009 and onwards, three important

[50] See http://www.cnr.it/sitocnr/IlCNR/Chisiamo/CNRnelmondo/CNRnelmondo.html
[51] Permanent stations are owned by Norway, Germany, United Kingdom, Italy, France, Netherlands, Japan, China, Republic of Korea and India. Sweden has its lab at the Zeppelin observatory.
[52] See http://nysmac.npolar.no/

multidisciplinary observation platforms were added to the station: the *Amundsen-Nobile Climate Change Tower* (CCT), the aerosol and Gruvebadet interface processes lab (GVB)[53] and a mooring (MD1) inside the Kongsfjiorden.

Italian Polar Research ship *OGS Explora*[54]

OGS Explora, owned since 1989 by the *National Institute for Oceanography and Experimental Geophysics* (OGS), is an Oceangoing Multipurpose Research Vessel classified as ice class IB, meaning that it can sail and collect data also in polar regions.

It is a multidisciplinary ship and is equipped with both oceanography and biology laboratories and geophysical data acquisition systems. *OGS Explora* conducted so far ten research cruises in Antarctica and four around the Svalbard Island. It was also employed to provide support to companies with offshore activities in the Arctic (Canada, Greenland, Iceland, Norway, Fær Øer Islands).

The ship is 73m long, its gross tonnage is over 1400 tons and it can reach a cruising speed of 11 knots. It is part of the EUROFLEETS Research Infrastructures project[55] (currently about to be integrated into EFSRI, the *European Strategy Forum on Research Infrastructures*[56], under which it is available for the scientific community to use in polar areas. In addition, it is listed in MERIL[57] (*Mapping of the European Research Infrastructure Landscape*). As it is equipped to sail in both shallow and deep ocean waters and it is specialized in polar research, *OGS Explora* is apt to be used in international projects of scientific collaboration.

In early 2016 *OGS Explora* will begin an intensive refitting process. Through the renewal of some structural elements, laboratories and accommodation areas, her operational lifespan will be extended by 12 years. The refit will also make possible to increase the number of on-board scientists up to 24 and improve the vessel's operational capabilities in the fields of geophysics, physical oceanography and biological oceanography.

4b. STRATEGIC GUIDELINES

The priorities and actions set out by the scientific community and by international scientific (ICSU[58], IASC[59], EPB[60]) and political (Arctic Council, European Commission) coordinating bodies

[53] See http://www.isac.cnr.it/it/infrastrutture/climate-change-tower-artide
[54] See http://www.ogs.trieste.it/it/content/nave-da-ricerca-ogs-explora
[55] http://www.eurofleets.eu/np4/home.html
[56] http://ec.europa.eu/research/infrastructures/index_en.cfm?pg=esfri
[57] http://portal.meril.eu/converis-esf/publicweb/startpage?lang=1
[58] International Council for Science, see http://www.icsu.org/
[59] International Arctic Science Committee, see http://iasc.info/

to deal with climate change aim at:

1 – Increasing the spatial and temporal extent of the Arctic observation system and strengthening coordination among national initiatives.

2 – Promoting the study and knowledge of another "dimension" of the Arctic system, its complexity, as integral part of the Earth system playing a key role in the *Arctic amplification* phenomenon as well as in the nature and entity of ongoing transformations. In this context, the research sites where it is possible to retrieve huge amounts of data on relevant physical, chemical and biological parameters all the year round (also known as *SuperSites*) are of the highest importance.

3 – Defining, at various levels (European or international), the agenda and priorities for scientific research in the medium and long term through projects such as the *Coordination Support Action EU-PolarNet* [61] and initiatives like ICARP (*International Conference on Arctic Research Planning*)[62]. The European Union included the Arctic among its priorities in the *Scoping Paper for Horizon 2020 Societal Challenge Climate Action, Environment, Resource Efficiency and Raw Materials* [63].

The overall national goal is to reinforce Italian presence in the Arctic, in continuation of past operational guidelines. Thus, over the next few years, the Italian scientific community, supported by the national research agencies (CNR, ENEA, INGV, OGS) and in line with the above-mentioned international efforts, will commit to:

A – *Promoting Italian participation in Arctic research giving prominence to national scientific and technological excellence,* optimizing the use of our resources and expertise. Priority will be given, on the one hand, to medium-long term continuous monitoring activities and, on the other, to experimental studies on terrestrial and oceanic ecosystems. Such objective will be pursued first of all through sound, continuous experimental activity in Ny-Ålesund, to be coordinated with the other countries operating there and supplemented with oceanographic activities, in order to make a significant contribution to the integrated study of the Earth-Ocean-Atmosphere system. Through the active participation in the *Svalbard Integrated Earth Observation System* (SIOS)[64] initiative, scientific interests and activities could be expanded to the entire archipelago. Moreover, the participation of the OGS *Explora* in the EUROFLEETS research infrastructure will contribute to the geographical expansion of our research activities and to the promotion of the Italian research system in Europe.

B – *Expanding the Italian presence in the pan-Arctic observation system, mainly through*

[60] European Polar Board, see http://www.europeanpolarboard.org/
[61] See http://www.eu-polarnet.eu/fileadmin/user_upload/redakteur/Members_documents/Tool-Kit/EU-PolarNet_FactSheet_2015.pdf
[62] See http://icarp.iasc.info/
[63] European Commission, *Horizon 2020 Work Programme 2016 - 2017 - 12. Climate action, environment, resource efficiency and raw materials*, Decision C(2016)1349 of 9 March 2016, as available on https://ec.europa.eu/programmes/horizon2020/en
[64] See http://www.sios-svalbard.org/servlet/Satellite?c=Page&pagename=sios/Hovedsidemal&cid=1234130481072

bilateral agreements. Ongoing contacts are directed to start, over the next two-three years, partnerships both with Greenland and Canada. In the East, Italy efforts will focus on Russia, Korea, China and Japan. A few specific partnerships already exist; more may be initiated through instruments such as the scientific and technological cooperation agreements promoted by the Ministry of Foreign Affairs and the agreements between CNR and RFBR (*Russian Foundation for Basic Research*[65]) and between OGS and the Chinese FIO (*First Institute of Oceanography*[66]).

C – *Reinforcing internationalization*. Italian research agencies (CNR, ENEA, INGV, OGS) already take an active part in international Arctic initiatives. The CNR is a member of IASC and EPB and participates in ECRA (*European Climate Research Alliance*[67]) initiatives, in particular in the *Arctic Climate Stability and Change Collaborative Programme* promoted by the Alfred Wegener Institute (Germany) and the Bjerknes Centre (Norway). The sharing of major oceanographic infrastructures (such as research vessels, perforation systems, ROVs) will contribute to the further internationalization of Italian oceanographic research activities in the Arctic. Under IASC's aegis, CNR and OGS will continue to give an active contribution to two of the Arctic Council Working Groups on sea and atmosphere, AMAP (*Arctic Monitoring and Assessment Programme*) in particular[68]. OGS was also part of the Italian delegation to the *Arctic Circle 2014* event in Reykjavik[69], while CNR takes part in the *International Polar Initiative* (IPI[70]) and has represented the Italian research community in SAON since day one[71]. As to major infrastructural initiatives, Italy played an active role in the *preparatory phase* of SIOS and is planning to participate via CNR in its *interim phase* and to promote it on a national scale.

D – *Participating in the action to strengthen European Arctic infrastructures* promoted by the European Commission, Arctic countries and also Mediterranean countries like France (IAOOS project - *Ice, Atmosphere, Arctic Ocean Observing System*[72]). This target will be pursued by further developing the *Dirigibile Italia* base as well as its observation platforms:

- taking part in the new research infrastructures promoted by the European Commission and by ESFRI[73] in the Arctic (e.g., SIOS);
- supporting those EFSRI infrastructures coordinated by Italy that are reinforcing their presence in the Arctic and sub-Arctic regions, namely EMSO (*European Multidisciplinary Seafloor and Water Column Observatory*), a Europe-wide multidisciplinary network of marine observatories[74], and EPOS (*European Plate Observing System*[75]) an infrastructure integrating European research facilities on Earth's surface dynamics and tectonics;
- supporting the possible extension to the Arctic of the ESFRI ICOS (*Integrated Carbon*

[65] See http://www.cnr.it/sitocnr/IlCNR/Attivita/Attivitainternazionali/Mobilita_file/AIview.html?id=46
[66] See http://www.fio.org.cn/en/
[67] See http://www.ecra-climate.eu/
[68] See http://www.amap.no/
[69] See http://www.arcticcircle.org/
[70] See http://internationalpolarinitiative.org/IPIhomepage.html
[71] See http://www.arcticobserving.org/
[72] See http://www.iaoos-equipex.upmc.fr/fr/index.html
[73] See http://ec.europa.eu/research/infrastructures/index_en.cfm?pg=esfri
[74] See www.emso-eu.org
[75] See www.epos-eu.org

Observation System[76]) infrastructure;
- conducting further oceanographic expeditions;
- participating in European calls in partnership with BAS, NPI, AWI and non-Italian Universities.

E – *Creating synergies between the activities of Italian research agencies in the Arctic and PNRA (*National Antarctic Research Programme[77]*) activities*. First of all, the management of incoming data from both the Arctic and the Antarctic is to be standardized by means of an information system gathering all generated metadata and, as to the Arctic, also acquired data. A second, highly important step will be the divulgation and distribution of results. Finally, the Italian polar scientific community will be expanded by providing specific training for young researchers.

F – *Promoting and strengthening the collaboration among national actors (Agencies, Universities)*. CNR, OGS and INGV are conducting a 2012 project, ARCA (*ARctic: present Climate change and pAst extreme events)*, involving nine Italian universities. The strong synergies emerging in the ESFRI framework between SIOS, with participation of CNR, and EMSO and EPOS, both coordinated by INGV, will be further enhanced. Similarly, the *Italian Space Agency* (ASI[78]) will be involved in the identification of ways and means to promote the inclusion of *Cosmo-SkyMed* unique data and products into the pan-Arctic observation system.

G – *Promoting activities of technological innovation and experimentation*, mainly in the field of atmosphere observation (UAVs, extreme environments monitoring systems, air-sea-ice interface monitoring systems), marine observation (USVs, ROVs) and satellite observation (product development, cal/val), also integrating and exploiting the long-standing experience gained by the Italian scientific community in the PNRA framework.

5. ECONOMIC DIMENSION

A number of studies[79] suggest that the Arctic hosts significant, unexplored amounts of mineral and energy resources (e.g., hydrocarbons and rare earth elements). Their possible exploitation is a complex and, in many areas, still impossible endeavor, due to technological, infrastructural and financial constraints. The ongoing thinning of the ice sheet could improve accessibility to such resources. However, in view of the delicate and complex Arctic environment, ensuring the respect of the highest standards of operation safety and ecosystem protection is a necessary requirement, that implies sizable investments and a wide use of cutting-edge technology.

Italy has a significant track record in offshore oil & gas research and exploitation. At the same time, one of its distinctive features is its cultural and environmental heritage value, globally considered truly unique. Therefore, Italian institutions are keenly aware of the importance of

[76] See www.icos-ri.org
[77] See http://www.pnra.it/
[78] See http://www.asi.it/
[79] See, for instance, http://energy.usgs.gov/RegionalStudies/Arctic.aspx

the environmental compatibility of hydrocarbons extraction activities and in the years have built substantial expertise that ensures safety performance levels among the highest in the world[80]. The Italian extraction industry, in turn, has proved its high technical capabilities since 1959, when the first offshore oil platform in Europe was realized in Italy. Italian institutions' competences are available for the Arctic States to use through cooperation within Arctic Council Working Groups, with a view to dealing with the problems arising from the increase of industrial and anthropic activities in the Arctic.

In the Arctic, Italy is deeply committed to studying climate change through the work of its research agencies. Italy is also in a position to answer the needs for infrastructures and services tailored to Arctic conditions thanks to the cutting-edge technological expertise of its companies, in particular with regard to specialist services such as satellite-based control and offshore engineering, as well as to energy, navigation and building.

It is also noteworthy to mention the expertise that Italy could provide to the field of renewable energies. The first geothermal power plant in the world was built in Italy at the beginning of the 20th century. Today, Italy is still a European leader in geothermal energies and is willing to develop possible partnerships with the Arctic countries, some of which also have a well-established tradition in this field.

Italy's capacity to embark on pioneering ventures and to combine advanced technology and the preservation of its environmental and cultural heritage is its added value to economic growth and sustainable development in the Arctic.

According to the central scenario of the IEA (*International Energy Agency*) *World Energy Outlook 2014*, global energy demand is set to grow by 37% by 2040[81]. Arctic resources could play a significant role in satisfying this thirst for energy, which affects not one country but all global actors.

Investments, however, shall have to comply with a wide range of criteria: the need for sustainable development which takes into account the fragility of the Arctic ecosystem; the human dimension; financial constraints; compliance with relevant regulations; peculiar, hostile weather conditions. Such environmentally sensitive and remote areas require a heightened commitment to safety, a careful risk analysis, the deployment of advanced technology and highly skilled staff, as well as steady cooperation with indigenous peoples. Indeed, the latter are the real experts in the Arctic environment, with their unique, millennial heritage of traditions and culture, which should be protected and treasured by all companies operating in the region.

Each Arctic stakeholder has an interest in respecting such a peculiar and sensitive ecosystem. Italy supports an eco-sustainable management of Arctic fisheries stocks. Commercial fishing should take into account its impacts on the ecosystem as a whole and on the subsistence of Arctic inhabitants, and prevent damage to non-commercial species and to marine biodiversity.

[80] Ministero dello Sviluppo Economico, *DGRME - Rapporto Annuale 2015. Attività dell'anno 2014*, disponibile su http://unmig.mise.gov.it/

[81] International Energy Agency, *World Energy Outlook 2015*, OECD/IEA, 2015, disponibile su http://www.worldenergyoutlook.org/

5a. ENI AND THE ARCTIC

Eni acknowledges the scientific evidence on climate change as exposed in the IPCC *5th Assessment Report* (AR5)[82], which defines "extremely likely" the link between climate change and human activities. Faced with such evidence, Eni is convinced that all public and private actors should actively contribute to the mitigation of risks connected with climate change. As a world's leading energy company, Eni has been committed for years to satisfying its customers' energy demand while at the same time striving to mitigate the climate impact of its own production process and its products. To this end, in the past ten years Eni has been implementing a three-pronged *Climate Strategy*:

- continuous improvements in its own energy efficiency and progressive reduction of emissions arising from its production activities;

- promotion of natural gas as instrumental for the transition towards a *low carbon* economy;

- investments in renewable energy and development of "green" products.

The challenge of climate change is global and requires shared solutions. Italy believes that companies' programs of GHG reduction in their products and production process should be complemented with a strong commitment to initiatives aimed at fostering partnerships with public and private actors, with a view to combating climate change.

For its part, Eni joined two public-private initiatives to curb methane emissions and flaring:

• *Climate and Clean Air Coalition*, coordinated by UNEP (*United Nations Environmental Programme*) and aimed at reducing methane emissions in many fields, including Oil&Gas[83]. In this framework, Eni committed to reporting on its activities to improve monitoring and to reduce methane emissions from natural gas production.

• *Global Gas Flaring Reduction*, coordinated by the World Bank and aimed at progressively eliminating flare gas emissions[84]. In 2014 Eni subscribed to the "zero routine flaring in 2030" goal, which believes to be able to attain in advance of the deadline.

In 2014 Eni, together with other O&G major companies, also embarked on a voluntary program, the *Oil&Gas Climate Initiative*, an ambitious action plan to contribute to the fight against climate change. It aims at strengthening proactive collaboration, information sharing and communication aspects in order to optimize GHG emission management in the oil & gas sector, thus contributing to the transition towards a low-carbon economy[85].

[82] See https://www.ipcc.ch/report/ar5/
[83] See http://www.ccacoalition.org/en
[84] See http://www.worldbank.org/en/programs/gasflaringreduction
[85] See http://www.oilandgasclimateinitiative.com/

Carbon pricing is one of the instruments to achieve a de-carbonized economy. In this regard, Eni published a public appeal to all governments and to UNFCCC[86], calling for the introduction of emissions pricing schemes. The target is to establish a clear, steady and more ambitious regulatory framework and to harmonize existing national rules, whose differences currently distort competition (*carbon leakage*)[87]. In this way, uncertainty of investments in *low carbon* technology would be reduced and efforts to identify more effective methods to significantly curb CO^2 emissions on a global scale would be encouraged.

The Arctic represents a huge technology and management challenge for all companies. Indeed, while it offers opportunities to explore new mineral resources, its environmentally sensitive and remote areas require exceptional safety measures and thorough risk analysis by deploying cutting-edge technology and highly skilled staff.

Eni's approach to Arctic activities, therefore, is based on the following key points:

- activities are to be performed in ice-free offshore areas only and assisted by satellite iceberg control and remote monitoring of all drilling activity;

- operations are to be conducted only during periods of the year when repercussions on the marine environment (in particular, on mammals) are minimal, while guaranteeing site-specific biodiversity conservation techniques;

- employment of the best drilling technologies; well diameter kept at minimum; pressure management; use of blow out preventers and robotic oil spill prevention/containment systems;

- local inhabitants have to be involved and informed; their activities have to be protected and their know-how employed, especially in the field of emergency management (fishing vessels, for instance, may help in detecting/containing oil spills);

- use of technologies and adoption of criteria for the evaluation and management of environmental and social impacts, based on lessons learned through the ongoing joint ventures in the region.

To understand the Arctic environment and adjust to its sensitivity, Eni has also engaged in discussions with a number of NGOs. As a result, new engineering solutions were identified for the exploitation of the *Goliat* field (located in the Norwegian Barents Sea)[88],so that operations can be adapted to the area's extreme conditions (a particularly cold climate, long periods of darkness, communications difficulties), to its fragile ecosystem and to the specific needs of indigenous peoples. The floating production, storage and offloading unit (FPSO), which can store up to one million barrels of oil, shall receive half of its power supply from the mainland, through the world's longest submarine cable of this type. This will enable a 50% reduction in carbon dioxide emissions. The associated gas and produced water will be reinjected into the oilfield, thus minimizing dispersal of pollutants in the atmosphere and in the marine environment.

[86] *Le major europee dell'oil & gas lanciano un appello sulla tariffazione delle emissioni di anidride carbonica*, Eni S.p.A., 2015, available on http://www.eni.com/it_IT/home.html
[87] Delocalization of production facilities linked to higher environmental costs (e,g, compliance to the *EU Emission Trading Scheme*).
[88] See http://www.eninorge.com/en/field-development/goliat/

6. CONCLUSIONS

Italy is about to reach a milestone: a century of scientific presence in the Arctic. Our footprint has reinforced over time, thanks to the scale and quality of the activities conducted by scientific institutions like CNR, ENEA, INGV and OGS, together with many universities and other research centers.

Accordingly, Italy aims at getting increasingly involved in all fields of Arctic cooperation, be it on a multilateral level (in the Arctic Council and in other relevant fora) or bilaterally with the Arctic States.

At domestic level, the Government will maintain its support to the national research centers currently engaged in the Arctic. Moreover, it will continue to promote growing public awareness on Arctic-related topics and will remain fully available to collaborate with citizens and other actors interested in exploring and studying the Arctic.

All Government activities will most certainly conform with the principles and goals of the European Union environmental policy as well as with all relevant international obligations, with special reference to sustainable development – that is, the compatibility and the synergistic relationship between economic growth, protection of the environment and specific needs of indigenous peoples.

ACRONYMS

AEWA:	African-Eurasian Migratory Waterbird Agreement
AMAP:	Arctic Monitoring and Assessment Programme
AR5:	IPCC 5th Assessment Report
ARCA:	ARctic: present Climatic change and pAst extreme events
ASI:	Italian Space Agency (Agenzia Spaziale Italiana)
CBD:	Convention on Biological Diversity
CCT:	Climate Change Tower
CITES:	Convention on International Trade of Endangered Species
CLRTAP:	Convention on Long-Range Transboundary Air Pollution
CMS:	Convention on Migratory Species
CNR:	National Research Council (Consiglio Nazionale di Ricerca)
EEAS:	European External Action Service
EMSO:	European Multidisciplinary Seafloor and water column Observatory
ENEA:	Italian National agency for new technologies, Energy and sustainable economic development (Agenzia nazionale per le nuove tecnologie, l'energia e lo sviluppo economico sostenibile)
EPOS:	European Plate Observing System
ESFRI:	European Strategy Forum on Research Infrastructures
FPSO:	Floating Production, Storage and Off-loading unit
HABITAT III:	United Nations Conference on Housing and Sustainable Urban Development
EPB:	European Polar Board
FIO:	First Institute of Oceanography
GHG:	Greenhouse gases
IAOOS:	Ice, Atmosphere, Arctic Ocean Observing System
IASC:	International Arctic Science Committee
ICARP:	International Conference on Arctic Research Planning
ICOS:	Integrated Carbon Observation System
ICSU:	International Council for Science
IEA:	International Energy Agency

INGV:	National Institute of Geophysics and Vulcanology (Istituto Nazionale di Geofisica e Vulcanologia)
IPCC:	Intergovernmental Panel on Climate Change
IPI:	International Polar Initiative
IsAG:	Institute of Advanced Studies in Geopolitics and Auxiliary Sciences (Istituto di Alti Studi in Geopolitica e Scienze Ausiliari)
Marpol 73/78:	International Convention for the Prevention of Pollution from Ships, 1973 as modified by the Protocol of 1978
MERIL:	Mapping of the European Research Infrastructure Landscape
MFAIC:	Ministry of Foreign Affairs and International Cooperation (Ministero degli Affari Esteri e della Cooperazione Internazionale)
NySMAC:	Ny-Ålesund Science Manager Committee
OGS:	National Institute of Oceanography and Experimental Geophysics (Istituto Nazionale di Oceanografia e Geofisica Sperimentale)
PNRA:	National Antarctic Research Programme (Programma Nazionale di Ricerche in Antartide)
RFBR:	Russian Foundation for Basic Research
ROV:	Remotely Operated Vehicle
SAO:	Senior Arctic Official
SAON:	Sustaining Arctic Observing Networks
SLCF:	Short-Lived Climate Forcers
SIOS:	Svalbard Integrated Earth Observation System
SOLAS:	International Convention for the Safety of Life at Sea
UAV:	Unmanned Aerial Vehicle
UNCLOS:	United Nations Convention on the Law of the Sea
UNEP:	United Nations Environment Programme
UNFCCC:	United Nations Framework Convention on Climate Change
USV:	Unmanned Surface Vehicle
WMO:	World Meteorological Organization