2nd ARCTIC SCIENCE MINISTERIAL

Joint Statement of Ministers

On the occasion of the

Second Arctic Science Ministerial

26 October 2018

Berlin

Federal Republic of Germany

Federal Ministry of Education and Research

European Commission

Ministry of Education and Culture

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We, the Ministers representing the eight Arctic States (Canada, the Kingdom of Denmark - here represented by Ministers of Denmark, Faroe Islands and Greenland -, Finland, Iceland, Norway, Russia, Sweden, and the United States), fifteen further States (Austria, Belgium, China, France, Germany, Italy, Japan, Republic of Korea, the Netherlands, Poland, Portugal, Singapore, Spain, Switzerland, the United Kingdom), and the representative of the European Union, joined by representatives of six Arctic Indigenous Peoples Organisations (Aleut International Association, Arctic Athabaskan Council, Gwich'in Council International, Inuit Circumpolar Council, Russian Association of Indigenous Peoples of the North, Saami Council), have gathered to further enhance collaborative science efforts in the Arctic.

We thank the government of the United States of America for having convened the first Arctic Science Ministerial in 2016 in Washington D.C., and for having supported the follow-up of its deliverables.

The first Arctic Science Ministerial boosted the significance and visibility of Arctic science in the international arena and presented to a wide audience the contributions of Arctic and non-Arctic States, as well as the valuable contributions of Arctic Indigenous Peoples and local communities, to Arctic science.

This second gathering of science ministers from around the world – joined by Arctic Indigenous leaders – continues to focus on the potential for supporting and enhancing Arctic science through increased cooperation.

We strongly note the need for increased effort and urgent attention supporting further international scientific collaboration focusing on the warming trend in the Arctic. This trend is progressing fast, with widespread environmental, social, cultural, and economic impacts in the Arctic and other regions worldwide. Moreover, broader global and regional changes – both

environmental and socio-economic – are challenging the region's ecosystems and the health and well-being of its communities. Hence, developments stemming mostly from outside the Arctic are posing significant challenges, but are also opening new opportunities for the people who call the Arctic home.

Science, research, and the knowledge generated by Indigenous Peoples and local communities play an important role:

- in establishing a sound understanding of the causes and interwoven implications of these dramatic transformations, of the likely impacts and additional risks;
- in considering possible scenarios for future changes and new social and economic developments in the region, including for Arctic residents and for the Indigenous Peoples living there;
- in improving our understanding of the long-term effects of Arctic changes, the consequences and benefits of alternative paths of action, and bolstering efforts to enhance adaptation, risk management and emergency preparedness.

We remain committed to advancing our capacity to observe current changes, to project and predict climatic and other changes into the future based on shared information.

Accordingly, we recognise the value of acting together with determination on behalf of present and future generations. This includes striving for diversity – also of gender – and inclusiveness in Arctic science, recognising that cultivating talent and promoting excellence across the social spectrum will lead to better problem solving and innovative solutions to the Arctic science challenges described in this Joint Statement.

Knowledge stemming from the long-term experience of inhabiting the Arctic, being Indigenous Peoples or local communities, is indispensable for understanding the Arctic and its changes. We acknowledge that, where appropriate, research in the Arctic has to be carried out

– in compliance with national sovereignties and jurisdictions – respecting the values, interests, priorities, culture and traditions of Arctic Indigenous Peoples and local communities.
We also recognise that Arctic Indigenous Peoples have developed a very wide body of living knowledge, which is inseparable from their culture and language. Within this knowledge lies an evolving repository of detailed observations and analyses regarding the wide variety of ecological, physical and biophysical conditions and systems in the Arctic, such as weather, climate, ocean, ice and wildlife. Indigenous Peoples should be involved as appropriate – as they are in this Ministerial discussion – in the assessment and definition of Arctic research priorities.

We further recognise the importance of appropriate involvement of local communities in relation to Arctic science.

We very much welcome the summary of the Chair of the Science Forum that was held yesterday, 25 October 2018, in preparation for this ministerial event.

We very much welcome the entering into force, on 23 May 2018, of the Agreement on Enhancing International Arctic Scientific Cooperation by the Arctic States, as negotiated under the auspices of the Arctic Council, and its relevance for improving international scientific cooperation.

We also welcome the intention to facilitate cooperation in scientific activities and to establish a Joint Program of Scientific Research and Monitoring of the Central Arctic Ocean as part of the legally binding Agreement to Prevent Unregulated High Seas Fisheries in the Central Arctic Ocean, drafted in November 2017 in Washington D.C., once the Agreement enters into force.

Through the second Arctic Science Ministerial, we are enhancing and developing collaborative activities under three themes:

1. Strengthening, Integrating and Sustaining Arctic Observations, Facilitating Access to Arctic Data, and Sharing Arctic Research Infrastructure
2. Understanding Regional and Global Dynamics of Arctic Changes
3. Assessing Vulnerability and Building Resilience of Arctic Environments and Societies

We emphasise that improved and better coordinated international scientific cooperation, through collaborative activities, can enable notable advancement in understanding Arctic changes, their impact on other regions of the world, and in our ability to respond to them by providing appropriate and evidence-based information for decision-making processes. Through these collaborative activities, this process also contributes to the implementation of the 2030 Agenda for Sustainable Development and the Paris Agreement, for those countries that are implementing it.

1. **Strengthening, Integrating and Sustaining Arctic Observations, Facilitating Access to Arctic Data, and Sharing Arctic Research Infrastructure**

The Arctic is a complex system, and it remains a challenge to monitor and forecast changes – even more so due to its vastness, diversity, remoteness, low population density, and sometimes extreme conditions.

Arctic research can often be difficult and expensive, and it requires the sustained availability of costly research infrastructure to observe, monitor, and understand the rapid changes taking place in the Arctic.

Existing national and international observing and research efforts and data management initiatives are not yet fully able to meet the demand for sustained, comprehensive, and integrated information on the Arctic. There is a need to enhance reciprocal collaboration and coordination of efforts on Arctic observations of all types, spanning from community-based observatories to high-tech autonomous systems, and to increase their spatial and temporal coverage.

Costs can be reduced, and outcomes improved, by further promoting the sharing of research infrastructure and observing systems, and by making scientific data and publications – whenever possible - freely and openly available in a findable, accessible, interoperable, reusable, and timely manner, in accordance with domestic and international laws, policies and ethical principles, while ensuring protection of sensitive information.

Deliverables produced to date have shown the potential benefits and the value of an integrated Arctic observing system, and the returns associated with the required long-term investments for its improvement and operation.

We therefore intend to cooperate through the following actions:

- taking stock of progress made in the analysis of societal benefits of Arctic observations, continue and expand the cooperation in this area by progressively moving from the design to the deployment phase of an integrated Arctic observing system which also supports and includes community-based observatories, in cooperation with the Sustaining Arctic Observing Networks (SAON) initiative, Copernicus, and other major operational observing networks, such as the Svalbard Integrated Arctic Earth Observing System (SIOS) and the Distributed Biological Observatory (DBO);

- enhance cooperation among space agencies on current and future missions of Arctic relevance, building on the experience of the Polar Space Task Group of the World Meteorological Organisation (WMO);
- cooperate in facilitating international access to Arctic research infrastructure;
- reiterate the willingness, already expressed within the Group on Earth Observations, to make substantial progress in making Arctic research and monitoring datasets available, discoverable, and relevant for communities;
- explore new technologies for unmanned observing systems and remote sensing to add versatility to observations;

2. Understanding Regional and Global Dynamics of Arctic Changes

Changes in the Arctic are driven by environmental, climatic, social and economic factors that are local, regional and - most significantly - global. Feedback from the Arctic climate system, in turn, has global repercussions affecting the environment, people and economies worldwide. Global warming is the main cause of the well-documented decline of Arctic sea-ice extents and thickness, and of the increase in mass loss from the Greenland ice sheet. Furthermore, warming and melting in the ocean and on land, including effects on permafrost, lead to potential further increase in greenhouse gas emissions and in warming through surface radiation feedback. These changes - and their dynamics - alter ocean and atmospheric circulation, thereby affecting the global climate. Even a small increase of temperature in the region can trigger greater warming over time, making the Arctic one of the most sensitive areas to climate change on Earth.

The complexity of regional and global impacts of a warming Arctic and of associated ecosystem changes regarding land, freshwater and oceans have not yet been fully assessed and quantified. Understanding and responding to this challenge requires joint efforts by the global community.

We therefore intend to cooperate through the following actions:

- enhance international cooperation, taking advantage of the programmes of the Year of Polar Prediction (YOPP) – within the WMO's Polar Prediction Programme – and the international Multidisciplinary Drifting Observatory for the Study of Arctic Climate (MOSAiC), in order to:
  - increase our predictive capabilities for Arctic weather and climate and their connections with the global system, including other parts of the global cryosphere (e.g. Antarctica and high mountain regions);
  - improve confidence in predictions of future Arctic changes based on a better understanding of the feedbacks in the Arctic cryosphere;
- promote voluntary international cooperation – taking into account the essential contribution of the knowledge generated by Arctic peoples - to achieve substantial progress on:
  - predicting sea-ice changes and analysis of consequences for weather and climate, including ecological, health, social, and economic issues;
  - understanding the impact of Arctic changes on freshwater, terrestrial, and marine ecosystems, their structure and function, including the effects for local human communities;
  - assessing the stability of Arctic permafrost, given the risk of greenhouse gas emissions from its thawing;
  - better predicting the dynamics of Arctic ice sheets, glaciers and ice caps, their interactions with the surrounding ocean, and their contribution to global sea-level rise;
  - understanding of social and economic drivers of Arctic change.

3. Assessing Vulnerability and Building Resilience of Arctic Environments and Societies

Ecosystems and human communities in the Arctic are already experiencing the impacts of global changes. While these changes are perceived to have generally negative effects, for some a warmer Arctic may also present opportunities – with related challenges - for new social and economic developments. However, local circumstances and community resiliency vary widely across the region.

It is increasingly clear that environmental and societal changes are continuing and projected to increase, affecting ecosystems, economies, people's livelihoods, health and well-being, and cultural contexts. The lives of Arctic residents – both Indigenous and non-Indigenous - are also changing, providing or indicating the need for new livelihoods, enabling new technologies, and increasing global connections.

Therefore, it is important to combine our understanding of environmental, technological and socio-economic changes and their short- and long-term interlinkages. This practice will best inform decision-making for sustainable development in the Arctic and in other parts of the world affected by changes in the Arctic.

We therefore intend to cooperate through the following actions:

- enhance multilateral scientific cooperation between Arctic and non-Arctic States, Indigenous Peoples, local communities, and societal and economic stakeholders for:
  - identifying the risks and minimising the impacts of climate and global changes on Arctic environment, infrastructure, local and Indigenous communities, including on health and well-being;
  - developing adaptation and resilience-building strategies through multidisciplinary and holistic approaches, including community-based methods;
  - developing activities that address the sustainability of new Arctic opportunities for social, economic, and technological development of the region;
- develop and integrate in the Arctic region services making use of climate information;

- develop and disseminate best practices for coping with impacts of Arctic changes also outside of the Arctic.
- develop research and educational programmes to support Indigenous languages, cultural and economic practices, sustainable ways of living, and heritage resource preservation.

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The implementation of the new and enhanced collaborative activities described above should benefit from dedicated multi-lateral discussions to facilitate the cooperation between national and transnational science funding programmes. We therefore recommend exploring the possible call of a forum of Arctic science funders to discuss strategies for supporting the research that is necessary to achieve the goals agreed at this Ministerial meeting.
Through this second Arctic Science Ministerial, we demonstrate the importance our respective governments, the European Union, and Arctic Indigenous Peoples Organisations place on supporting science cooperation in the Arctic region that is an integral component of the Earth system.

We emphasise the necessity for all States and the European Union conducting research in this region to work together, in collaboration with Arctic Indigenous Peoples and local communities, as appropriate, to enhance and deepen scientific knowledge and understanding of the Arctic in order that it remains a safe, sustainable, prosperous and peaceful place for generations to come.

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Mr. Stéphane Dion
Ambassador to the Federal Republic of Germany and Special Envoy to the EU and Europe
Canada

Mr. Carlos Moedas
Commissioner for Research, Science and Innovation
European Commission

Mr. Poul Geert Hansen
Permanent Secretary, Ministry of Education, Research and Culture
Faroe Islands

Ms Anja Karliczek
Federal Minister of Education and Research
Federal Republic of Germany

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Prof. Frédérique Vidal
Minister of Higher Education, Research and Innovation
French Republic

Ms Karen A. Motzfeldt
Head of division for the department of Nature and Climate
Ministry of Nature and Environment
Greenland

Ms Lilja Alfreðsdóttir
Minister of Education, Science and Culture
Iceland

Mr. Salvatore Giuliano
Undersecretary of State at the Ministry for Education,
Universities and Research
Italian Republic

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Mr. Masahiko Shibayama
Minister of Education, Culture, Sports, Science and Technology
Japan

Baron Willem Albert G. van de Voorde
Ambassador to the Federal Republic of Germany
Kingdom of Belgium

Mr. Hans Müller Pedersen
Director-General, Danish Agency for Science and Higher Education
Kingdom of Denmark

Ms Rebekka Borsch
State Secretary to the Minister of Research and Higher Education
Kingdom of Norway

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Prof. Rafael Rodrigo
General Secretary of Coordination of Scientific policy
Ministry of Science, Innovation and Universities
Kingdom of Spain

Ms Ann Christin Linde
Minister for European Union Affairs and Trade
Kingdom of Sweden

Ms Ingrid van Engelshoven
Minister of Education, Culture and Science
Kingdom of the Netherlands

Mr. Huang Wei
Vice Minister of Science and Technology
People's Republic of China

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Mr. João Mira Gomes
Ambassador to the Federal Republic of Germany
Portuguese Republic

Dr. Peter Huber
Ambassador to the Federal Republic of Germany
Republic of Austria

Ms Sanni Grahn-Laasonen
Minister of Education
Republic of Finland

Ms Jin-hee Oh
Counsellor, Embassy to the Federal Republic of Germany
Republic of Korea

Mr. Andrzej Przyłębski
Ambassador to the Republic of Poland
Republic of Poland

Mr. Sam Tan Chin Siong
Minister of State, Ministry of Social and Family Development and Ministry of Foreign Affairs
Republic of Singapore

Dr. Grigory V. Trubnikov
First Deputy Minister of Science and Higher Education
Russian Federation

Mr. Stefan Estermann
Ambassador and Head of the Sectoral Foreign Policies Division
Swiss Confederation

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Prof. John Loughhead
Chief Scientific Adviser at the Department for Business, Energy and Industrial Strategy
United Kingdom

Dr. France A. Córdova
Director National Science Foundation
United States of America