

Cover sheet

Full name of state or organization:

France

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Is your state or organization still interested in continuing as an Observer of the Arctic Council?

Yes No

Observer Report

Please describe in no more than 2 pages your state or organization's contributions to the work of the Arctic Council's Working Groups, Task Forces and/or Expert Groups since the time of your most recent report, or in the previous two years. Please highlight contributions to specific projects, such as through proposals, concept development, in-kind and financial support, and hosting of meetings. If applicable, please include mention of collaboration with Permanent Participants, such as project proposal endorsement and support.

As an Observer since 2000, France actively contributes to the leading work of the Arctic Council (AC) in the governance of the region. Building on its long-standing tradition of polar exploration and research, France has been a polar nation for the last three centuries. Today, France is among the major scientific contributors for the Arctic sciences: its expertise in Earth and Life sciences, humanities and social sciences provides an internationally recognised input to the understanding of the region. The French Polar Institute (IPEV), the national support agency for the implementation of polar research, operates one station in Svalbard and implements several scientific and technological programs in the Arctic. Around 400 researchers from French research and academic institutions are working permanently in the Arctic region.

Moreover, France has a leading role in the collective understanding and address of climate change. The Arctic vulnerability is a challenge for the planet, especially regarding its major role in the global climate regulation and the extreme sensitivity of its ecosystems. In this respect, France is committed to work with the international community to address the consequences of environmental and climate changes.

France released its National Roadmap for the Arctic in June 2016, testifying the high level of interest in the Arctic. The Roadmap reaffirms France's scientific, environmental, economic and strategic commitments to the area. It reaffirms the leading role in regional cooperation and the legitimacy of the AC for the regulation of the Arctic region.

Therefore, France, as an Observer, contributes to the work of the Working Groups, Expert Groups and Task Forces and participates in the regular SAO and ministerial meetings. The Roadmap gives priority to the increase of French scientific contribution, specially through French flagships programs which are and will be significant contributors to the AC work. France is indeed a major contributor to Arctic research and is involved in a range of projects in the Arctic through the mobilisation of French institutions and its research infrastructures.

For years, France has been promoting the principle of placing greater responsibility on States from outside the Arctic region, which are also responsible for the sustainable development of this fragile environment. Under the US Chairmanship, the Observers had the honor to be invited to collaborate to the work of the AC in sciences and research.

In addition to its historical presence and its major contribution to scientific research in the Arctic, France closely follows the work of the Arctic Council through the mobilization of French diplomats and scientists. France extensively mobilized the French diplomatic network to take part to the SAO meetings (and took part in the Special Sessions on Observer Engagement when organised) and various working groups. Moreover, France continually monitored the work of the Scientific Cooperation Task Force (SCTF).

In December 2015, with Germany and the United Kingdom, France promoted the Observer States significant contribution to scientific knowledge and cooperation in the Arctic. France provided a comprehensive national report on black carbon and methane emissions to the Arctic Council Secretariat in September 2015, coordinated by the French Ministry of Foreign Affairs and International Development and the Ministry of Environment, Energy and the Sea.

Besides, France increased its scientific contribution to the AC working groups and expert groups:

AMAP: two French experts contribute to the AMAP work. Mrs Kathy LAW, research Director at the National Center for Scientific Research (CNRS) and expert on Arctic air pollution issues has been working on the Expert Group on Black Carbon and tropospheric ozone since 2012. She is also coordinator of the ongoing PARCS project (Pollution in the Arctic System). She contributed to the *AMAP Assessment 2015: Black carbon and ozone as Arctic climate forcers* and contributor to the *Summary for Policy Makers: Arctic Climate Issues 2015*. M. Jérôme FORT, CNRS, is an expert on ecotoxicology (Arctic seabirds exposed to mercury contamination while overwintering in the Northwest Atlantic) and participates in the AMAP working group meetings since November 2016.

CAFF: France provided an expert on migratory birds, M. David GREMILLET, Research Director at the CNRS to take part in the CAFF working group. M. GREMILLET contributes to the work of CAFF/AMBI through the TAMANI project (Belmont Forum) he coordinates. TAMANI aims at designing an improved network of long-term monitoring sites for Arctic vertebrates and involving local communities through participatory scientific programs. TAMANI also contributes to the Circumpolar Biodiversity Monitoring Plan (CBMP).

PAME: M. Sébastien GADAL, professor of Geography at the University of Aix-Marseille (France)/CNRS ESPACE and NEFU Department of Geography contributes since September 2015 to the work of PAME and the Shipping Expert group. M. Sébastien GADAL is an expert of the processes of urban development, metropolisation and organization of urban space in the post-Soviet cities: he develops geographical models that predict the trends of urban areas development, especially in Siberia. In 2015, France once again become involved in this working group and is working to mobilize skilled experts on navigation issues in the various technical ministries concerned. Joint cooperation (expert group), and joint research project with US and NGO (IAI) are under implementation. Skill problematic of Arctic infrastructures for navigation, energy, and socio-environmental impacts on indigenous populations are monitored and managed under French, European and joint Russian research programs (ANR PUR, FP-7 POLARIS, RSF Land Ontology).

SDWG: Since the Canadian Chairmanship of the Arctic Council, the Department in charge of Polar Affairs at the French Ministry of Foreign Affairs and International Development has been participating in the SDWG meetings when they are back-to-back with SAO meetings and has been providing the relevant bodies which may be interested with information on the ongoing projects. Several research programs granted by the National Research Agency (ANR) (CLASSIQUE, PUR) or joint program (FMSH-RGNF) (RSF) (Land Ontology), FP-7 IRSES PEOPLE POLARIS, are focusing on the problematics of sustainable development in the Arctic territories and geospatial monitoring by remote sensing, GIS and simulation. Moreover, the international workshop "Urban Arctic" has been organised in Umea University under the umbrella of the French Embassy in Sweden, U-Artic and the International Arctic Social Sciences Association (10 May 2016).

During the United States Chairmanship, France also participated in the American initiative related to the Arctic (White House Arctic Science Ministerial).

France is also involved in the International Arctic Science Committee (IASC), observer at the Arctic Council, as a full Member. French scientists participate in most of the IASC Working Groups, namely in Terrestrial, Cryosphere, Social & Human and Atmosphere WG.

If applicable, please describe in no more than 1 page your state or organization's future plans for contributing to the work of the Arctic Council's Working Groups, Task Forces and/or Expert Groups. Please highlight intentions to contribute to specific projects and to collaborate with Permanent Participants.

As mentioned in the National Strategy, France aims at maintaining and reinforcing its presence in the working groups. Some of the on-going projects led by French researchers are directly contributing to the work of the Arctic Council, such as:

AMAP: France is contributing to the work of AMAP via funded European (e.g. ECLIPSE) and national projects (CLIMSLIP-ANR, French Arctic Initiative project PARCS). The recent national French PARCS (Pollution in the Arctic System, FAI, 2015-2017) project will contribute to improving understanding about pollution impacts on climate, ecosystems and societies and also forms a contribution to the international IGAC (Future Earth)/IASC PACES (air Pollution in the Arctic: Climate, Environment and Societies). PARCS project on Arctic pollution is a multi-disciplinary project involving 19 French laboratories. A combination of new data collection, data analysis and modelling is being used to address these issues with a focus on northern Scandinavia (Svalbard)/eastern Greenland and Siberia. New data are being collected on aerosol-cloud interactions, riverine and oceanic mercury compounds, mercury levels in sea-birds (across the Arctic), pollutant deposition (nitrate, sulphur), local pollution sources (using Russian YAK aircraft) and pollutant perception/risks and exploration of the use of community based monitoring of air pollutants in Siberia. The France expert is also co-chair of new international initiative on Arctic air pollution (PACES) which is endorsed as an activity of the Future Earth International Global Atmospheric Chemistry project and co-sponsored by the International Arctic Science Committee (IASC) Atmosphere Working Group. PACES aims to motivate new activities to improve our knowledge about Arctic air pollution and its impacts. Major new field activities are being planned with the aim to reduce uncertainties in models and improve predictions of pollutant transport to the Arctic (focus on Asia) and its impacts as well as improving knowledge about sources and impacts local Arctic air pollution working with local communities (ex. community based monitoring). France is committed to participate in the elaboration of the scientific assessment by the new expert group on Short Lived Climate Forcers (interim report in 2019; full report in 2021). The scientific information will be based on research programs such as PACES and EU H2020 in which France is actively represented.

CAFF: TAMANI (Belmont Forum, 2015-2019) aims at designing an improved network of long-term monitoring sites for arctic vertebrates, towards a better involvement of local communities through participatory science programs. TAMANI will give inputs to the working group's work.

PAME: French expert in PAME has an interest in working with the SDWG as the ongoing project "Mobility and Sustainable Urban Systems" (ANR, launched in 2015) on Polar Urban centers aims at understanding the Arctic settlement and urbanization process.

As stated in the National roadmap for the Arctic, the following French institutions are mobilized to provide French scientific and logistical expertise and to contribute to the work of the AC through its Working Groups, Experts Groups and Task Forces: French National Center for Scientific Research (CNRS), French Polar Institute (IPEV) National Centre for Space Studies (CNES), French national research agency (ANR), Ministry of Education, Higher Education and Research (MENESR), Ministry of Foreign Affairs and International Development (MAEDI), Ministry of Environment, Energy and the Sea (MEEM).

If applicable, please describe in no more than 1 page your state or organization's contributions to other aspects of the Arctic Council and its goals not covered by the previous sections since the time of your most recent report, or in the previous two years.

France plays a major role in the various Arctic research fields and international cooperation through its numerous and various projects and its infrastructures (selected excerpt):

1. Major Arctic Research Initiatives or Projects

- **The French Arctic Initiative** (FAI, 2015–2020, CNRS) fosters collaboration across the French scientific community on major Arctic research themes. FAI supports: (1) GREENEDGE (cofunded with ANR, CNES, CNRS and Arctic-Net; dynamics of the phytoplankton spring bloom and its role in the Arctic Ocean, 2014-2019), and (2) PARCS.
- **EQUIPEX program** (Investments for the Future supported by the French Prime Minister up to 2020): IAOOS and NAOS develop and implement autonomous instrumentation (ice platforms and floats) to contribute to a long term observing system in the Arctic Ocean.
- The **“Belmont Forum – Arctic Observing and Research for Sustainability”** cofounded by ANR: TAMANI, Pan-ARCTIC OPTIONS (holistic Integration for Arctic Coastal-Marine Sustainability) and the Arctic-ERA (Arctic climate change and its impact).
- The **“Mobility and Sustainable Urban Systems”** (ANR, 2015): PUR (Polar Urban centers).
- **Horizon 2020 Blue Growth initiative of the European Commission**: INTAROS (BG9), BLUE-ACTION and APPLICATE (BG10) with the participation of CNRS and Météo France. France will also submit a proposal to participate in the coming BG-11-2017.
- The **“Changing Arctic” program** of seminars organized by the French Embassies in Denmark, Finland, Norway and Sweden under the Fonds d’Alembert 2016 with Institut Français.
- **The EU-PolarNet project** constitutes the world’s largest consortium in expertise and infrastructures for polar research. It provides a long-term strategy for Polar Regions, integrating cutting-edge science and top quality polar infrastructures. CNRS is leading the Work Package dedicated to Polar research in for Science and Society and IPEV leads several tasks on international collaborations and infrastructures.
- **Education programs**: A new interdisciplinary, international Master-degree program "Arctic Studies" has been set up at University Paris-Saclay in science and technology and human and social science. Besides, France is one of the few EU countries where Inuktitut is taught (INALCO).

2. Arctic Research Infrastructures

Field stations: For 13 years, IPEV and the AWI (Germany), have combined efforts in Svalbard, and have made full use of logistic and scientific assets. The joint AWIPEV French-German Arctic Research Base, situated in the Norwegian settlement of Ny-Ålesund offers operational opportunities in atmospheric research, geophysics, geochemistry, oceanography, biology, ecology and glaciology. Together with its partner AWI, IPEV is member of SIOS, a contributor for SAON.

Vessels and aircrafts: France has a fleet (CNRS/IFREMER/IPEV/IRD) of 10 research vessels. France encourages international or European collaborations, such as the ongoing European ARICE providing access to a set of 4 European and international existing icebreakers for marine-based research). France has the capacity to measure the transport and processing of atmospheric pollutants over the Arctic with two aircrafts from its national SAFIRE fleet, with a Russian aircraft as part of a joint French-Russian cooperation (YAK-AEROSIB), and with stratospheric balloons.

Satellites: France is a partner in the following Earth observation satellite systems that are used to study sea ice and ice-covered surfaces, clouds, atmosphere, ocean circulation, marine primary production, and (soon) land surfaces in the Arctic region: SMOS (Soil Moisture and Ocean Salinity); IASI (infrared atmospheric sounding interferometer); CALIPSO (Cloud Aerosol Lidar and Infrared Pathfinder Satellite Observations); PLEIADES. Launched in 2011 and 2012, Pleiades is a constellation of two very-high-resolution satellites capable of providing images of any point on the globe; MERLIN (Methane Remote Sensing Mission, French-German mini-satellite climate mission).