Report on the scientific activity of the Argentine Antarctic Institute – 2020

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***Introduction***

The Argentine Antarctic Institute (IAA) is a scientific-technological institution and a dependency of the National Antarctic Directorate (DNA), within the Ministry of Foreign Affairs, International Trade and Worship, under Argentine guided by the political norms of the Argentine Republic. It is an active stakeholder of Argentina's National Scientific and Technological System, and pioneer on an international level in the development of Antarctic scientific research.

The IAA staff is composed of approximately 100 scientific, technical and administrative personnel. 60% of them are researchers from a diverse range of scientific disciplines including Life Sciences, Earth Sciences, Social Sciences and Humanities, Physics, Chemistry and Environmental Sciences. Currently, the IAA is engaged in 55 research projects. 70% of the activities carried out by the IAA in Antarctica are conducted jointly with researchers from national universities and scientific-technological organizations, while 60% of its projects include some kind of international scientific cooperation in association with national Antarctic programmes from other Parties to the Antarctic Treaty, as well as universities and research centres from over 20 countries.

The year 2020 was marked worldwide by the difficulties emerged from the COVID-19 pandemic, which affected all human activities; and scientific activities in Antarctica were not an exception. Argentine scientific activity, coordinated by the IAA, had to be significantly reduced, and a very limited number of researchers participated in the 2020/21 campaign. In addition, all scientific encampments originally programmed in the Annual Antarctic Plan were suspended, and summer stations, many of which host research projects, remained closed.

These strict sanitary measures yielded positive results, as no COVID-19 cases were detected in the Argentine Antarctic stations nor on national vessels that entered the Antarctic Treaty area. Notwithstanding the difficult situation produced by the pandemic, the IAA continued its scientific activity. This report provides a summary of the main results of the IAA’s work during the year 2020.

***Production of the Argentine Antarctic Institute***

A summary is provided below, containing the results achieved by the IAA during 2020 in terms of scientific production, Antarctic Campaigns, capacity building, training, scientific advisory, scientific articulation and outreach activities:

1. **Scientific production**: During 2020 the IAA published 74 scientific peer review articles in specialised magazines, 7 book chapters, and made 45 presentations in national and international conferences. In particular, five works were published in the prestigious *Nature* magazine, showing that the IAA and its researchers are present at the highest level of their areas of expertise. Regarding presentations in conferences, these were severely affected by the cancellation of many events which could not be conducted in a virtual format; for this reason, they were reduced by 60% in comparison with those of 2019. The highest participation (with 20 presentations) took place at the SCAR Open Science Conference 2020, a virtual event. It is important to note that scientific production of specialised articles, peer-reviewed and included in international publications, has remained within the parameters of past years, slightly diminished as a result of the decrease in activity due to the COVID-19 pandemic.
2. **Antarctic Campaigns**: As the 2020 ATCM was cancelled and the Antarctic Campaign that started in 2019 ended in March 2020, we are providing a brief summary of both the 2019/20 and the 2020/21 Campaigns.

* **Antarctic Campaign 2019/2020**: 180 research, technical and logistical personnel were deployed, in groups working on 40 scientific projects. The groups were distributed between stations and the icebreaker Almirante Irízar (RHAI). Around two thirds of all personnel undertook their activities at Carlini and Marambio stations (both inside the stations and in nearby encampments and refuges). 21 projects were carried out in the areas of Marambio and Esperanza stations (8 in Marambio station, 5 in Esperanza station and 8 in encampments) by 77 scientists, technicians and logistical personnel. Additionally, 56 scientists and technicians were deployed at Carlini station to work on 20 projects, primarily on biological sciences, oceanography and environmental science. Further, 11 wintering personnel (engineers and technicians in computer science and electronics) were hired to operate and verify the functioning of scientific electronic equipment during 2020 in the permanent stations Belgrano II, Orcadas, San Martín, Marambio and Carlini, as well as its proper registration in data acquisition recorders and computers, and the management of computer networks and satellite data links. A wintering biologist was present as well in 2020, who was in charge of scientific-technical tasks in the field and in the laboratory at Carlini station, to support ongoing scientific projects especially during winter.
* **Antarctic Campaign 2020/2021**: Pre-season 2020 campaign (September-November) had to be suspended given the restrictions imposed as a result of the COVID-19 pandemic. For this reason, as was mentioned above, the deployment of personnel and equipment and thus the scientific activity were severely reduced. In Carlini, only a small interdisciplinary group of 15 researchers and technicians could be stationed, to carry out essential research tasks involving international commitments and completing Bachelors and PhD theses. Additionally, at Marambio station only 3 researchers participated in the summer campaign and no encampments were deployed. Similarly, only two researchers were present at Esperanza station. Contrary to the usual practice in summer campaigns, due to the pandemic, it was not possible to welcome foreign researchers to the Argentine Antarctic stations.

1. **Capacity building**: Regarding human resources, during 2020 IAA personnel directed 26 theses (including Bachelors, Masters and PhD degrees) in Antarctic scientific affairs. Further, as part of their professional training, IAA researchers participated in 40 specialisation courses in different scientific disciplines related to their positions. In total, over 1600 hours were dedicated to capacity building activities. In addition, IAA researchers participated in numerous training activities in Antarctic disciplines directed towards the Joint Antarctic Command personnel, among others.
2. **Research career**: During 2019, in the framework of a special call for admission into the Scientific Researcher course of the National Council for Scientific and Technical Research (CONICET), focused on institutional strengthening, the IAA drafted 5 profiles for vacant areas, and 3 researchers were admitted in August 2020. In a new special call by CONICET in 2020, 5 more profiles were drafted. The results of these evaluations will be available in mid-2021.

1. **Scholarships**: During 2020, 5 PhD scholars and 1 post-doctoral scholar from CONICET continued their work at IAA. One new PhD scholar was incorporated to work on the subject of detection by molecular biology of bacteriophages present in the different Antarctic environments.

Additionally, an IAA researcher was awarded a CCAMLR scholarship (2019-2021), and 3 scholarships from the Program for Training and Support to Research and 2 scholarships for Work Experience as Stimulus for Scientific Vocations for students were awarded by the Natural Science and Museum Faculty of the National University of La Plata. In 2020 a young IAA researcher completed a 5 month internship at the Bioscience Division, Functional Ecology Area at the Alfred Wegener Institute (AWI) in Germany. It was financed by the Federal Ministry of Education and Research of Germany (BMBF) in the framework of a bilateral Project with the Ministry of Science, Technology and Innovation of Argentina for IAA researchers. During her internship, scientific data was analysed, results were discussed and an article was prepared on the tolerance to temperature of the macroalga species *Desmarestia menziesii*.

1. **External financial support for research projects**: Tasks were continued in relation to grants awarded in previous years through national and international financing mechanisms for an amount of over U$S 300.000, covering the development of multi-year projects.

It is worth noting that the CoastCarb Project, “Coastal ecosystem carbon balance in times of rapid glacier melt”, financed by the call H2020-MSCA-RISE-2019 of the Marie Curie Actions program (European Commission Research Executive Agency “REA”) and formed by 105 researchers from 16 institutions from 7 countries, including the IAA, postponed the start of field work planned for summer 2020/21 due to the COVID-19 pandemic. The first workshop of this project, programmed for March 23rd to 27th, 2020 in Punta Arenas, Chile, was carried out in virtual format.

1. **Scientific advisory**: During 2020, IAA scientists drafted 5 scientific advisory reports for international negotiation fora on Antarctic affairs, which in turn generated Working and Information Papers submitted by Argentina to SCAR, CCAMLR and the Meeting of Administrators of Latin American National Antarctic Programs (RAPAL).
2. **Scientific networking**: In the course of 2020, the IAA participated in virtual format in the monthly meetings of the Interinstitutional Council for Science and Technology (CICYT), the main institutional forum for networking and joint work for national institutions dedicated to science and technology in Argentina. The IAA also took in several working commissions organized by the Ministry of Science and Technology (MINCyT).

At the international level, the IAA participated in 2020 in the virtual meetings of the Ad-hoc Committee Argentina-Chile on political coordination in Antarctic Affairs, the XXXII Annual General Meeting of the Council of Managers of National Antarctic Programs (COMNAP), the XXXI RAPAL meeting, the XXXVI Meeting of Delegates of the Scientific Committee of Antarctic Research (SCAR) and the 39th CCAMLR Meeting as well as the activities of its Scientific Committee.

1. **Outreach activities**: A Youtube channel for the IAA was created, coordinated by the Department of Social Sciences, Communication and Outreach. On this channel the IAA presented a documentary series on its scientific projects, called “Laboratorio Antártida” (Antarctica Laboratory), as well as a series on Antarctic history called “Huellas de hielo” (Ice Footprints) and series of film material from Antarctica recovered by the IAA in cooperation with the Film Museum (Buenos Aires).

URL: <https://www.youtube.com/channel/UCcLZP9FacMQmckjoNhsr1Ew>

The IAA has also incorporated an Instagram profile, in which it publishes content related to scientific activities as one step further in its social media presence and the promotion of IAA activities for the public’s knowledge:

<https://www.instagram.com/instituto_antartico_argentino/?hl=es>.

In order to encourage Antarctic careers, the IAA participated in 2020 in some 50 outreach activities in different formats such as conferences, master classes, magazine articles, television, journals, social networks and documentaries. These activities were directed towards equally varied audiences, including primary education (also in rural areas), secondary school, university students and teachers, military personnel and the general public. All of the aforementioned activities were carried out in virtual format.

***Conclusion***

In a year marked by the COVID-19 pandemic, the results of the IAA’s work in scientific production, advisory, human resources and outreach have been satisfactory and show a trend for growth. Our institution, which has celebrated seven decades of scientific activity in April 2021, is committed to continuing development of quality science in the Antarctic continent, contributing to support the standing and interests of Argentina in the region and the position of our country as a protagonist