



Biennial Report
2012 - 2014

Mission

The mission of IAI is to develop the capacity of understanding the integrated impact of past, present and future global change on regional and continental environments in the Americas and to promote collaborative, well informed actions at all levels.

Core values

IAI pursues the principles of scientific excellence, international cooperation and full and open exchange of scientific information relevant to global environmental change.

Vision

The IAI was envisaged as an intergovernmental instrument by which scientists and decision makers of countries throughout the Americas might jointly address the critical issues associated with global change in the region.

Cover photo credits: From top to bottom: 1. CRN 3025 - tropical dry forest, 2. CRN 3070 – bow wave by C.Mejia, 3. SGP-CRA 2060 – Coffee producer learning how to operate a weather station in a coffee plantation in Honduras by O. Gonzalez, 4. SGP-CRA 2015 peppers, 5. CRN 3076 – measuring rodent specimens, 6. CRN 3095 - Eucalyptus plantations on Uruguayan grasslands, 7. CRN 3076 Land cover change in Peru. **Inside photo credits:** Page 4. CRN 3076: land use change in western Amazonia; Page 6: CRN 3038: Vista del embalse del río Sauce Grande, al pie del Cerro del Amor en Sierra de la Ventana, febrero 2009, by Mauryfrapi (<http://commons.wikimedia.org/wiki/>); Page 7. CRN 3097 training activity; Page 8. View of the Andes by Peter Jorgensen; Page 9 and Page 35. CRN 3094: Antares stations (<http://www.antares.wsl/>); Page 16 land use change in tropical dry forest (A. Pfaff); Page 17: SGP-CRA 2021: Sandra Duran's presentation at an OSACT workshop in 2013; Page 18: CRN 3025-Measurements in tropical dry forests; Page 19. CRN 3025-Cipo trees; Page 34. CRN 3101 Itaipu Diciembre 2007 - Vista general de Martin St-Amant (S23678) - Own work. CC Attribution 3.0 via Wikimedia Commons - <http://commons.wikimedia.org/wiki/>; CRN 3005: Banco de imágenes del CNICE <http://recursostic.educacion.es/bancoimagenes/web/>; CRN 3107 corn-field-cc-Tyler-Allen-2011 from <http://tckctckctck.org/>; CRN3108-Mexico City,DF,Paseo Reforma Skyline by Alejandro Islas Photograph AC - <http://www.flickr.com/photos/99299995@N02/9355469268/>. Licensed under CC Attribution 2.0 via Wikimedia Commons



Inter-American Institute for Global Change Research

Biennial Report 2012 - 2014

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Foreword

True to its mandate, the IAI places its emphasis on excellent science to contribute to decision-making and policy formulation. Driven by real-world problems, the IAI's science and capacity building have become increasingly interdisciplinary and transformation-oriented; in fact this has become one of the IAI's marks of identity.

The **research networks** are working on problem and solutions - oriented interdisciplinary science projects that frequently manage to contribute to decision-making. Several focus on exploring new and better ways of using interdisciplinarity to contribute to problem solving and to social and productive development.

The collaborative networks are undergoing a generational renovation: supported by interdisciplinary and intersectoral **capacity building** seminars that help mold a new generation of young scientists and decision makers who have trained and are working together under the paradigm of science integration.

IAI **science lives in various domains** besides the scientific: in the global conventions and environmental governance system, in management and policy formulation of federal and local governments, and in the day-to-day decision making of various sectors throughout the Americas.

The coming years will find the IAI deepening these lines of action and pushing the frontiers of science in its role as the America's global change science integrator, and as a core supporter of Latin America's regional network of the Secretariat of Future Earth.

Elma Montaña
Director for Science Programs

The science

The third round of the IAI's Collaborative Research Networks (CRN3) was initiated at the end of 2012 and will run through 2018. In the call for proposals, the IAI asked to generate new knowledge on the phenomena of global change, and stimulate networks of people in the region to provide mitigation and adaptation options within their social, economic, institutional and legal contexts. For this, researchers had to address both the biophysical and the human dimensions of environmental change, and develop strategies for communication and policy implications. Two calls produced over 120 proposals. Several proposals received good disciplinary external reviews but

highly critical panel evaluation. Ten projects were approved, frequently only after both the Scientific Advisory Council (SAC) and the Directorate worked with the research groups to achieve a greater integration between the natural and social sciences and make involvement of stakeholders more verifiable.

The two-year work by the Directorate and the SAC with the research teams in shaping research projects to address global change problems with interdisciplinary approaches and a view to decision making highlights the institutions' and science community's limited capacity to frame

global change problems collaboratively from the perspectives of natural and human sciences. To address this, a set of 7 smaller grants were also implemented to examine best practices for the construction of interdisciplinary and intersectoral teams. In addition to a specific problem orientation, these projects will provide a self-reflective analysis of their applied interdisciplinary approach. This will help the IAI develop the frontiers of global change science which needs an integrated science approach to respond to societal concerns about global and regional environments.

Knowledge to address regional needs

At the conclusion of the previous Collaborative Network Program (CRN2), IAI engaged the researchers in a process of knowledge synthesis. As part of this synthesis, bringing together researchers and practitioners from projects on hydrology throughout the continent provided an opportunity to create a center of excellence on water security (Aquasec) in collaboration with the University of Arizona and the Pontificia Universidad Católica de Chile. Aquasec is engaged in activities on hydrology, water distribution, and water rights with emphasis on semi-arid areas and Andean watersheds. It is now engaged in one of the new CRN3 projects and has received a substantial grant from the Lloyd's Register Foundation in the UK.

Climate change and health are known to be linked, but development patterns and ecosystem services also play a role. The CRN3 is funding two projects on insect³⁰³⁶¹ and rodent-borne³⁰⁷⁶ diseases in newly disturbed areas of the western Amazon. The purpose is to understand the relationship between the incidence and propagation of disease, the ecology and populations of the vectors and environmental disturbances such as new highways through little disturbed ecosystems. The IAI has worked to bring these originally independent research proposals of regional importance and they are now sharing protocols in social studies, health surveys and also research sites in Ecuador. ☒



¹
These and further numbers refer to network numbers.
See Projects, page 34.

Enhancing networking opportunities and cross-project synthesis

Researchers who participated in the CRN2 said that the clear and persistent intention of the IAI Directorate to develop syntheses across projects has helped to stimulate intellectual and scientific debate. However, a better structure to such a synthesis effort, and earlier collaboration with investigators would make this effort even more valuable.

At the time of implementing CRN3, the IAI Directorate therefore organized meetings of principal investigators and members of its Scientific Advisory Committee. With the help of NSF, IAI facilitated the participation of the

CRN2 researchers in these meetings, in order to promote a "generational development" between the groups. As a result, projects on nutrient cycling³⁰⁰⁵, ecosystem services and remote sensing³⁰²⁵ are now collaborating. Two other CRN3 projects with different kinds of investigations on the oceans will collaborate on simulations and training. One studies the physical oceanography and carbon sequestration of the southern oceans³⁰⁷⁰, the other with sites around the continent³⁰⁹⁴, investigates algal production and its role in fisheries production.

These collaborations, motivated by the researchers themselves, will make the exercise of synthesizing science and learning across teams much more stable, and are beginning to span across the entire spectrum of IAI networks. These networked projects represent a very major advance towards the IAI's mandate to improve the capacity of the entire region to address issues and opportunities of global change. ☒

Stakeholder involvement

People and institutions that hold a stake in the research that is done are an important part of the IAI's mission. They are a natural audience for the results, they may contribute to refining research plans, they may provide feedback on research, and active stakeholder involvement may provide extra motivation for scientists. One research network that uses freshwater bodies as indicators of ecosystem risk under climate change³⁰³⁸, has expanded beyond its initial science program, and now works with stakeholders and decision makers to jointly analyze the problems affecting communities and economic activities in the Sauce Grande River Basin in Argentina. Following the main hypothesis of the project, it analyzes how climate variability and anthropogenic intervention (i.e., urban, agricultural and livestock activities) are affecting the watershed, and, how changes in the basin impact the living conditions of populations in and beyond the basin, as affected by the water conditions of the river. ☒

Climate services

An important issue in the region is establishing base lines for global change research. The network on climate services³⁰³⁵ has started the compilation of historical daily weather information issued from meteorological stations in Brazil, Paraguay and Argentina, and is applying quality control protocols to those series. For this, it is using open-source programming so it can develop a platform for much broader efforts of data recovery on the continent. ☒



Learning to interact with stakeholders from the planning stage of research

One of the smaller CRNs³⁰⁹⁷, designed specifically to address the construction of interdisciplinary teams and projects, held an 10-day intensive course in Morelia, Mexico, on the management of social-ecological systems to support decision making. The 25 students from 7 countries came from a wide range of disciplines, working backgrounds and ages.

The course was itself a laboratory in which participants had to identify the problems they would address, the area of study, the stakeholders associated with different aspects of the problems, and the methods and tools they would use. This provided an experience in the practical application of co-design in trans-disciplinary research. A civil society organization (Altenare) acted as liaison to stakeholders in the area, facilitating a dialogue that would be difficult for scientists to achieve alone.

Each day, students interviewed stakeholders (usually community members) on their perceptions of problems, and then had to integrate the group's different fields of knowledge towards an action and research plan. Many instances of brainstorming, despair and heated discussions had to be diffused to recover, and rediscover the group's identity, to realign objectives and to acknowledge the importance of the process itself in obtaining valid research products. In a final synthesis session participants defined the four main products to be developed: a report for Altenare on the characteristics of the water related problems in the region; a documentation of the course itself; the development of a Latin-American network on socio-ecological systems; and a scientific article on trans-disciplinary studies taking the watershed as case study. ☒



Vulnerable Andes

The project on “Climate-related vulnerability and risk assessments and improved decision making processes for conservation and land use planning in two Andean biodiversity hotspots;” funded by the MacArthur Foundation, is led directly by the IAI Directorate. The study was designed originally for 2 original trans-boundary areas Nariño/Carchi (Colombia-Ecuador) and Puno/La Paz (Peru-Bolivia) and has been expanded to a third site in Los Nevados Natural Park in the Colombian central Andes with contributions from the Escuela de Ingeniería de Antioquia in Colombia and the International Research Institute for Climate and Society (IRI). The project has developed a GIS-based climate wizard from observed and simulated climate data, which represents the complex Andean topography. For the Andes, strong altitudinal differences in the long-term trends of ambient temperatures are both observed and predicted by atmospheric general circulation models. In order to assess uncertainty in climate change projections, digital sensor data are now being combined with climate reconstructions from dendrochronologies, and with 50-year records from weather stations. Georeferenced databases on the known distribution of species in selected taxonomic groups (ca. 2900 species in total) have been completed, mapped and modeled by ecosystem and altitudinal range. These maps are now being overlaid with the Andean climate wizard to obtain the input for the climate change exposure module of the NatureServe Climate Change Vulnerability Index (CCVI).³⁰⁹⁴



Learning to plan for interdisciplinarity

The research network on ecosystem services from phytoplankton³⁰⁹⁴ went through several stages of re-design before it was approved. The IAI Directorate worked with the team to enhance and better integrate the human dimensions research. The group was able to develop an integrated and balanced proposal only when they all met and started discussing what each



of the disciplines could bring into the research. Conversations helped develop a common language, and the team realized that extending the study of phytoplankton, environmental variables and ecosystem services to assess socioeconomic impacts seemed a “natural” sequence: data and analysis from the Antares Network “should” answer policy and conservation questions. However, the picture was still blurry: which questions? Whose questions? And how to assess if these are the right questions? The project team needed to strengthen the socioeconomic component, identify new researchers, develop common ground and find the best way to a dialogue. The project still required new inter-disciplinary research methods and a clear definition of the science-policy interphase; who are the decisionmakers to be involved? Since policymakers and the public are not aware of the extent and relevance of phytoplankton ecosystem services, a new

module was included in the workplan, to “set the scene” for a science-policy dialogue. In addition the workplan now included methodology development (indicators of “socioecological health” and scenario analysis) and social learning (dialogue with policymakers and capacity-building beyond academics).

In the process the team learned that (in their words)

- Methodology cannot be taken for granted in multi-disciplinary projects
- Facilitating dialogue among project participants is crucial
- Multidisciplinary analysis is better conducted when motivated by a common goal, question or problem-solving
- Effective multidisciplinary is possible only with a balanced budget allocation.
- Interdisciplinary capacity building is needed for multi-discipline -problem oriented- research efforts.³⁰⁹⁴

Investing in people

IAI's capacity building aims at the integration of research and training in global change sciences and applications. At IAI training events, IAI researchers are instructors and sometimes also students. This double role is possible because the IAI explores the interface between different science disciplines, and policy and decision making - where everyone has something to learn. The international character of those activities provides "use-oriented" capacity building that enriches research groups and networks.

Seven capacity building events (see page 12) were funded with resources from NSF and through leveraging of these funds by the IAI. The aim of the IAI's Professional Development Seminars (PDS) is to go beyond the academic context. These week-long Seminars train a wide range of professionals through the transfer of knowledge and development of skill sets to analyze socially relevant global change problems and seek solutions. Seminars focus on regionally important themes, such as climate and public health, ecosystems services, risk and agriculture systems. With an innovative and practical approach, they promote the development of interdisciplinary global environmental change sciences; knowledge integration; stakeholder involvement; policy applications and outreach.

Most PDS build on current IAI science projects, whose research findings are used to enhance capacity building. This in turn generates cross-project interactions. Interdisciplinary team building skills and opportunities for guided proposal development and evaluation are included to strengthen regional capacities for international research development. This helps establish new collaborative networks across disciplines, professions, sectors and countries.

PDS foster the science-policy interface and the application of scientific information to decision making. Several of them have included policy makers from the planning stage on and have been co-funded by government institutions. Because of the geographical spread of

venues and participants, the seminars are a valuable mechanism to strengthen the participation of professionals from small countries in Latin America and the Caribbean in IAI programs.

One of the co-organizers and lecturers at one of the PDS said: "I am a late-career

scientist at a US university with extensive contacts across the Americas, but this PDS increased my network a great deal... This investment in capacity building enhances the opportunities that USA scientists have to find scientists and students across the Americas who are prepared and eager to collaborate across international borders. It

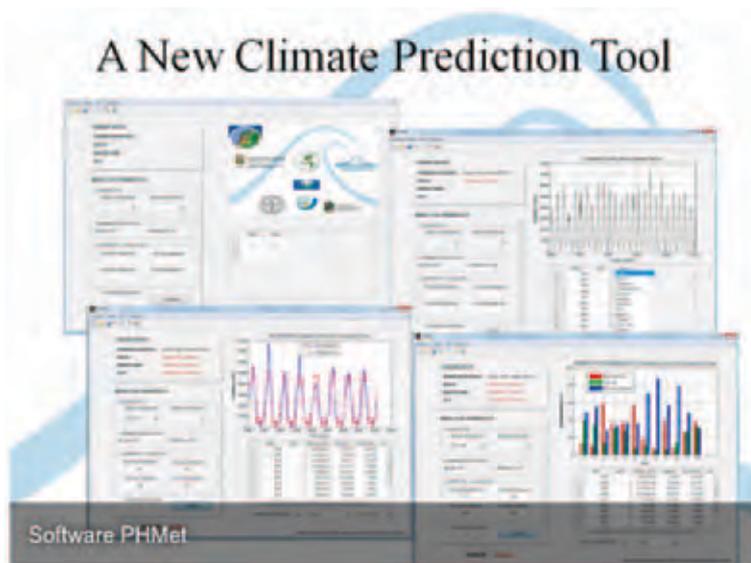
helps advance science in the region and contributes to solving many key global change problems."✎



Group discussions during the Colloquium on Knowledge Integration at the Science-Policy Interface, 11-17 November 2012, Santo Domingo, Dominican Republic

Improving climate and hydrological forecast capacities in South America

To build regional scientific capacity in the region, the IAI has developed multiple interlinking activities of research, professional development and communication. Through these activities, the IAI builds networks throughout the continent and also provides opportunities for professional growth. This is the case of the hydrometeorological forecast model developed by Julian Rojo, a Colombian hydrologist. Based on his performance at the 2010 IAI Training Seminar on seasonal climate forecasts, Julian was selected to participate in the IAI-INPE internship program which allowed him to spend 6 months at CPTEC (Centro de Previsão de Tempo e Estudos Climáticos) improving his forecast model with the help of INPE researchers. The work at INPE started with the hydrological analysis of all the rivers used for power generation in Brazil. Other experiments followed using data from Colombia, Brazil, Chile, Paraguay, and Argentina.



Back in Colombia, he was asked to implement the model for other institutions, for example, the Paraguayan Weather Service. Researchers from Brazil, Peru, Chile, Mexico, Paraguay and Uruguay are now using this tool. "We need to generate climate information, which will allow users to develop value-added products for planning in the water, agriculture and climate sectors", he said. Julian maintains contact with CPTEC and all the people who use his model, and provides on-line help and a forum for discussion to achieve better forecasts through collaboration. But he stresses that users are free to use the model without his intervention. The model and the tutorial are free of charge for research or public institutions in South America. ☑

PHMet is a tool for non-linear forecast of hydrometeorological variables (rainfall, streamflow, temperature, moisture, etc) at monthly or seasonal scales (<http://julianrojo.weebly.com/phmet.html>)

Global dialogue

Future Earth

IAI's mandate for global change research is problem oriented and interdisciplinary. The amalgamation of the global change programs IGBP, IHDP and Diversitas, with participation by WCRP into a new global entity with a broad interdisciplinary mandate very similar to the IAI's in the Americas. Future Earth is a 10-year international research initiative established by the Science and Technology Alliance for Global Sustainability, whose members are the International Council for Science (ICSU), the

International Social Science Council (ISSC), the Belmont Forum of funding agencies, the United Nations Educational, Scientific, and Cultural Organization (UNESCO), the United Nations Environment Programme (UNEP), and the United Nations University (UNU).

As part of Future Earth's globally distributed secretariat, the IAI is providing leadership to a Latin American network whose initial partners are the three science funding agencies CONICET of Argentina, CONACYT of Mexico and FAPESP of São Paulo State, Brazil.

The network takes advantage of the IAI as an intergovernmental treaty organization of 19 countries with its established networks of scientists and institutions, and of the funding agencies with their in-depth knowledge of national science communities and programs.

The objectives of Future Earth and IAI are closely related. The IAI supports collaborative research networks throughout the region, and the three funding agencies support national and state research - increasingly

Future Earth (cont.)

with an international ambition within the realm of global change research. The IAI is now part of the task of developing a global, inclusive, equitable science governance initiative to guide global change research for the future.

A partnership agreement in support of Future Earth themes was signed in October 2013 between the IAI, the Regional Office of ICSU for Latin America and the Caribbean, and the Regional Office for Science in Latin America and the Caribbean of UNESCO.

Its partners agree on the importance of contributing to the Future Earth initiative in Latin America and the Caribbean through interdisciplinary programs in the areas of disaster risk and sustainable energy. They will support research, assessments, capacity building and communication. ☒



United Nations Framework Convention on Climate Change

Alberto Piola, principal investigator of CRN 2076 gave a presentation at the 36th meeting of SBSTA on Ocean, climate and fisheries on the Patagonia Shelf. His contribution focused on mechanisms and linkages between productivity of ocean and marine ecosystems, nutrient supply and carbon uptake, as part of the Research Dialogue on the technical and scientific aspects of GHGs from coastal and marine ecosystems.

In June 2013, the IAI showcased the Tropi-Dry Collaborative Research Network at the Research Dialogue of SBSTA-38. The IAI contribution was in response to

an invitation to provide information on emissions and removals from terrestrial ecosystems of greenhouse gases, with a view to identifying and quantifying the impact of human activities.

The SBSTA workshop on "technical and scientific aspects of ecosystems with high-carbon reservoirs not covered by other agenda items under the Convention", was held in October 2013. The IAI has encouraged the participation of young researchers in meetings of the Conventions whenever possible, to develop a new generation of policy-aware scientists, to showcase the importance of IAI capacity

building, and to provide opportunities to young scientists from Latin America to present their research in international policy fora. The presentation was delivered by Sandra Duran, an IAI-funded PhD student from Colombia, who works in the TropiDry project.

She commented: "it is important to learn how to communicate results from research to policy makers; I had to think about which aspects from my research are relevant to that audience and the take-home messages: 'managing biodiversity is imperative to continue the provision of ecosystem services for human wellbeing'".



Bringing the science of biodiversity to the Climate Convention

The Tropi-Dry team in Brazil, Canada, Costa Rica, Cuba, Mexico, USA, and Venezuela is conducting comprehensive comparative studies of ecosystems, land use and policy. Over the past 8 years, natural and social scientists have jointly examined the functioning and management of Tropical

Dry Forests (TDF) on the American continent, exploring sustainability issues and ecosystem services in these endangered ecosystems.

Knowledge of emissions and sinks of greenhouse gases in TDF is limited. Carbon losses by deforestation in these ecosystems

are difficult to estimate since there are no systematic continental, national or regional analyses of deforestation rates. TDF have multiple ecosystem services and uses, which are closely linked to cultural and economic development. Lands where TDF grow are often fertile with low rates of nutrient leaching and soil development; they possess a marked rainfall seasonality that allows for short cycle crops while their dry climate limits the propagation of pathogens and insects; and their low structural complexity and above ground biomass facilitate forest clearing. They are an important source of firewood, medicinal plants, shade, and animals for hunting. TDF that are close to coastal areas have turned into hotspots of tourism development, especially in Mesoamerica.

Different components of biodiversity are important for TDF's carbon storage, and changes in biodiversity may influence carbon gains and losses in an ecosystem. In addition, ecosystem resilience can be reduced by a

loss of biodiversity. Such a loss of resilience diminishes the capacity to recover after perturbation, i.e. it is related to "tipping points" of the ecosystem.

Deforestation for wood, charcoal and agricultural development continues due

to the forests' low level of protection and limited international attention to its ecosystems services and attributes. While protected areas of humid forests amount to 25% of their total extent, only 4.5 % of TDF in the Americas fall within any level of legal protection. Across the Americas,

TDF cover more than half a million km² and are home to nearly 90 million people. There is a clear need for integration of knowledge and research to provide advice for decision-making on conservation, use and management to avoid a dire future for millions of people in TDF regions.

"This was a unique opportunity to present to the UNFCCC and to an audience that we are not regularly exposed to. We were able to present our work, get feedback on our knowledge, exchange activities and learn from other organizations on how complex it is to synthesize the largest body of scientific knowledge into statements that can catch the attention of a wide range of policy makers", Sanchez Azofeifa, principal investigator of Tropi-Dry, said at SBSTA-40 in June 2014. ☒



Convention on Biological Diversity

The IAI partnered with the Secretariat of the Convention on Biological Diversity (CBD), DIVERSITAS, Conservation International (CI) and the GEO Biodiversity Observation Systems for a side event at COP-11 of the CBD, in Hyderabad, India in October 2012.

A young researcher from CRN 2015 (DiverSus), Natalia Perez-Harguindeguy presented results on how social actors value ecosystems and on the importance of understanding which ecosystem components are critical for different stakeholders.

CBD Executive Secretary Braulio Dias, pointed to the importance and success of the IAI research in integrating various disciplines beyond the barriers of language and concept: "If we really want to help policy makers to make a difference, we need to understand the social context, just understanding the natural context is not enough". In his final remarks, he added "I look forward to further interaction on how we can bring these products to the countries, stakeholders and society".

THE FUNCTION OF BIODIVERSITY FOR DIFFERENT SOCIAL ACTORS
IAI Research in the Americas
Dr. Natalia Pérez Harguindeguy

Changes in **biodiversity** significantly affect ecosystem **functioning** and exert control over **ecosystem services**

"Ecological studies of land use change and its impacts on biodiversity and ecosystem properties must be integrated with an understanding of the multiple contributions of ecosystems to human well-being. This is a major challenge for science"

Authors: DIAZ S, PEREZ HARGUINDEGUY N, ENRICO, I & CONTI, G. Photos by Lucas Enrico & Esteban Tapella.

Intergovernmental Platform on Biodiversity and Ecosystem Services

At the Second Plenary of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES-2) in December 2013, the IAI hosted a side-event to present its work on biodiversity and ecosystem services, discuss knowledge gaps and research priorities and explore areas of collaboration between IAI and IPBES. Speakers at the side-event were SGP-CRA 2015 principal investigator Sandra Diaz, SAC Member Harold Mooney, and Salvatore Arico from UNESCO.

Not all components of biodiversity are equally important for different ecosystem benefits. Sandra Diaz explained that this has direct implications for biodiversity monitoring strategies, and for what aspects

of biodiversity are useful for different social actors. An IAI-IPBES partnership can aid knowledge generation, capacity-building, communication and policy-science integration. Harold Mooney showed how the IAI model of regional collaboration on global change issues, conducted in an integrated manner with targeted solutions to policy challenges, can serve as a model for IPBES. Salvatore Arico cited the UNESCO-IAI collaboration model as one way for IPBES to "collaborate with existing initiatives on biodiversity and ecosystem services, including multilateral environment agreements, UN Bodies and networks of scientists and knowledge holders, to address gaps and build upon their work, while avoiding duplication".

Three IAI nominated experts have been selected to participate in the following task forces of the IPBES Secretariat:

- * Assessment on Pollination and Pollinators: CRN 3025 investigator Mario Marcos do Espirito Santo
- * Methodology on Values of Biodiversity: SGP-CRA 2015 investigator Daniel Caceres
- * Expert Group on Policy Support Tools: the Directorate's science-policy advisor, Nicolas Lucas.

Outreach & communication

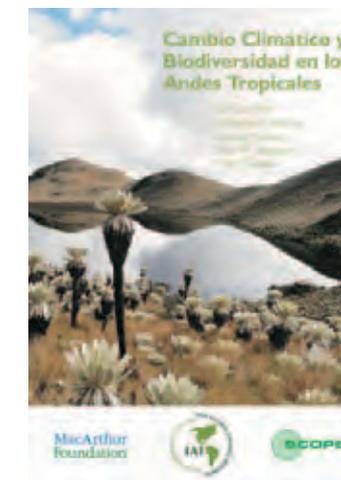
Expanding the funding base for global change research

The IAI, CONICET of Argentina, CONACYT of Mexico, FAPESP of São Paulo State in Brazil, and the US National Science Foundation are promoting an opportunity for collaborative global change science funding across the region. Following a meeting of funding agencies in the Americas in August 2014 mechanisms for co-funding international research programs on issues of global change will be developed, that respect the agencies' own interests and national funding rules while facilitating the multilateral collaboration needed to address global change and its socioeconomic implications. ☒

Hydrology and water management in the Andes

IAI projects on hydrology and water management in the Andes disseminated their research findings through two webinars of UNEP's REGATTA (Regional Gateway for Technology Transfer and Climate Change Action in Latin America and the Caribbean) and the NGO Practical Action. These projects contributed to UNESCO's program on "Climate Change Impacts in Major Mountainous Regions of the World". Dendroclimatology, dendrochronology and hydrological modeling helped explain recent forest disturbances, glacial retreat, variations in Andean snow pack and stream flows, and the implications on water availability for human use. Decreasing water supply contrasted with the growing demand for domestic water and irrigation. This increasing imbalance affects social groups with different degrees of vulnerability, and is strongly linked to patterns of development. These science outputs provided content to the regional science-policy discussion of CONDESAN (Consortio para el Desarrollo de la Ecorregión Andina) in its workshop in Quito, Ecuador, June 2014. Resulting recommendations were adapted to the diverse political and institutional audiences in the Region. ☒

Following the training institute on Urban Responses to Climate Change (Santiago, Chile, 2010), IAI and the Economic Commission for Latin America and the Caribbean (ECLAC) jointly published a book to provide critical information to local, state and national authorities and planners as well as a wide range of stakeholders on the interactions between climate and urban areas: how do cities affect climate and how does climate affect cities? The book outlines ways to respond to climate variability and change (mitigation, vulnerability reduction and adaptation) in everyday work using state-of-the-art scientific knowledge.



The IAI's analysis of needs for research on the effects of climate change on biodiversity in the Tropical Andes concluded in 2010. The three-year project funded by the John D. and Catherine T. MacArthur Foundation was coordinated by the Directorate. It resulted in a comprehensive appraisal on biodiversity and climate change and of institutional capacities and needs to address knowledge and management gaps. Both, the English and the Spanish versions of the publication can be downloaded from the IAI website. The Spanish version is also available in print.



The IAI on the web

The Directorate is developing a new user-friendly website, and has expanded its communications in social networks. This allows a wide audience to be reached beyond the mailing lists of research and governmental institutions. The IAI continues to maintain and use its mailing lists. Facebook and Twitter are building a community of followers to share messages. And in contrast to mailed information, the social media allow detailed analysis of the interest shown by its audience. ☒

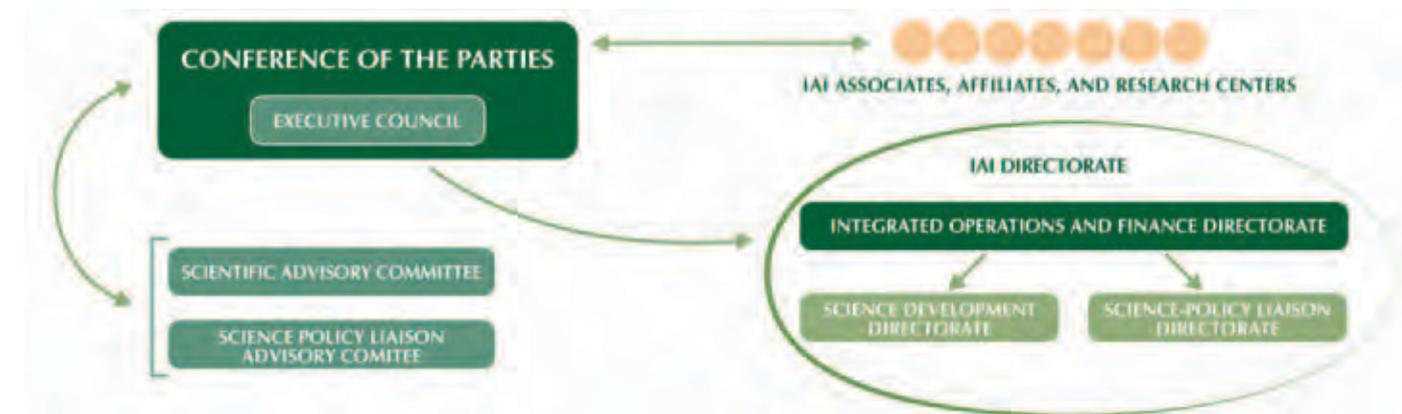
The Comparative Research Programme on Poverty (CROP)

This Program of the International Social Science Council (ISSC) hosted by the University of Bergen, Norway, explores synergies between poverty studies and global change research and reinforces the sustainability dimensions of the research. The IAI's involvement with the Scientific Committee of CROP will help strengthen the social science component of future IAI activities. ☒

People

IAI Directorate

In addition to conducting science programs, the Directorate provides scientific knowledge to governments, develops future science capacities, plans research directions, and increases awareness of global change research. IAI sponsored global change science and related activities have evolved towards an integration of multiple disciplines, inclusion of human dimensions in all research projects, and promotion of outreach to policy and decision makers. To promote this evolution, the IAI Conference of the Parties decided to implement a broadened, distributed Directorate with the help of Argentina, Brazil, and Uruguay. Overall coordination and executive functions are now in Uruguay, while new activities on science development and new science-policy liaison are to be initiated in Brazil and Argentina respectively.



The agreement between the IAI and the Argentinean Ministry of Science, Technology and Innovative Production was signed in October 2012, and the workplan for the new science-policy liaison office was approved by the CoP in 2013. The science-policy liaison strategy of IAI is guided by the purpose of increasing the relevance, legitimacy, and credibility of IAI and its scientific production in the eyes of policy makers. Within this framework, the plan pursues three general goals:

- * the institutional goal to establish formal, functional mechanisms to broker and facilitate policy-science integration for IAI;
- * the communication goal to position global change as a relevant policy issue among institutions that will face the main regional challenges and opportunities of global change and consolidate the IAI as leading provider of scientific information; and
- * the substantive goal to spur collective action to address global change through use-oriented research and policy decisions.

In October 2013, the Uruguayan Parliament issued the Law 19.144, which approves the Agreement signed by the IAI and the Government of Uruguay, whereupon the Directorate office and staff moved from São Jose dos Campos to Montevideo. ☺



Holm Tiessen
Executive Director



Rafael Atmetlla
Director: Finance & Administration



Elma Montaña
Director: Science Programs



Marcella Ohira
Director: Capacity Building



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Paula Richter
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Tania Regina Freire Sanchez
Executive Assistant



Anita Soares
Accountant



Mariana Toledo
Assistant: Capacity Building

Welcomes

Murielle Gras
Operations Assistant
since January 2014

Elma Montaña
Director: Science Programs
since June 2013

Mariana Toledo
Assistant: Capacity Building
since February 2012

Cristiano Kichiro de Aquino
Information Technology Assistant
since February 2012

Farewells

Luis Marcelo Achite
Manager: Information technology
left the IAI in 2013

Maria Fernanda Fraga
Assistant: Capacity Building
left the IAI in 2012

Luciana Londe
Assistant: Capacity Building
left the IAI in 2012

Conference of the Parties

The Conference of the Parties (CoP) is the principal policy-making organ of the Institute. It establishes, reviews and updates the policies and procedures of the IAI and evaluates its work and the accomplishment of its objectives.

Argentina

Carlos Eduardo Ereño
Agueda Menvielle

Ministerio de Ciencia, Tecnología e Innovación Productiva

Bolivia

Carlos Salinas Torrico (point of contact)

Programa Nacional de Cambios Climáticos

Brazil

Franklyn Silva Netto

Mercedes Maria da Cunha Bustamante

Ministério da Ciência, Tecnologia e Inovação

Maria Virginia Alves

Jean Pierre Henry Balbaud Ometto

Instituto Nacional de Pesquisas Espaciais

Canada

Eric Gagné

Charles A. Lin

Environment Canada

Chile

Gladys Santis

Fernando Farías

Oficina de Cambio Climático del
Ministerio de Medio Ambiente

Colombia

Omar Franco Torres

Paola Bernal Cortes

Instituto de Hidrología, Meteorología y Estudios Ambientales

Costa Rica

Roberto Villalobos

Instituto Meteorológico Nacional

Cuba

Enrique Moret Hernandez

Daysarh Tapanes Robau

Ministerio de Ciencia, Tecnología y Medio Ambiente

Dominican Republic

Bautista Rojas Gómez

Zoila Gonzalez de Gutiérrez

William Fermin Gómez

Ministerio de Medio Ambiente y Recursos Naturales

Ecuador

René Ramírez Gallegos

Héctor Rodríguez

Secretaría Nacional de Educación Superior,
Ciencia, Tecnología e Innovación

Guatemala

Luis Ricardo Alvarez Giron

Secretaría Nacional de Ciencia y Tecnología

Jamaica

Leonie Barnaby

Ministry of Land and Environment

Mexico

María Amparo Martínez Arroyo

Ana Cecilia Conde Álvarez

Instituto Nacional de Ecología y Cambio Climático

Panama

Alexis Rodríguez

Geremías Aguilar

Lineth Arcia

Autoridad Nacional del Ambiente

Edwin Pinzon

Ministerio de Relaciones Exteriores

Anselmo Mc Donald

Instituto Conmemorativo Gorgas de Estudios de la Salud

Paraguay

Constantino Nicolás Guefos Kapsalis

Fernando José Mendez Gaona

Universidad Nacional de Asunción

Peru

Zoila del Rosario Gómez Gamarra

Ministerio del Ambiente

Ken Takahashi Guevara

Instituto Geofísico del Perú

Elizabeth Silvestre Espinoza

Servicio Nacional de Meteorología e Hidrología

Uruguay

Jorge Rucks

Ministerio de Vivienda, Ordenamiento

Territorial y Medio Ambiente

USA

Maria Uhle

National Science Foundation

Venezuela

Guillermo Barreto

Ministerio del Poder Popular para Ciencia,

Tecnología e Industrias Intermedias 

Executive Council

The Executive Council (EC) is the executive organ of the Institute elected by the CoP for two year terms. From June 2012 - August 2014 it was made up of Argentina, Brazil, Canada, Colombia, Dominican Republic, Ecuador, Paraguay, Uruguay and USA. Members of the EC Bureau were Carlos E. Ereño, Argentina (Chair), Maria Uhle, USA (First Vice-Chair) and Jorge Rucks, Uruguay (Second Vice-Chair).

2012-2013 CoP and EC meetings

- 33rd EC – 20th CoP - 34th EC, Arlington VA, USA, 26-29 June 2012
- 35th EC - 21st CoP - 36th EC, Montevideo, Uruguay, 11-14 June 2013 

Scientific Advisory Committee

The Scientific Advisory Committee (SAC) is the main scientific advisory body of the IAI. It makes recommendations to the Conference of the Parties regarding the Science Agenda, long-range plans and annual program of the Institute. The SAC is composed of ten members elected by the CoP. These members are scientists recognized internationally for their expertise in a variety of disciplines relevant to global change research.

Members of the Scientific Advisory Committee (June 2014)

Frank Müller Karger (Chair)
University of Massachusetts Dartmouth, USA

Susana Beatriz Adamo
CIESIN, Columbia University, USA

Walter Baethgen
IRI, USA

Rodolfo Dirzo
Stanford University, USA

Michelle Grunauer
Universidad San Francisco, Ecuador

Members who retired from the SAC

Silvio Cesar Pantoja Gutierrez
Universidad de Concepción, Chile, 2010-2012

Juan Valdés
University of Arizona, USA, 2006-2012

Ramon Pichs Madruga
CIEM, Cuba, 2007-2013

Jose Antonio Marengo Orsini
Instituto Nacional de Pesquisas Espaciais, Brazil

Harold Mooney
Stanford University, USA

Claudia Eleonor Natenzon
Universidad de Buenos Aires, Argentina

Carolina Susana Vera
CIMA/Universidad de Buenos Aires, Argentina

Scott Whiteford
University of Arizona, USA, 2012-2013

Werner Wilbert
Centro de Antropología Laboratorio de Ecología Humana, Venezuela, 2013-2014

The numbers

9 Small Grants for Collaborative Research in the Americas (SGP-CRA) - 2012-2014

with 76 investigators in 53 institutions and 13 member countries

96 students involved in the projects, 59 of whom received scholarships from projects, totalling USD 249,000

111 students participated in training activities and workshops funded by projects

the program was funded with USD 2,757,000, and additional funding leveraged amounts to USD 13,440,000

17 Collaborative Research Networks (third round - CRN 3) - 2012-2018

10 5-year projects with 111 investigators in 68 institutions and 14 member countries

7 of the 10 networks are led by institutions and investigators in Latin America

76 students are involved in research, 41 of them with scholarships from the projects

total additional funding leveraged during the first year was approximately USD 2,300,000

7 CRN projects that include Argentine researchers will receive additional CONICET grants of USD 200,000 in total

7 smaller projects on Science Integration, funded with between USD 100,000 - 200,000

USD 11,000,000 have been provided by the US NSF for the entire program

The research project on **Climate-related vulnerability and risk assessments and improved decision making processes for conservation and land use planning in two Andean biodiversity hotspots -2011-2014**

funded with USD 500,000 by the John D. and Catherine T. MacArthur Foundation

with 12 principal investigators from 9 institutions in 5 countries

5 capacity building events of about 7 days each were held with 166 participants from 16 countries

funded with approximately USD 300,000 by NSF and others. ☒

Financial statements

Science and training programs

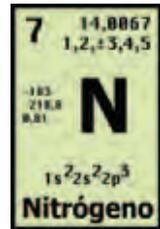
Programs	Number of Projects	Total Amount USD	Period
Science Programs			
3rd Collaborative Research Network Program	17	11,000,000	2012 - 2018
SGP-CRA	9	2,757,000	2014 - 2017
Training Funds			
Training Institutes	5	300,000	2012 - 2014
Grants Administered			
MacArthur Foundation	1	500,000	2011 - 2014
Total	27		

Country Contributions to Core Budget - 2012 / 2014

Member countries	Contribution Level (USD)
Argentina	63,000
Bolivia	5,000
Brazil	110,000
Canada	159,000
Chile	7,000
Colombia	12,000
Costa Rica	5,000
Cuba	5,000
Dominican Republic	5,000
Ecuador	5,000
Guatemala	5,000
Jamaica	5,000
Mexico	77,000
Panama	5,000
Paraguay	5,000
Peru	5,000
Uruguay	5,000
USA	762,000
Venezuela	41,000
Totals	1,286,000

Projects

3rd Collaborative Research Network Program (CRN3) 2012-2018



CRN 3005
Nitrogen cycling in Latin America:
drivers, impacts and vulnerabilities
PI: Jean Pierre H.B. Ometto



CRN 3035
Towards usable climate science: Informing
decisions and provision of climate services
to the agriculture and water sectors of
southeastern South America
PI: Cecilia Hidalgo



CRN 3025
Enhancing knowledge exchange for
conservation and management of
tropical dry forests in the Americas
PI: Arturo Sánchez-Azofeifa



CRN 3036
Land use, climate and infections in
Western Amazonia
PI: Alisson F. Barbieri



CRN 3038
Sensing the Americas' freshwater
ecosystem risk from climate change
PI: Gerardo M. E. Perillo



CRN 3076
Effects of anthropogenic habitat
perturbation on rodent population
dynamics and risk of rodent-
borne diseases
PI: Daniel Bausch



CRN 3056
Innovative science and influential
policy dialogues for water security in
the arid Americas
PI: Francisco Meza



CRN 3094
Assessment of marine ecosystem
services at the Latin-American Antares
time-series network
PI: Milton Kampel



CRN 3070
Variability of ocean ecosystems
around South America
PI: Alberto R. Piola



CRN 3095
Bridging ecosystem services and
territorial planning (BEST-P): a
southern South American initiative
PI: José M. Paruelo

CRN 3 - Science integration projects 2014-2017



CRN 3097
Intensive training program in management of social-ecological systems to support decision-making
PI: Patricia Balvanera



CRN 3101
Advancing good practices in building interdisciplinarity: moving towards user-oriented science
PIs: Marcelo Saguier & Andrea K. Gerlak



CRN 3102
Interdisciplinary science and development integration for adaptation to water scarcity in the Comahue region, Argentina
PI: Ana María Murgida



CRN 3105
Interdisciplinary science team skill building through the study of socio-ecological impacts from bioenergy development across the Americas
PI: Kathleen E. Halvorsen



CRN 3106
Transferring climate knowledge in the science-policy interface for adaptation to drought in Uruguay
PI: Gabriela Cruz



CRN 3107
Interdisciplinary research to improve information provision for decision making
PI: Jacob van Etten



CRN 3108
Coping with hydrological risk in megacities: Collaborative planning framework for the Mexico City Metropolitan Area
PI: Luis A. Bojórquez Tapia

Small Grant Program for Collaborative Research in the Americas (SGP-CRA) 2012-2014



SGP-CRA 005
Towards an integrated assessment of water security under global change in the Americas
PIs: Christopher Scott & Francisco Meza



SGP-CRA 2015
DIVERSUS
Links between functional diversity, ecosystems and social dynamics: a wrap-up of concepts, methods and baseline information
PI: Sandra Diaz



SGP-CRA 2021
Understanding the human, biophysical and political dimensions of tropical primary and secondary dry forests in the Americas
PI: Arturo Sánchez-Azofeifa



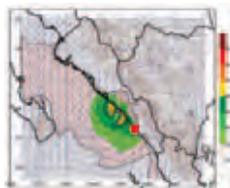
SGP-CRA 2031
From farm-level management to governance of landscapes: climate, water and land use decisions in the plains of Southern South America
PIs: Federico Bert & Esteban Jobbágy



SGP-CRA 2047
Documenting, understanding and projecting changes in the hydrological cycle in the American cordillera
PI: Brian Luckman



SGP-CRA 2060
Small coffee producers and adaptive options for a changing climate: the risks and challenges of certification for ecosystem services
PI: Edwin Castellanos



SGP-CRA 2048
Landfalling tropical cyclones in the Eastern Pacific basin
PI: Graciela de Raga



SGP-CRA 2076
SACC: An international consortium for the study of ocean related global and climate changes in South America
PI: Alberto R. Piola



SGP-CRA 2050
Paleotempestology of the Caribbean region: a multi-proxy, multi-site study of the spatial and temporal variability of Caribbean hurricane activity
PI: Kam-biu Liu

IAI Science Agenda

I. Understanding Climate Change and Variability in the Americas

- to observe, document and predict climate change and variability in the Americas and its links to changes in natural systems and societal impacts
- to understand the role of the ocean-land-atmosphere interactions in climate, to determine the key processes that cause climatic variability, from seasonal to decadal time scales in order to improve weather and climate predictions

II. Comparative Studies of Ecosystem, Biodiversity, Land Use and Cover, and Water Resources in the Americas

- comparative and integrated analyses of the effects of global environmental change on natural and anthropogenic systems and processes among tropical, temperate and cold latitude systems. increase knowledge of the drivers and dynamics of variability, and the impacts of such variability on food security, biodiversity and the provision of ecological goods and services. terrestrial, coastal and oceanic environments; and integration across the land/sea interface

III. Understanding Global Change Modulations of the Composition of the Atmosphere, Oceans and Fresh Waters

- to observe, document and understand the effects on productivity and human welfare processes that modify the chemical composition of the atmosphere, inland waters and oceans using a multidisciplinary approach

IV. Understanding the Human Dimensions and Policy Implications of Global Change, Climate Variability and Land Use

- to research the dynamic interaction of global change, climate variability, land use and human beings – their health, welfare and activities which depend on the productivity, diversity and functioning of ecosystems
- to address the complex interactions between natural and socio-economic systems through interdisciplinary approaches
- to inform public policies that increase sustainability of natural systems and human welfare

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