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**CONFERENCE OF THE PARTIES TO THE
INTER-AMERICAN INSTITUTE FOR GLOBAL
CHANGE RESEARCH
Twenty-seventh meeting
Brasilia, Brazil, 5-6 June 2019
Agenda item 11**

Revisions to the Scientific Agenda

1. This document has been prepared by the Scientific Advisory Committee (SAC) and the Science-Policy Advisory Committee (SPAC) with the assistance of the IAI Directorate.

Background

2. Article III of the *Agreement establishing the Inter-American Institute for Global Change Research* stipulates that:

...the Institute shall have an evolving Scientific Agenda, reflecting an appropriate balance among biogeographical areas of scientific importance; an integration of scientific, economic and sociological research; and shall focus on such regional issues as the Conference of the Parties shall determine.

3. Article III lists 7 areas of initial research:
 - a. The study of tropical ecosystems and biogeochemical cycles;
 - b. The study of the impacts of climate change on biodiversity;
 - c. The study of El Niño Southern Oscillation and interannual climate variability;
 - d. The study of ocean/atmosphere/land interactions in the intertropical Americas;
 - e. Comparative studies of oceanic, coastal and estuarine processes in temperate zones;
 - f. Comparative studies of temperate terrestrial ecosystems; and,
 - g. High latitude processes

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4. The Conference of the Parties, at its 5th meeting (CoP-5, Montevideo, 1998) adopted Decision V/6 which revised the Scientific Agenda by consolidating the initial 7 areas of research into 4 areas:
 - a. Understanding climate variability in the Americas;
 - b. Comparative studies of ecosystems, biodiversity, land use and water resources in the Americas;
 - c. Changes in the composition of the atmosphere, oceans, and fresh waters; and,
 - d. Integrated assessment, human dimensions and applications.
5. At its 18th meeting (Mendoza, Argentina, 2003), the SAC reviewed these four topical areas and established two working groups of members to re-draft the descriptive paragraphs under each of the topical areas.
6. The draft revised Scientific Agenda¹, was presented to the Conference of the Parties at its 10th meeting (CoP-10, Boulder, 2003) for its consideration. The revisions proposed by the SAC were adopted by the CoP through Decision X/11.

Current situation

7. During the 2018-2019 intersessional period, the SAC and the SPAC, with the assistance of the IAI Directorate, and pursuant to Article VII, paragraph 4(a) of the *Agreement*², reviewed the Agenda and proposed revisions to the text.
8. The proposed revisions strengthen the opportunities for research in the biogeographical areas of scientific importance in the Americas and reflects better the transdisciplinary nature of science supported by the IAI.
9. The final draft of the revised Scientific Agenda is attached as Annex I to the present document. All the proposed changes to the Agenda are shown with track changes.

Recommendation

10. The Conference of the Parties is invited to consider adopting the draft decision contained in Annex 2 to the present document.

¹ See Addendum_document 7, no. EC-XVII-CoP-X (http://www.iai.int/wp-content/uploads/7_addendum_AP.pdf)

² *Make recommendations to the Conference of the Parties regarding the Scientific Agenda, long-range plans and annual program of the Institute.*

The IAI Scientific Agenda

27th meeting of the Conference of the Parties to the Inter-American Institute for Global Change Research

THE IAI SCIENTIFIC AGENDA

The primary objective of the IAI is to encourage scientific research beyond the scope of national programs by advancing comparative and focused studies based on ~~scientific~~ global change environmental issues important to the region as a whole. Our mission is ~~defined as~~ 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 research and informed action at all levels for the benefit of society and the environment. In its approach, the IAI pursues the principles of scientific excellence, international cooperation and the full and open exchange of scientific information relevant to Global Environmental Change (GEC). ~~Thus, our~~ Our vision, therefore, vision is to encourage and support the joint collaboration of scientists, stakeholders, and decision makers of the Americas to address and communicate critical issues associated with GEC.

The term global change is used to refer to the interactions of biological, chemical ~~and~~, physical and social processes that regulate changes in the functioning of the Earth system, including the particular ways in which these changes are influenced by and impact on human activities

The Agreement establishing the IAI stated that the Scientific Agenda should be dynamic and should evolve to permanently incorporate new scientific priorities and to address changes based on ~~in~~ the needs of the region's countries. At present, four broadly defined research foci have been identified by the IAI. These are:

I - Understanding Climate Change and Variability in the Americas

The focus of this theme is to ~~monitor~~observe, document, ~~and understand~~ and predict the causes associated with climate variability and climate change ~~and variability~~ in the Americas and ~~their~~its links to changes in natural systems and societal impacts with a view to provide better information for decision-making processes.

The goals are to understand the role of the ocean-land-atmosphere interactions in the climate system, to determine the key processes that cause climatic variability, from sub-seasonal to decadal time scales, and to apply the insight gained by these findings to improve weather and climate predictions and to reduce the uncertainties related to climate change projections and their impacts.

Topics included in this area:

- Tropical Atlantic Variability (TAV), El Niño-Southern Oscillation (ENSO) and other forms of low-frequency climate variability, such as decadal variations (Atlantic Multidecadal Oscillation (AMO), Pacific Decadal Oscillation (PDO)).
- Short- and long-term ~~o~~Ocean variability, including ~~sudden~~abrupt climate change, and its influence on climate and weather of the surrounding continents.
- Variability of the American Monsoon systems.
- Ocean/~~L~~and/~~a~~Atmosphere interactions and hHydrology, including atmospheric mesoscale processes.

- Global and regional changes in the water cycle.
- Aerosol impact on climate change and variability.
- Climate change at regional scales: regional forcing mechanisms, model intercomparisons (statistical and dynamical downscaling models), future scenarios, extreme events, impacts, vulnerability and adaptation.

~~—Climate changes in the past.~~

- Development of the Americas component for a Global Observing System for climate.

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

The IAI encourages 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. Sponsored work should increase our 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. Research is expected to include work in terrestrial, coastal and oceanic environments; and work that integrates across the land/sea interface will be ~~encouraged~~promoted.

Topics included in this area:

- ~~—Impacts of global change on biodiversity, including species and genetic biodiversity--both of natural systems and agricultural systems, and cultivars.~~
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- Comparative studies of resilience of ecosystems, key species, and important agricultural ~~cultivars~~systems to global change.
- Comparative studies of changes in land use and/or coastal/marine/freshwater resource use.
- Prediction and documentation of estuarine changes due to changes in freshwater inflows as well as changes in watershed land use and cover.

- Climate and habitat change impacts on ~~wide-ranging~~ species across the Americas.

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

The focus of this theme is on observing, documenting and understanding processes that modify the chemical composition of the atmosphere, inland waters and oceans in a manner that affects productivity and human welfare. A multidisciplinary approach to this research area is expected.

Topics included in this area:

- Effects of air pollution and rain water quality on ecosystems.
- Impact of mega-cities on regional climate.
- Regional and global air pollution: Transportion and impacts.
- High latitude processes and ozone depletion.
- Comparative studies of regional air and water pollution.
- Biogeochemical processes and ecosystem hydrology.
- Greenhouse gases and their impact on climate change.
- Coastal processes and water pollution.

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

The focus of this theme is to research the dynamic interaction of global change, climate variability, and land use ~~and human beings~~ -- their impact on human health, welfare and activities which depend on the productivity, diversity and

functioning of ecosystems. The emphasis of the research is on projects that address the complex interactions between natural and socio-economic systems through interdisciplinary approaches. The objective is to inform public policies that ~~increase~~ improve sustainability of natural and ~~agricultural~~ systems and ~~ensure~~ human welfare.

Topics included in the area:

- Health and environmental issues with emphasis on vector-borne diseases.
- Increased vulnerability of human settlements due to global change, climate variability, and land use.
- Sustainability of natural and human systems in rapid urbanizations~~Rapid urbanization and sustainability of natural and human systems.~~
- Changes in food ~~production patterns~~systems; potential actions for increasing food security and nutrition.
- Global environmental and economic change and biodiversity; implications for conservation strategies.
- Effects of GEC, climate variability and land use on natural disaster occurrences, mitigation strategies, and policies that limit loss of life and property.
- Impact of GEC and climate variability on fisheries and fishers; strategies for limiting socio-economic impacts.
- Identification of factors that contribute to resilience of natural ecosystems; conservation strategies to promote resilience.
- Effects of GEC, climate variability and land use on water supply, freshwater flows, and security of water for human uses.
- Participatory environmental decision-making.

Annex II

Draft decisions of the Conference of the Parties

Scientific Agenda

Directed to the Conference of the Parties

XXVII/xx. The Conference of the Parties are invited to adopt the revised IAI Scientific Agenda