



The Pontifical
Academy of Sciences

 National Research
Council of Italy

Conference on

CLIMATE CHANGE, HEALTH OF THE PLANET AND FUTURE OF HUMANITY



15 November 2018 | Casina Pio IV | Vatican City

Scientific results and future scenarios
anticipating COP24 in Katowice in December 2018



"The climate is a common good, belonging to all and meant for all. At the global level, it is a complex system linked to many of the essential conditions for human life. A very solid scientific consensus indicates that we are presently witnessing a disturbing warming of the climatic system. In recent decades this warming has been accompanied by a constant rise in the sea level and, it would appear, by an increase of extreme weather events, even if a scientifically determinable cause cannot be assigned to each particular phenomenon. Humanity is called to recognize the need for changes of lifestyle, production and consumption, in order to combat this warming or at least the human causes which produce or aggravate it. It is true that there are other factors (such as volcanic activity, variations in the earth's orbit and axis, the solar cycle), yet a number of scientific studies indicate that most global warming in recent decades is due to the great concentration of greenhouse gases (carbon dioxide, methane, nitrogen oxides and others) released mainly as a result of human activity. As these gases build up in the atmosphere, they hamper the escape of heat produced by sunlight at the earth's surface. The problem is aggravated by a model of development based on the intensive use of fossil fuels, which is at the heart of the worldwide energy system. Another determining factor has been an increase in changed uses of the soil, principally deforestation for agricultural purposes".

(Pope Francis, *Laudato Si'*, nro. 23)

Introductory Statements

More than fifty years after the first reports¹ climate change is taking a growing toll on humanity and on ecosystems, at local, regional and planetary scales. The scientific community has deeply investigated the causes and consequences of climate change, from primary drivers (the fast, anthropogenically-driven, increase in use of fossil fuel releasing greenhouse gases, in turn causing climate warming) to impacts, some of which (e.g. loss of biodiversity and agricultural productivity, rising sea level and climate extremization, including growing desertification and frequent occurrence of extreme meteorological events) are devastating the stability of life on Earth and may pose a serious risk for human wellbeing, and even survival.

Reports by major panels of scientists have since early discovery periodically informed and alerted the society about the risks associated to climate change, and recommended best practices and policies to fight climate change, and to achieve sustainable use of resources, therefore allowing us and our environment to mitigate, adapt or become resilient to climate change². Indeed, our understanding current indicates that there is no single “silver bullet” to fight and reverse climate change, and that success may only arise by implementing a variety of strategies aimed at the same goal³.

However, the political response has fallen short of scientific recommendations in terms of needed urgency, and global participation. Political negotiations have often ignored concrete actions, such as investments in research and innovation, that may reduce future greenhouse gas emissions and help protecting the environment. Nevertheless, awareness of the importance of climate change and of its ineluctable consequences under the “business as usual” scenario has grown worldwide, and examples of compliance to measures that reduce drivers and mitigate impacts of climate change

are spreading. But, this is not sufficient to stop and revert the current trend toward climate warming and its associated negative impacts, and global policies to fight climate change are endlessly called for⁴.

Pope Francis’s encyclical on climate change, “*Laudato Si*”⁵ stands as the most powerful warning that human-driven climate change is a real and urgent problem, and that we must change our daily habits to live more sustainably. “Never have we so hurt and mistreated our common home as we have in the last two hundred years” is a prominent appeal to revert a “failure of conscience and responsibility.” The United Nation sustainable development goals⁶ are also setting the blueprint for equitable use of resources, in turn mitigating climate change and fighting hunger and poverty around the planet. Indeed, climate change-driven pressure become so strong that they can originate famine, and encourage the spreading of diseases, large migrations and even conflicts and wars.

Signs that we are getting to the last stop before irreversibly affecting terrestrial climate are becoming more numerous and stronger⁷. Voices that argue about the fact that we, the humans, are not responsible for climate change are challenged more and more convincingly by scientific proofs and facts. In preparation of the COP 24 UN Climate Summit in Katowice (Poland, December 2018), this meeting sets the ground for a final call toward immediate and strong actions to curb global warming and the consequent climate change negatively affecting humans and the environment. We are the last generation that can stop climate change before it causes irreversible change to our planet. Time is almost over and action must be taken immediately, by all, worldwide. But hope remains that: “Humanity still has the ability to work together in building our common home ... Truly, much can be done!”⁸

Marcelo Sánchez Sorondo

Chancellor, Pontifical Academy of Sciences

Massimo Inguscio

President, National Research Council of Italy (CNR)

¹ International Panel for Climate Change (IPCC) Assessment Reports 1 (1990, http://www.ipcc.ch/ipccreports/1992%20IPCC%20Supplement/IPCC_1990_and_1992_Assessments/English/ipcc_90_92_assessments_far_full_report.pdf) and WMO technical note 79 (1966, https://library.wmo.int/pmb_ged/wmo_195.pdf)

² IPCC Assessment Reports 1 – 5 (1990-2014)

³ European Institute for Innovation and Technology Climate-KIC (2015, <https://eit.europa.eu/newsroom/cop21-historic-climate-deal-announced-paris-major-success-ey>)

⁴ IPCC special report on global warming of 1.5°C (2018, http://report.ipcc.ch/sr15/pdf/sr15_spm_final.pdf)

⁵ Encyclical Letter *LAUDATO SI'* of the Holy Father Francis on Care for our Common Home (2015, http://w2.vatican.va/content/dam/francesco/pdf/encyclicals/documents/papa-francesco_20150524_enciclica-laudato-si_en.pdf)

⁶ <https://www.un.org/sustainabledevelopment/sustainable-development-goals/>

⁷ IPCC special report on global warming of 1.5°C (2018, http://report.ipcc.ch/sr15/pdf/sr15_spm_final.pdf)

⁸ Encyclical Letter *LAUDATO SI'* of the Holy Father Francis on Care for our Common Home (2015, http://w2.vatican.va/content/dam/francesco/pdf/encyclicals/documents/papa-francesco_20150524_enciclica-laudato-si_en.pdf)

Programme

9.00-9.30	Registration
Welcome and Opening Remarks	
9.30-10.00	<p>Marcelo Sánchez Sorondo <i>Bishop-Chancellor of the Pontifical Academy of Sciences</i></p> <p>Joachim von Braun <i>President of the Pontifical Academy of Sciences</i></p> <p>Massimo Inguscio <i>President of CNR and of the Consulta of Presidents of Public Research Institutions</i></p>
Session 1: New Research Insights on Global Climate Change	
10.00-11.00	<p><i>The Great Transformation</i> John Schellnhuber <i>Director Emeritus, Potsdam Institute for Climate Impact Research</i></p> <p><i>Geo-hydrological Hazards in a Global Warming Scenario</i> Fausto Guzzetti <i>Director of the CNR Research institute for Geo-Hydrological Protection</i></p> <p><i>Agriculture and climate change: back to a sustainable future</i> Francesco Loreto <i>Director of the CNR Department of Biology, Agriculture and Food Sciences</i></p>
11.00-11.30	Coffee break
Session 2: Climate Change and Actions in Various Regions	
11.30-13.00	<p><i>The Vulnerable Eastern Mediterranean-Middle East Region: Challenges and Adaptation Options</i> Costas N. Papanicolas <i>President of The Cyprus Institute</i></p> <p><i>Global Changes and Vulnerability of the Human-Nature Relation</i> Riccardo Valentini <i>Università della Tuscia, Euro-Mediterranean Center on Climate Change</i></p> <p><i>Mediterranean Challenges and Innovation in Agri-Food Systems</i> Angelo Riccaboni <i>President of PRIMA Foundation</i></p> <p><i>Climate Change and Sustainable Development in Africa</i> Mohamed H.A. Hassan <i>Former Executive Director of The World Academy of Sciences</i></p>
13.00-14.00	Lunch

Session 3: Climate Change, People and Resources	
14.00-16.00	<p><i>Climate Action and the Sustainable Development Agenda: What the IPCC's Special Report on Global Warming of 1.5° Tells Us</i> Hoesung Lee <i>Chair of Intergovernmental Panel on Climate Change</i></p> <p><i>Feedbacks in Climate Change and the Need for Carbon Drawdown</i> Peter Wadhams <i>Department of Applied Mathematics and Theoretical Physics (DAMTP) University of Cambridge; Università Politecnica delle Marche, Ancona</i></p> <p><i>Climate Change and how we can shift to a sustainable future</i> Steven Chu <i>Stanford University – Nobel Prize in Physics in 1997</i></p> <p><i>The Role of Academies of Sciences in Supporting the UN Sustainable Development Goals: the Climate Change Issue</i> Roberto Williams <i>President of the National Academy of Exact, Physical and Natural Sciences of Argentina</i></p> <p><i>Climate Change and Water System Risks</i> Zbigniew W. Kundzewicz <i>Institute for Agricultural and Forest Environment, Polish Academy of Sciences, Poznan, Poland</i></p> <p><i>Challenges in Food and Health Sciences</i> Vanderlei Salvador Bagnato <i>Instituto de Física de São Carlos (IFSC) Universidade de São Paulo (USP) Brazil</i></p>
16.00-16.30	Coffee break
Session 4: Science and Policy Directions in Preparation for COP24 in Katowice in December 2018	
16.30-17.30	<p><i>Energy, Resources and Technology: Looking to 2050 and Beyond</i> Martin Rees <i>Co-Founder and Director of CSER – Center for the Studies of Existential Risks of Cambridge University</i></p> <p><i>Implementing the Paris Climate Agreement: Technologies, Economics and Politics</i> Jeffrey Sachs <i>Director SDSN and Director Center for Sustainable Development Columbia University</i></p> <p><i>Polish Academia Towards Climate Change Studies; “Safeguarding Our Climate, Advancing Our Society” Event at COP 24</i> Pawel Rowiński <i>Vice President of the Polish Academy of Sciences, Warsaw, Poland</i></p>
Session 5: Conference Statement and Closing Remarks	
17.30-18.00	<p>Joachim von Braun <i>President of the Pontifical Academy of Sciences</i></p> <p>Massimo Inguscio <i>President of CNR and of the Consulta of Presidents of Public Research Institutions</i></p>

List of Speakers



VANDERLEI S. BAGNATO Full professor in Physics at the IFSC- University of São Paulo, is member of the PAS-Vatican, TWAS and NAS-USA. Works in Atomic physics with cold atoms and applications of optics in life science. Has published more than 500 scientific articles and authored 11 books. Details about scientific production and ongoing projects can be found in the homepage: <http://cepof.ifsc.usp.br>



JOACHIM VON BRAUN | PRESIDENT von Braun is considered an internationally leading expert on the problems of hunger and malnutrition and solutions of these problems. His scientific publications address poverty, international development economics, economics of natural resources, agriculture, and science and technology policy. von Braun was Director General of the International Food Policy Research Institute (IFPRI) based in Washington, DC, USA from 2002 to 2009. Since 2009 von Braun is Director of the Center for Development Research (ZEF) and Professor for Economic and Technological Change at University of Bonn, Germany. ZEF is Germany's leading multi-disciplinary research institute on aspects of development. von Braun serves as chair of the Bio-Economy Council of the German Government, and on various international, and European advisory councils. He has had work experience in the following countries: Egypt, Gambia, Guatemala, Rwanda, Sudan, Ethiopia, India, China, Bangladesh, Russia.



STEVEN CHU Steven Chu is a Professor of Physics and of Molecular & Cellular Physiology at Stanford University. He has published over 280 papers in atomic, polymer and biophysics, biology, batteries, and other energy technologies and has 28 patents and patent applications. From January 2009 through 2013, he was U.S. Secretary of Energy; and before that director of the Lawrence Berkeley National Laboratory, professor of Physics, Applied Physics at Stanford University, and head of the Quantum Electronics Research Dept at AT&T Bell Laboratories. Dr. Chu is the co-recipient of the 1997 Nobel Prize in Physics numerous other awards. He is a member of the National Academy of Sciences, is a foreign member of the Royal Society, the Royal Academy of Engineering, the Chinese Academy of Sciences, the Korean Academy of Sciences and Technology. He has degrees in mathematics and physics from the University of Rochester, and a Ph.D. in physics from the UC, Berkeley, and holds 32 honorary degrees.



FAUSTO GUZZETTI A geologist, Fausto Guzzetti is a senior scientist with the Consiglio Nazionale delle Ricerche (CNR). Since 2009 he is Director of the CNR Research Institute for Geo-Hydrological Protection (IRPI). He participated in a number of national, international, European and US projects. He coordinated the AVI project, producing a large catalogue of historical landslides and floods in Italy. He was principal investigator for the MORFEO project of the Italian Space Agency, and for the DORIS and LAMPRE FP7 projects for the EC. He served as president of the Natural Hazards Division of the European Geosciences Union, and was executive editor for the EGU journal Natural Hazards and Earth System Sciences until 2015. He is responsible for the CNR IRPI Centre of Competence of the Italian Department of Civil Protection, and a member of the National committee for predicting and preventing major risks.



MOHAMED H.A. HASSAN is President of the Sudanese National Academy of Sciences (SNAS), Sudan; Chairman of the Governing Council of the United Nations Technology Bank for the Least Developed Countries, Turkey and Chairman of the International Advisory Board of the Centre for International Development (ZEF), Germany. He was President of the InterAcademy Partnership (IAP); founding Executive Director of the World Academy of Sciences (TWAS); President of the African Academy of Sciences (AAS); and Chairman of the Council of the United Nations University (UNU); He was Professor and Dean of Mathematics in Khartoum University and published several articles in Wind Erosion, Dust and Sand Transport in Dry Lands.



MASSIMO INGUSCIO President of the Italian National Research Council (CNR), of which he had previously directed the Department of Physical Sciences, and President of the Council of Presidents of Public Research Bodies. Member of the National Academy of Lincei, has been President of the National Metrology Institute (NMI). He has been given the title of Grand Officer of the Order of Merit of the Italian Republic, awarded the Legion d'Honneur by the French Government, received the prize Enrico Fermi of Italian Physical Society, the Herbert Walther Award of the Optical Society of America and the German Physical Society and has been included in the Thomson-Reuters list of "most influential scientific minds" for his activities in atomic physics research close to absolute zero at LENS - European Laboratory for Non-linear Spectroscopy, University of Florence, of which he was director. He is author of more than 300 scientific papers which have been cited around 13000 times for an h-index of 57.



ZBIGNIEW W. KUNDZEWICZ is a Professor of Earth Sciences, affiliated in the Institute for Agricultural and Forest Environment, Polish Academy of Sciences in Poznan, Poland. He is a Corresponding Member of the Polish Academy of Sciences, and a Member of Academia Europaea. Recipient of a Dooge Medal of the IAHS/UNESCO/WMO International Hydrology Prize and of a Great Golden Seal of the City of Poznań (Poland). He has been a four-fold Coordinating Lead Author of publications of the Intergovernmental Panel on Climate Change (IPCC). He was a Member of the Advisory Group on Environment (including Climate) for 7th Framework Programme of the European Commission. His main scientific contributions have been in the areas of extreme hydrological events (and floods in particular) as well as climate change impacts on water resources.



HOESUNG LEE is Chair of the International Panel on Climate Change (IPCC), elected since October 2015, and Endowed Chair Professor at Korea University Graduate School of Energy and Environment, Seoul, Korea. Lee was the founding president of the Korea Energy Economic Institute – a government agency for national energy policy development. He served as the president of the International Association for Energy Economics, president of the Korea Resources Economics Association, member of the International Advisory Board of the Battelle-Pacific Northwest National Lab, USA, the Board of Directors of Hyundai Corporation and the Institute for Global Environmental Strategies, Japan. He was Co-Chair of the IPCC Working Group III for the Second Assessment which provided a scientific basis for the UNFCCC's Kyoto Protocol. He served as Vice-Chair of IPCC 2008-2015, and lead author and review editor for the various IPCC assessments. He received his BA from Seoul National University and Ph.D. in economics from Rutgers University, USA.



FRANCESCO LORETO is an expert on biosphere-atmosphere interactions. He studies the biosynthesis and emissions of volatile organic compounds, and the impacts of abiotic and biotic stressors on primary and secondary plant metabolism. Dr Loreto is Research Director at the National Research Council of Italy (CNR), where he has directed the Institute for Plant Protection (2009-2012), and since 2013 is the director of the Department of Biology, Agriculture and Food Science (CNR-DiSBA) coordinating the activities of nine CNR Institutes and more than 800 researchers and technologists around Italy. Dr Loreto has been a delegate of the Italian Ministry of Research and Education at the European Commission and at several COST actions; a member of the scientific steering committee of the "Integrated Land Ecosystem Atmosphere Process Study programme" (iLEAPS), a core-programme of the International Geosphere Biosphere Programme (IGBP); and has coordinated eight European projects in the field of biogenic emissions and their role in plant defense, communication, and relationship with atmospheric chemistry. Dr Loreto has published so far (June 2018) > 200 papers on peer-reviewed ISI-indexed international journals, with a total number of citations > 16000, and a H index = 68. He has also published 11 book chapters, and is editor of the book "Terrestrial photosynthesis in a changing environment" (Cambridge Press, 2012).



COSTAS N. PAPANICOLAS is the President of the Cyprus Institute and the head of its Energy Division. He is an MIT-trained physicist with over 35 years of experience as a researcher, an educator and a scientific administrator. His fields of expertise include Nuclear and Particle physics, Medical Physics, Solar Energy and Energy policy. He has held positions at CEA, France, and has served as Professor at the Univ. of Illinois (USA), and at the Univ. of Athens (Greece). He served on numerous boards and committees including: Chair of the Council on Educational Evaluation and Accreditation (CEEAA) of the Republic of Cyprus, and the National Research and Innovation Council of Cyprus, chaired by the President of the Republic. He is a Fellow of the American Physical Society and a member of the Academia Europea and of the Silk Road Academy of Sciences. Prof. Papanicolas has over 140 publications in peer-reviewed journals.



MARTIN JOHN REES Research has been mainly on topics in high energy astrophysics, cosmology and galaxies, and space science. Early work concerned the nature of cosmic radio sources, and interpreting the data that first became available in the 1960s on cosmology and very remote objects at high redshifts. Other topics have included the nature of the compact objects emitting strong x-rays, quasars, pulsars, gravitational waves, background radiation, the formation of galaxies, and physical processes in the early universe. He has also been interested in the interface between cosmology and philosophy. Outside the primarily academic sphere, he has also been involved in international space research, and in projects for education, etc. in developing countries.



ANGELO RICCABONI Past Rector of University of Siena, is Full Professor of “Management Control Systems” at the Richard Goodwin School of Economics and Management (University of Siena). He is a member of the Leadership Council of the United Nations’ Sustainable Development Solutions Network and Chair of the Regional Centre of the SDSN for the Mediterranean since 2012. Since 2017 he is Chair of PRIMA Foundation, an agency located in Barcelona in charge to implement a 10-year research and innovation programme on food systems and water resources, with a budget of 500 million euros funded by the European Commission and 19 Euro-Mediterranean Countries. He chaired the General Assembly of the PRIMA Consortium, made up of representatives of Euro-Mediterranean governments, in charge to prepare the PRIMA Programme (2013-2017). His research focuses on Governance and Control issues and the role of organisations and universities to promote the implementation of Agenda 2030. He is currently Member of the Board of Directors of MPS Bank (since 2017), Member of the Sustainability Board of Edison Italia (since 2017) and Member of the Advisory Board of Carrefour Italia (since 2018). He was a member of Board of Auditors of Bank of Italy (2016-2017).



PAWEŁ M. ROWIŃSKI is Professor in Earth Sciences and the Corresponding Member of the Polish Academy of Sciences. Since 2015 Vice President of the Polish Academy of Sciences. From 2008 to 2015, he was the CEO of the Institute of Geophysics, Polish Academy of Sciences. He is the Co-Founder of Earth and Planetary Research Centre (GeoPlanet) and in the years 2009 – 2015, he served as the first Chairman of the Board of Directors of GeoPlanet. In 2017 he was elected Vice Chair of the International Association for Hydro-Environment Engineering and Research IAHR – Europe Regional Division Leadership Team. His research interests and contributions are in mathematical modelling of hydrological processes, fluvial hydraulics, river turbulence, pollution and sediment transport in rivers, two-phase flows, chaotic dynamics, water balance in a catchment, adaptive environmental assessment and management (Cambridge Press, 2012).



JEFFREY D. SACHS is a world-renowned economics professor, bestselling author, innovative educator, and global leader in sustainable development. He is widely recognized for bold and effective strategies to address complex challenges including debt crises, hyperinflations, the transition from central planning to market economies, the control of AIDS, malaria, and other diseases, the escape from extreme poverty, and the battle against human-induced climate change. He has been advisor to three United Nations Secretaries-General, Kofi Annan, Ban Ki-moon, and currently Antonio Guterres. Professor Sachs was the co-recipient of the 2015 Blue Planet Prize, the leading global prize for environmental leadership. He was twice named among Time magazine’s 100 most influential world leaders and has received 28 honorary degrees. The New York Times called Sachs “probably the most important economist in the world,” and Time magazine called Sachs “the world’s best known economist.” A survey by The Economist ranked Sachs as among the three most influential living economists. Professor Sachs serves as the Director of the Center for Sustainable Development at Columbia University. He is University Professor at Columbia University, the university’s highest academic rank. Sachs is the Director of the UN Sustainable Development Solutions Network and a commissioner of the UN Broadband Commission for Development. Sachs was Director of the Earth Institute from 2002 to 2016. Sachs has authored and edited numerous books, including three *New York Times* bestsellers, *The End of Poverty* (2005), *Common Wealth: Economics for a Crowded Planet* (2008), and *The Price of Civilization* (2011). Other books include *To Move the World: JFK’s Quest for Peace* (2013), *The Age of Sustainable Development* (2015), *Building the New American Economy: Smart, Fair & Sustainable* (2017), and most recently *A New Foreign Policy: Beyond American Exceptionalism* (2018). Prior to joining Columbia, Sachs spent over twenty years as a professor at Harvard University, most recently as the Galen L. Stone Professor of International Trade. A native of Detroit, Michigan, Sachs received his B.A., M.A., and Ph.D. degrees at Harvard.



MARCELO SÁNCHEZ SORONDO | CHANCELLOR Marcelo Sánchez Sorondo was born in Buenos Aires and was ordained a priest in 1968. He was lecturer in the history of philosophy at the Lateran University in Rome where he became full professor. He was dean of the Faculty of Philosophy at the same university and full professor of the history of philosophy at the Libera Università Maria SS. Assunta, Rome. In 1998 he was appointed Chancellor of the Pontifical Academies of Sciences and Social Sciences by St John Paul II, who then consecrated him titular Bishop of Vescovio. Awards: Cavaliere di Gran Croce (Italy); official of honour of the Légion d’Honneur (France); Grão Mestre da Ordem de Rio Branco (Brazil), Official of the Republic of Austria, Knight of the Republic of Chile, Member of Accademia dei Gergofili, Member of the Accademia Italiana del Vino; Corresponding Member of the Academia de Ciencias de Cuba; Orden del Aguila Azteca (Mexico); Innovation Award of the Gregor Mendel Foundation.



HANS JOACHIM SCHELLNHUBER founded the Potsdam Institute for Climate Impact Research (PIK) in 1992 and has been its Director ever since. He holds a Chair in Theoretical Physics at Potsdam University and is an External Professor at the Santa Fe Institute (USA). From 2001-2005 he also served as Research Director of the Tyndall Centre in the UK and became a Visiting Professor at Oxford University thereafter. Schellnhuber has been a long-standing member of the Intergovernmental Panel on Climate Change (IPCC) which was awarded the Nobel Peace Prize in 2007. He served as Chief Government Advisor on climate and related issues during the German G8/EU twin presidency in 2007 and has served as a principal advisor to the European Commission President Barroso. He is a member of numerous national and international panels addressing scientific strategies and sustainability issues.



RICCARDO VALENTINI Degree in Physics with score of 110/110 points at the University of Rome “La Sapienza” in 1985. In 1987 he became researcher at the University of Tuscia, Faculty of Agriculture. He spent one year in Stanford at Carnegie Institution of Washington. He was involved in negotiations for the Kyoto Protocol and the United Nations Framework Convention on Climate Change (UNFCCC). He obtained an ERC (European Research Council) Senior Advanced Grant concerning the role of African tropical forests in the global greenhouse gas balance. He coordinated the IPCC. He is also appointed as coordinator of the Megagrant n.221 of the Russian Ministry of Science and Technology leading a group of about 40 scientists at the Russian State Agriculture University in Moscow. He has been Councilor in “Partito Democratico” group at the Regional Council of Lazio. Currently he is also strategic manager of the CMCC Foundation and Professor at RUDN University of Moscow, Russia.



PETER WADHAMS (ScD) is Emeritus Professor of Ocean Physics at the Department of Applied Mathematics and Theoretical Physics, University of Cambridge, and is a Professor at Università Politecnica delle Marche, Ancona. He was formerly Director of the Scott Polar Research Institute in Cambridge. Since 1976 he has run a research group concerned with sea ice physics and climate change, with extensive field work (54 expeditions) done using submarines, autonomous underwater vehicles, icebreakers, aircraft and ice camps.



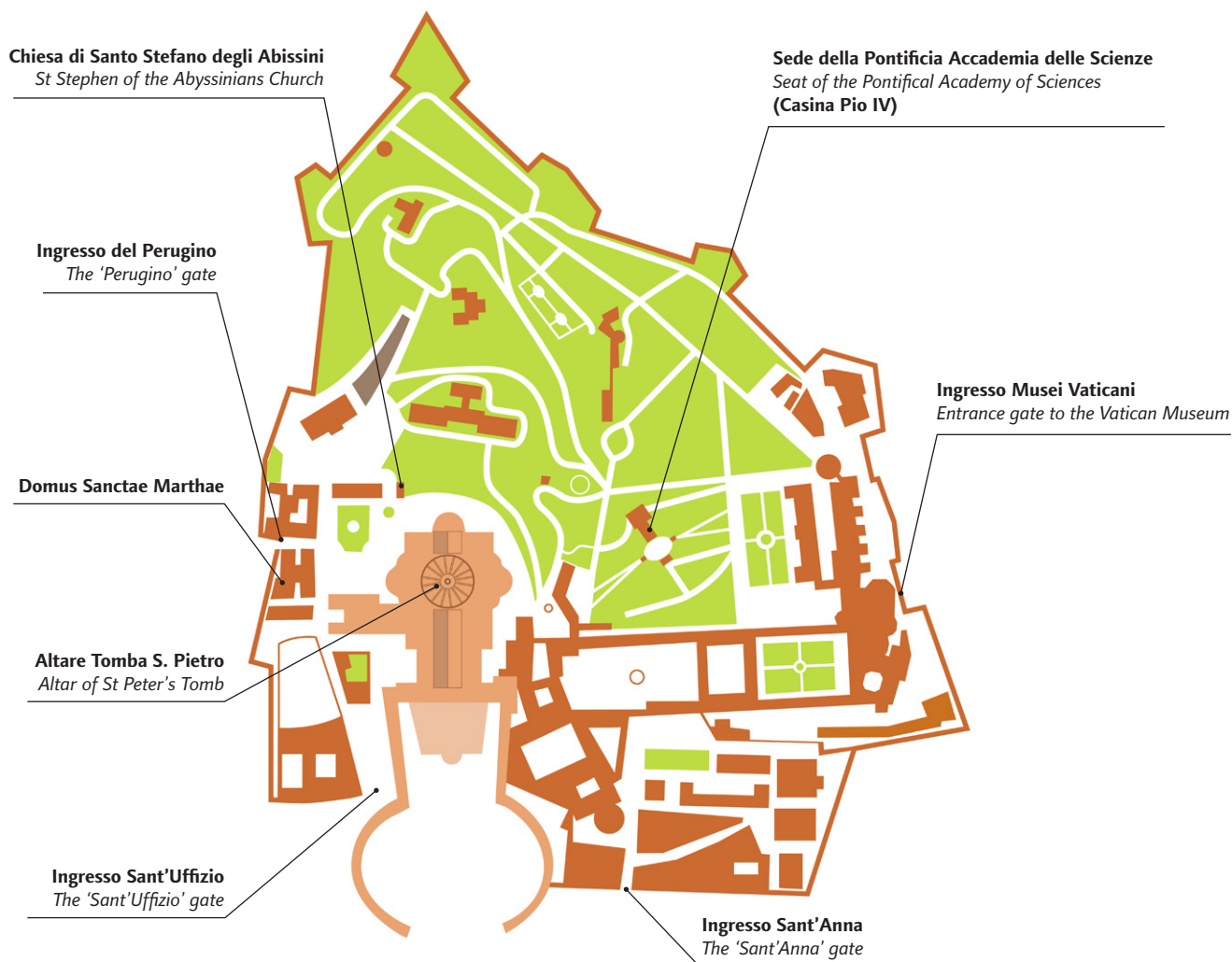
ROBERTO WILLIAMS (PhD, 1972, University of La Plata, Argentina) is Researcher of the National Research Council (CONICET) since 1977, in the field of thermosetting polymers. Co-author of 2 books, 17 book chapters and 233 scientific articles. He gave plenary and keynote lectures in international symposia held in the Americas and Europe. He was Professor at the Department of Chemical Engineering, University of Mar del Plata (1976-2016). He was organizer (1982) and first director (1982-86, 1988-94) of the Institute of Materials Science and Technology (INTEMA). Member of the Directory Board of CONICET (1997-99). He is President of the National Academy of Exact, Physical and Natural Sciences (ANCEFN, Argentina), since 2016 and. Fellow of TWAS, In 2011, he received the Presidential Award (Investigador de la Nación), the maximum distinction given to a scientist in Argentina.

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Memorandum

- 15 November 2018, pickup schedule:
 - Pick up from the Crowne Plaza Hotel: 8:40 AM
 - Pick up from the Hotel della Conciliazione: 8:45 AM
- The same buses will take participants back to their hotels after the afternoon session, at 18:00.
- Lunch for the participants will be served at the Academy. If there are vegetarians or for any dietary restrictions (food allergies, and/or religious restrictions), inform the Secretariat as soon as possible.
- WI-FI credentials
Network: **WLAN_PADS (WPA2)**
Password: **!!WIFI_2017_PADS!!**



MEDIA ENQUIRIES



All journalists and media operators who intend to participate must apply via the Holy See Press Office, through the online accreditation System available at: **press.vatican.va/accreditamenti**. All applications must be received no less than 48 hours before the event.



I giornalisti e gli operatori media che intendono partecipare devono fare richiesta alla Sala Stampa della Santa Sede attraverso il Sistema di accreditamento online, all'indirizzo: **press.vatican.va/accreditamenti**. Tutte le richieste dovranno pervenire entro 48 ore dall'evento.



Todos los periodistas y gráficos que deseen participar deben enviar una solicitud a la Oficina de Prensa de la Santa Sede a través del Sistema de acreditación online, en esta dirección: **press.vatican.va/accreditamenti**. Todas las peticiones deberán hacerse al menos 48 horas antes del evento.

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