The Climate Change category leads off the fifth edition of the awards

Susan Solomon wins the BBVA Foundation Frontiers of Knowledge Award for establishing the links between atmosphere, climate and human activity

- The jury, in its citation, states that Solomon **"has contributed, through her research and leadership, to the safeguarding of our planet,"** and stands as **"a role model of science for the public good"**

- In a series of Antarctic expeditions, she was able to confirm her theory about the causes of ozone layer depletion, and in 2007 co-led the watershed report of the Intergovernmental Panel on Climate Change (IPCC)

Madrid, January 10 2013.- The BBVA Foundation Frontiers of Knowledge Award in the Climate Change category goes in this fifth edition to U.S. scientist Susan Solomon for her work on determining how human action alters the composition of the atmosphere and how these changes, in turn, affect the Earth's climate. The jury's citation states that Solomon **"has contributed, through her research and leadership, to the safeguarding of our planet."**

Solomon's work over 30 years has succeeded in establishing and drawing together links between three key climate change variables: human activity; a profound and comprehensive understanding of the behavior of atmospheric gases; and the alteration of climate patterns globally.

Susan Solomon is a professor at the Massachusetts Institute of Technology (MIT). For the jury, **"her early research, fundamental to the understanding of stratospheric chemistry, led to the strengthening of the Montreal Protocol to curb the use of ozone-destroying substances."** In recent years, the citation adds, **"her contributions and leadership within the IPCC and other forums is a role model of science for the public good."**

In the words of jury chairman Bjorn Stevens: "Her research has really shown how basic science can shape policy decisions and social actions. She is not an activist; she is very much a basic scientist, but she has this knack of picking up topics and developing new understanding which then influences the public debate.

Probably there is no other scientist in the field whose results have had such a big impact on one of the key social questions of our time."

Carlos Duarte, the jury secretary and Director of the UWA Oceans Institute at The University of Western Australia, added during the announcement event that Solomon "has formulated a general theory of climate system response to perturbations in atmospheric composition."

Solomon received news of the award last night and declared herself "thrilled. It is a fantastic award and also a great honor to join these very distinguished past recipients."

A precocious scientist and a vital discovery

Susan Solomon (Chicago, 1956) was won over to science at an early age by watching TV nature programs like *The Undersea World of Jacques Cousteau*. Her passion for atmospheric chemistry was already apparent in high school, where she won a prize with a project measuring the amount of oxygen in gas mixtures.

After earning her PhD from the University of California at Berkeley, with an atmospheric chemistry project alongside future Nobel laureate Paul Crutzen, Solomon started work in the NOAA (National Oceanic and Atmospheric Administration). It was the early 1980s, and news was coming in of a drastic reduction in the ozone layer over Antarctica. Although the ozone-destroying power of the gases known as CFCs – chlorofluorocarbons, used in refrigeration and aerosols – was already known to science, the hunt was still on to find the causes of the hole opening up in the Antarctic ozone layer.

Why in Antarctica, so far from where CFCs were in regular use? And, why was depletion happening so fast? Susan Solomon solved the mystery by elucidating the chemical reactions that take place on the surface of the ice crystals present in the stratosphere over both poles. But not content with constructing an explanatory model, she was determined to test her theory on the ground. In 1986 and 1987, Solomon led two expeditions during the Antarctic winter – with its permanent nights and temperatures as low as 50ºC below zero – to gather data on atmospheric composition at the time and place when the hole was forming. The evidence obtained would vindicate her theory.

Science had already established that a lack of ozone led to an increase in the ultraviolet radiation reaching Earth, but it was Solomon who proved, in later research, that these changes in stratospheric composition also impacted on climate. In particular, the ozone hole has a clear effect on wind and rain patterns in the southern hemisphere.

This was the first time a link had been found between the ozone hole and climate. As Solomon explains: **"the ozone hole is such an incredible perturbation of the entire atmosphere, it just rocks the planet."**

Her research has produced such tangible results as the ban on CFC gases in the Montreal Protocol, signed in 1987**. "What's encouraging about the ozone hole is that it shows that people can understand that we can change our global environment in ways that are not safe, but we can also make choices to decide that we don't want to do that. And is it not amazing,"** she goes on, **"that virtually every country in the world has signed the Montreal Protocol?"**

Another of Solomon's findings highlights the slowness with which the atmosphere recovers. Despite this, she insists that "it is important to know that it's not too late to stop turning up the thermostat."

"My discovery really increases the importance of making good choices about how much more carbon dioxide we want to put into the atmosphere, because we need to understand that what we are doing cannot be easily undone."

Solomon has no doubt that innovation is one of the best ways to combat climate change: **"There is a tremendous amount of technical work and engineering to find alternative ways to produce energy, or to get the carbon back in the ground. I am a strong believer in technology, and I see tremendous and encouraging changes happening."**

In 2002, she joined the Intergovernmental Panel on Climate Change (IPCC), where she co-chaired Group One, tasked with writing the watershed climate report published in 2007.

"What is really great about scientists is that you can have 10 scientist in the room and it doesn't matter if their native languages are different. They look at the data and are able to talk to each other in a very constructive way. That's truly incredible and it's also the reason I love being a scientist."

BBVA Foundation Frontiers of Knowledge Awards

The BBVA Foundation primarily engages in the generation and diffusion of scientific knowledge and culture, through ongoing programs in the areas of basic sciences, biomedicine, ecology and conservation biology, social sciences, literary and musical creation, and the visual arts.

Its focus on the core concerns of today's society, like health or the environment, has materialized in major research projects, including those involving the study of cancer. The Foundation's support for research, advanced training and knowledge dissemination is also manifest in a series of award families which not

only honor the winners' contributions but also shed a wider light on their fields of work, the values they represent and the combined endeavors of the research and creative communities.

The BBVA Foundation established its Frontiers of Knowledge Awards in 2008 to recognize the authors of outstanding contributions and radical advances in a broad range of scientific and technological areas characteristic of our times. They are in this sense a prize family congruent with the knowledge map and central challenges of the 21st century.

The nominations received from leading universities and research and cultural centers all over the world, the independence and objectivity of the prize juries formed by reputed specialists in their respective fields, and the excellence of the laureates in their earlier editions have earned these awards, devised and organized from Spain, a firm place among the world's foremost award schemes. The BBVA Foundation is assisted in this initiative by the country's premier multidisciplinary research organization, the Spanish National Research Council (CSIC), and by the presence of Spanish scientists and creative practitioners on the international juries.

The CSIC collaborates in the appointment of Technical Evaluation Committees for each prize category made up of acknowledged experts in the relevant domain. This Committee undertakes an initial assessment of candidates and draws up a reasoned shortlist for the consideration of the juries.

In the Climate Change category, Committee members were Jordi Bascompte, CSIC Research Professor at Doñana Biological Station; Xavier Querol, CSIC Research Professor in the Institute of Environmental Assessment and Water Research; Rafael Simó, a CSIC researcher in the Institute of Marine Sciences; and Fernando Valladares, CSIC Research Professor in the Spanish Museum of Natural Sciences.

The Frontiers awards provide an international showcase for the best qualities of Spain and Spanish science, and have achieved the endorsement of the world scientific community, whose members have served on the juries and put forward nominations from their posts in eminent Spanish and international academic and research institutions.

In their fifth edition, the BBVA Foundation Frontiers of Knowledge Awards wish to offer support and recognition to the individuals and teams working for a better future for people through the advancement of knowledge, innovation and culture and their dissemination to society; a core element of the culture of the BBVA Group.

In an economic context marked by a prolonged economic crisis and the short-term measures taken to address some of its causes and manifestations, science, the environment and culture have dropped further down the list of public priorities. The BBVA Foundation Frontiers of Knowledge Awards, and the Foundation's broader program to foster scientific knowledge and culture, wish to drive home the message that these three spheres are of transcendental importance for our collective wellbeing and our opportunities as individuals.

The eight categories of the BBVA Foundation Frontiers of Knowledge Awards respond to the knowledge map of the early 21st century, but also to key global challenges that have never before merited a specific honor on this scale, as with the two environmental categories – Ecology and Conservation Biology and Climate Change – and the category of Development Cooperation. These stand alongside the classic categories of Basic Sciences, Biomedicine and Economics, Finance and Management. And, finally, the award family is completed by Contemporary Music, an art at the leading edge of cultural innovation to which the BBVA Foundation devotes a broad-ranging support program and which finds in Spain a wide and talented community of authors, conductors and performers.

International jury

The jury in this category was chaired by **Bjorn Stevens**, Director of the Max Planck Institute for Meteorology (Germany). The secretary was **Carlos Duarte**, Research Professor of the Spanish National Research Council (CSIC) and Director of the UWA Oceans Institute at The University of Western Australia (Australia). Remaining members were **Miquel Canals**, Professor of Marine Geology in the Geology School at the University of Barcelona; **Sandrine Bony-Lena**, senior scientist in the Laboratoire de Meteorologie Dynamique belonging to the Centre National de la Recherche Scientifique (CNRS) and Pierre et Marie Curie University (France); **Kirsten Halsnæs**, Head of the Climate Program at the Technical University of Denmark (Denmark), and **Edward Rubin**, Professor of Engineering and Public Policy at Carnegie Mellon University (United States).

The winner in the previous edition was German-born U.S. physicist **Isaac Held**, employed at the Geophysical Fluid Dynamic Laboratory of the U.S. National Oceanic and Atmospheric Administration (NOAA), for "his fundamental and pioneering contributions to our understanding of the structure of atmospheric circulation systems and the role of water vapor in climate change."

The award in the third edition went to the British economist **Nicholas Stern**, whose pioneering report shaped and focused the discourse on the economics of climate change and was the means to quantify the impacts and costs arising from the alteration of our planet's climate. The award in the second edition was granted to German physicist and mathematician **Klaus Hasselmann** for "developing methods which show that today's global warming is mainly attributable to human action." Finally, the winner in the inaugural edition was **Wallace Broecker**, the U.S. scientist who alerted the world to the phenomenon of "global warming".

The BBVA Foundation Frontiers of Knowledge Awards, spanning eight prize categories, recognize research and creative work of excellence as embedded in theoretical advances, technological developments or innovative artistic works and styles, as well as fundamental contributions in addressing key challenges of the 21st century. The Foundation has been assisted in the selection of jury members and candidates by the Spanish National Research Council (CSIC), the country's leading public research organization. Nominations have been received from the world's most prestigious teaching and research institutions.

UPCOMING AWARD ANNOUNCEMENTS

CATEGORY	DATE
Information and Communication Technologies (ICT)	January 15, 2013
Basic Sciences	January 22, 2013
Biomedicine	January 29, 2013
Ecology and Conservation Biology	February 5, 2013
Contemporary Music	February 12, 2013
Economics, Finance and Management	February 19, 2013
Development Cooperation	February 26, 2013

LAUREATE'S FIRST DECLARATIONS AND IMAGES

A video recording of the new laureate's first interview on receiving news of the award is available from the Atlas FTP with the following name and coordinates.

Server: **213.0.38.61**
Username: **agenciaatlas1**
Password: **amapola**

The name of the video is:
"FBBVA PREMIO CAMBIO CLIMATICO"

Click on the hyperlink **http://wtrns.fr/odsmsapCwt3dBU** to access an audio file (MP3) of the public announcement event, including declarations from the awardee, and selected photographs.

If the event of connection difficulties, please contact Alejandro Martín at ATLAS:

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Fundación BBVA

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