

In the fourth edition of these awards upholding science as a motor of progress

## Isaac Held wins the BBVA Foundation Frontiers of Knowledge Award for his fundamental contribution to understanding the structure of atmospheric circulation systems and the role of water vapor in climate change

- The BBVA Foundation Frontiers of Knowledge Awards recognize the role of science and cultural creation as levers of society's progress and wellbeing. Their eight categories address the main scientific, technological, social and economic challenges of our times
- Held predicts that if CO<sub>2</sub> emissions are not curtailed, temperatures in the Mediterranean will rise by 3° in the next century while rainfall levels will drop by between 10% and 15%

**January 11, 2012.-** The BBVA Foundation Frontiers of Knowledge Award in the category of Climate Change goes in this fourth edition to Isaac Held, an American physicist of German origin 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 – the most important greenhouse gas – in climate change," in the word's of the jury's citation.

The jury chair, Dr. Bjorn Stevens, points out that while climate change research has tended to center on rising temperatures, Isaac Held (Ulm, Germany, 1948) has opened up new avenues of interest that focus on the essential role of water, both by studying its movement in the atmosphere and by investigating how water vapor influences the greenhouse effect.

Held's research has helped to uncover many of the processes that dictate the existence of different climate zones, and to predict how they will change due to the alteration of the world's climate. In particular, his work explains why tropical zones will become more humid as subtropical zones get gradually drier, a trend already borne out by the available data.

"The amount of water in the atmosphere is what makes some zones wetter than others. Trying to understand how water moves in the atmosphere and how climate change may alter those patterns in the future is one of the things I have focused on in my research," remarked Held after hearing of the award.

As temperature rises, so too will the quantity of water vapor in the atmosphere, and this gas, in turn, will drive further warming. The result is a positive feedback that will have to be factored into estimates of future climate.

Held's research holds out a particular warning for the Mediterranean. According to his forecasts, if CO<sub>2</sub> emissions are not curtailed, temperatures in the region could increase by 3° in the course of a century. This would mean a major reduction in rainfall levels: "We expect precipitation to decrease maybe 5% to 10% for every degree of warming," Held affirms.

The chairman of the jury, Bjorn Stevens, announced the name of the new laureate this morning in the Marqués de Salamanca Palace, Madrid headquarters of the BBVA Foundation, where he was accompanied by Juan José Damborenea, Assistant Vice-President of Scientific and Technical Areas at the Spanish National Research Council (CSIC), the Rafael Pardo, Director of the BBVA Foundation.

The BBVA Foundation established the Frontiers of Knowledge Awards in 2008 to recognize the authors of outstanding contributions and significant advances in a broad range of scientific and technological areas characteristic of our times. The quality of the nominations received and the stature of the jury members and laureates in their first three editions have located them among the world's foremost award families.

At a time when concerns about the world economy have pushed science and culture lower down the list of priorities, the BBVA Foundation Frontiers of Knowledge Awards enter this fourth edition firm in their commitment to the individuals and teams working for a better future for people.

The BBVA Foundation Frontiers of Knowledge Awards honor world-class research and artistic creation across eight prize categories, each carrying prize money of 400,000 euros. Their uniqueness lies in their close alignment with the scientific, technological, social and economic challenges of the 21st century, and their inclusion of two dedicated environmental categories in the form of "Climate Change" and "Ecology and Conservation Biology".

## Biography of Isaac Held

Isaac Held was born in a refugee camp. At the age of four he emigrated to the United States with his brother, his mother – a survivor of Auschwitz – and his father, who died in 1956.

As a student his first choice was theoretical physics, but these were the times of the anti-Vietnam war protests, when as Held puts it, “it wasn’t that easy to concentrate on one’s studies”. His watershed moment came in 1972 on reading *Man’s Impact on the Climate*, one of the first scientific assessments of the effects of rising greenhouse gases in the Earth’s atmosphere. By the time he had finished Held was clear that “this was a challenging problem, and understanding it *really* had importance to society.”

After graduating from the State University of New York at Stony Brook, he moved on to Princeton where he obtained his PhD in atmospheric and oceanic sciences in 1976. Two years later, he joined the NOAA Geophysical Fluid Dynamic Laboratory, where he remains to this day, combining his research work with the teaching of classes at Princeton University.

One of his first achievements, in the 1980s, was to explain the functioning of the so-called Hadley cells, the atmospheric phenomenon regulating climate in the planet’s tropical and subtropical belts. Held then went on to investigate how climate change-induced alterations of air circulation in these regions affect the formation of storms and hurricanes.

Throughout his career, Held has been esteemed for his work on testing the reliability of climate change prediction models. His accomplishments “have been pivotal in understanding tropical circulations and climate patterns and in assessing the robustness and limitations of complex models used to predict climate change,” reads the award certificate.

In over three decades of research, he had published 130 widely cited papers on atmospheric dynamics and climate change. As well as contributing substantially to the Fourth Assessment Report of the IPCC (Intergovernmental Panel on Climate Change), he has served on the World Meteorological Organization Expert Team on “Hurricanes and Climate”.

## International jury

The jury in this category was chaired by **Bjorn Stevens**, Director of the Max Planck Institute for Meteorology (Germany), with **Miquel Canals**, Professor of Marine Geology in the Geology School at the University of Barcelona acting as secretary. Remaining members were **Sergio Alonso**, Professor of Meteorology in the Physics Department of the University of the Balearic Islands; **Sandrine Bony-Lena**, senior scientist in the Laboratoire de Meteorologie Dynamique of the Centre National de la Recherche Scientifique (CNRS) and Pierre et Marie Curie University (France); **Kirsten Halsnæs**, Head of Climate Programme at the Technical University of Denmark (DTU); and **Edward Rubin**, Professor of Engineering and Public Policy at Carnegie Mellon University (United States).

The Climate Change award in the last edition of the BBVA Foundation Frontiers of Knowledge awards went to Briton **Nicholas Stern**, whose “pioneering 2006 report shaped and focused the discourse on the economics of climate change” in the words of the prize jury. The “advanced economic analysis” applied by Stern has been the means to “quantify the impacts and costs” arising from the alteration of our planet’s climate, as well as providing “a unique and robust basis for decision-making”.

The award in the second edition went 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**

The BBVA Foundation supports knowledge generation, scientific research and the promotion of culture, relaying the results of its work to society at large. This effort materializes in research projects, advanced training and a series of award families aimed at recognizing and drawing public attention to the work of scientists and creative practitioners.

Among the BBVA Foundation’s areas of activity are basic sciences, biomedicine, ecology and conservation biology, the social sciences and literary and musical creation. Its initiatives mesh with the BBVA Group’s strategy of fostering innovation and knowledge as development drivers and a means to expand our individual and collective choices.

In just three editions, the BBVA Foundation Frontiers of Knowledge Awards have captured the attention of the world’s most prestigious teaching and research institutions, which have responded by putting forward candidate nominations. The strength of their support reflects the rigorous standards governing the award process, as endorsed by the participation of the National Research Council (CSIC) and jury members of world repute deliberating in conditions of complete independence.

**UPCOMING AWARD ANNOUNCEMENTS**

<b>CATEGORY</b>	<b>DATE</b>
<b>Information and Communication Technologies (TIC)</b>	Tuesday, January 17
<b>Basic Sciences</b>	Tuesday, January 24
<b>Biomedicine</b>	Tuesday, January 31
<b>Ecology and Conservation Biology</b>	Tuesday, February 7
<b>Contemporary Music</b>	Tuesday, February 14
<b>Economics, Finance and Management</b>	Tuesday, February 21
<b>Development Cooperation</b>	Tuesday, February 28

### **LAUREATE'S FIRST DECLARATIONS AND IMAGES**

A video recording of the new laureate's first impressions on receiving news of the award is available from the Atlas FTP with the following name and coordinates, along with an audio MP3 recording of the announcement event and pictures of the laureate:

Server: **213.0.38.61**

Username: **agenciaatlas1**

Password: **amapola**

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

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