

Acceptance speech

20 June 2024

Jean Jouzel, awardee in the Climate Change category (16th edition)

I am very honored to be one of the recipients of this award from the BBVA Foundation, which I would like to deeply thank. I am proud to share this Climate Change award with my long-time colleagues Dorthe Dahl-Jensen, Valérie Masson-Delmotte, Jakob Schwander and Thomas Stocker.

I am being honored for my contribution to ice core research, in particular to the European project that allowed our community to cover the last 800,000 years. Although more deeply involved in Antarctic research, I have also been active in projects in Greenland, including field work. Through these various projects, I have been lucky to be associated with two important findings; the existence of a link between greenhouse gases and climate in the past, and the discovery of large and rapid climate changes occurring at the scale of a human life or even less.

My PhD was dedicated to deriving information about the growth of large hailstones from their composition in deuterium and oxygen 18, two isotopes of hydrogen and oxygen, the components of water. Such studies made me familiar with the various aspects of isotopic fractionation that affect water molecules during their atmospheric cycle and how the isotopic composition of snow and ice can be used to reconstruct past climate changes.

I started ice core research in the mid 1970s in close collaboration with Claude Lorius and his group in Grenoble. For almost forty years, I then actively participated in major ice core international projects and also made contributions to various aspects of the modeling of water isotopes.

In the eighties, I became fully involved in the Vostok ice core program, conducted in the framework of a collaboration between French, Russian, and U.S. scientists. This ice allowed us to discover a strong correlation between the concentration of greenhouse gases – carbon dioxide and methane – both measured by the team led by Dominique Raynaud, and the Antarctic climate as derived by our team from water isotope measurements. First documented over the last glacial-interglacial cycle, this correlation has remained strong over the last four climatic cycles, a period over which the Vostok ice core was

extended in the nineties. I was associated with the launch and success of the European Program for Ice Coring in Antarctica, the EPICA project, which allowed to extend the timescale back to 800,000 years.

I have fully participated to many other aspects of the Vostok and EPICA programs: ice core dating, comparison between the climate and the greenhouse gas records, correlation with other paleo-records and contribution to the interpretation of various ice core records including beryllium, nitrogen, oxygen, argon and sulfur isotopes.

I have long been convinced that looking at the past is a key to understanding the future. The relevance of paleoclimate research to future climate change is now fully recognized and this is one facet of our field of research of which I am very proud. This was one of the main reasons for my involvement in the Intergovernmental Panel on Climate Change, an involvement that I was particularly happy to share with two co-recipients, Valérie Masson Delmotte and Thomas Stocker.

What I appreciate most about our field of research is the strong spirit of collaboration among teams interested in looking at different properties and records extracted from these archives of our climate and our environment. In recognition of the profound collaboration that goes into ice core research, I would like to thank all the colleagues with whom it has been my immense pleasure to collaborate. I would also like to acknowledge other close collaborators, scientists, technicians, and PhD students for their invaluable contribution. Many thanks as well to research institutions and funding agencies, in particular the French Atomic Energy Agency, an institution where I started my research 56 years ago. And I should also express my deep thanks to national and European research agencies for their support.

Acknowledgements go also to my family, in particular to my wife Brigitte, who has been very supportive despite the fact that doing research is very time consuming.