THE WHITE PLANET: THE EVOLUTION AND FUTURE OF OUR FROZEN WORLD. Jean Jouzel, Claude Lorius and Dominique Reynaud. 2013. Princeton: Princeton University Press. 306 p, hardcover, illustrated. ISBN 978-069-114-499-3. $29.95.

The Arctic is often described as a planetary bellwether when it comes to the danger of climate change. The public perception of the polar region's contribution to the understanding of climate change remains however often limited to the risks implied by the withdrawing Arctic sea ice extent. Such a perception fails to acknowledge the importance of polar science as a unique window into the very distant past.

With *The white planet,* three prominent actors of polar research contribute to address this shortcoming by introducing the non-specialist to the relevance of glaciology for society at large. Rather than focusing solely on physical processes, this book concentrates on the relation between humans and their physical environment. It provides a firsthand account of polar research, an experience that serves to illustrate the advancement of our understanding of the human impact on the climate.

The value of *The white planet* builds on the impressive careers of its authors, Jean Jouzel, Claude Lorius and Dominique Reynaud, three leading French glaciologists with over a century of cumulated research experience and the recipients of the most prestigious scientific medals and awards in this field. Having personally contributed to shape French polar research during more than three decades, their account is primarily an invitation to follow the progress of one of the most impressive scientific endeavours of the past century.

The book begins with an overview of the cryosphere, one of the two concepts at the core of the *The white planet*, which encompasses the approximate 2% of the water available in solid form on our planet. This frozen world includes snow, sea ice, glaciers, ice caps, ice shelves, ice sheets, permafrost and other frozen grounds. The first chapters offer a short introduction to the physical properties of each of these components, a much-welcomed cheat sheet for any non-specialist interested in the polar regions.

Having set the stage, the authors then invite the reader to join them through several decades of climate science and polar exploration. Firstly, the authors provide a succinct description of the methods allowing for the reconstruction of past climate, a discipline in which glaciology plays a central role as the most important source of information regarding the past glaciations cycles. The reader will particularly appreciate a very intelligible initiation to the science of exploiting information contained in ice bubbles and the crucial role of isotope chemistry.

Throughout the following chapters, which constitute the crux of this book, the three glaciologists pull their reader into the formidable quest of researchers exploring the glacial archives of our planet, from the Greenland Ice Core Project and Greenland Ice Sheet Project in the high north to the Dome C and Vostok station on the opposite side of the planet. This journey from one pole to the other combines the excitements and deceptions faced by many research teams operating in the most hostile environment with the description of the relevance of their findings. Ice core drilling enabled the reconstruction of the climate prevailing over five glacial cycles, a deeper understanding the thermohaline circulation and its role in the regulation of our climate, as well as demonstrated the interlinkages between the physical conditions prevailing in both polar regions.

Moving away from the historical testimony provided by glaciologists on the climate of the past 800.000 years, the third part of the book takes a forward looking stance, focusing on the main objective of the book: to highlight the contribution of polar research, and in particular ice core drilling, to the understanding of human impact on our climate. The authors also evoke the role of scientists in actively promoting the understanding of climate change for the public and decision-makers.

In this endeavour to highlight the link between anthropogenic emissions of greenhouse gases and a modification of the climate, glaciologists played a prominent role in confirming the hypothesis of pioneers including Joseph Fourier and Svante Arrhenius. With the ongoing increase of temperatures, the cryosphere is also presented in its dynamic nature, emphasizing the implications of its vulnerability for the rest of the world. The authors take the opportunity to debunk several theories promoted by so-called climate sceptics.

The conclusion of this third part provides with a short introduction to the political processes set in motion to respond to the warnings of scientists and mitigate human climate interference, both at the international and domestic levels. Here again, the account is rather that of an active stakeholder in which Jean Jouzel writes from his perspective as a facilitator during the French 'Grenelle' consultations on sustainable development policy.

Finally, the authors wrap up their exposé by introducing the concept of the anthropocene, a term coined in the 1990s by atmospheric chemist Paul Crutzen to illustrate the scale of the impact of human activities on our physical world. The concept being introduced by individuals having dedicated their life to the comprehension of the natural regulation of the planet's climate over close to a million years, one seizes more easily the significance of entering into this new geological era in which human activities have become one of the main influences shaping our planet's climate.

The strength of the book lies in that it enables the reader to understand the stakes and implications of polar research without the need for scientific proficiency. Written for a French audience, the level of details provided on the organising and development of French polar research might at times appear superfluous to the international reader. The rooting of this exposé in the personal experience of the authors provides however an additional value for this book as it invites the reader to sit on the backseat and join key participants in this scientific adventure.

This captivating account of the exploration both of the polar regions and of the physical dynamics shaping our climate takes us on the footsteps of legendary explorers, scientific pioneers or engaged researchers, from Robert Falcon Scott to Ernest Shackleton, from Svante Arrhenius to Milutin Milankovich, and from James Hansen to Michael Mann. *The white planet* connects the dots between the achievements of these heroes and visionaries, as well as of the many anonymous research teams whose contributions to climate science are mentioned. Undeniably, *The white planet* makes a very convincing and solidly illustrated case of the crucial importance of polar research to enable our society to navigate through the anthropocene. (Sébastien Duyck, Arctic Centre, University of Lapland, PO Box 122, 96101 Rovaniemi, Finland (sebastien.duyck@ulapland.fi))