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# Book Reviews

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## Antarctica: global science from a frozen continent

D.W.H. Walton
Cambridge University Press, Cambridge, 2013.
ISBN 978-1-107-00392-7. 342 pp. £35.00.

Scientific research in Antarctica captures the public's attention as perhaps no other does or could. The participants cope with sometimes life-threatening conditions even as they experience the unique beauty of the icy continent and its native inhabitants. The work they do advances knowledge frontiers in fields ranging from astronomy and astrophysics to geology and zoology, and much of it advances our understanding of the Earth's global climate. In addition to all this, the scientists' presence on the ice is the passport that enables their governments to play a role in governing the seventh continent under the terms of the Antarctic Treaty.

The introductory chapter by David Walton will be of particular interest to historians and political scientists as well as to laypersons and Antarctic specialists. It provides an informed and engaging description of how the focus of expeditions to the continent evolved gradually from an emphasis on "being there first" to one focused on scientific research and on the development of mechanisms for multi-national governance and environmental protection.

Subsequent chapters describe the physical and biological features of the continent and its surrounding ocean from the perspectives of expert researchers who work there, always with the aid of breathtakingly beautiful photographs. Readers will learn how Antarctica and its climate and the organisms that inhabit it all evolved over tens and hundreds of million years. They will read about ongoing research aimed at understanding how Antarctica is changing today and how changes in Antarctica's ice cover, ocean, and atmosphere are linked to climate and weather changes worldwide.

Although not explicitly emphasized in this collection - which focuses on today's Antarctica - readers will see in every chapter the results of an evolution over time in the nature and focus of Antarctic research. Driven partly by continuous discovery and partly by the development of new technologies and expanded logistics capabilities, the research portfolio of the second half of the last century has been greatly expanded in recent decades by increasing emphases on climate change research, environmental science, microbiology and astrophysics, to call out just a few such topics. The Frozen Continent as a laboratory for fundamental discovery continues to achieve ever-broader importance and to attract new generations of scientists.

Antarctic researchers have always been highly collaborative and the trend has accelerated as the range of opportunities for discovery has grown. Of particular interest and importance is the continued growth and importance of multi-national research collaborations. Fewer than 10% of the Antarctic research papers published in 1981 were collaborative between two or more nations, but by 2007 the fraction had risen to over 40% (Aksnes & Hessen 2009).

One chapter in the book describes how an international organization, the Scientific Committee on Antarctic Research (SCAR), has facilitated this trend by providing a venue where scientists, like the authors of the present volume, can link with colleagues in South America, Asia, Europe and Russia to develop new research directions and collaborations.

Another chapter describes how scientists from countries around the world "live and work in the cold" and how the combined logistics capabilities of those countries enable researchers to achieve previously impossible goals. Although not described here another international organization, the Council of Managers of the National Antarctic Programs, facilitates the linking together of national logistics capabilities that enables large-scale research projects that no one country could have accomplished alone.

The subtitle of this book, "Global Science from a Frozen Continent" could not be more apt. Scientific research in Antarctica, leading to discoveries that advance our understanding of the behavior of today's global Earth System and how it will evolve in the future, is conducted by scientists from around the world, often in international collaborations, frequently funded and supported logistically by multiple governments linked together to implement an international Treaty.

The chapters in this volume will give the reader a broad and fascinating taste of what the continent and surrounding ocean is like, why they constitute such a fertile venue for scientific discovery, and what it's like to work there. Written by experts most of the chapters will be understandable to lay readers. At the same time experienced specialists will find reading chapters outside their own areas of expertise both interesting and highly informative. I know I did.

KARL A. ERB

### Reference

AKSNES, D.W. & HESSEN, D.O. 2009. The structure and development of polar research (1981–2007): a publication-based approach. *Arctic, Antarctic and Alpine Research*, **41**, 155–163.