

Review

WEBB RH, BOYER DE and TURNER RM eds (2010) *Repeat photography: methods and applications in the natural sciences*. Island Press, Washington, DC. 392pp. ISBN: 978-1-597-26712-0, cloth, US\$125/£75; ISBN: 978-1-597-26713-7, paperback, US\$75/£45.

Glaciology is at the heart of repeat photography as a technique, and the book *Repeat photography* can be a great resource for those interested in learning more about the technique's use in glaciology and many other disciplines. Structured into chapters about particular techniques and applications, the sections of most interest to glaciologists will include 'Virtual repeat photography', 'Three methods of presenting repeat photographs', 'Repeat photography of Alaskan glaciers and landscapes from ground-based photo stations and airborne platforms' and 'Documenting disappearing glaciers: repeat photography at Glacier National Park, Montana'. Still, the reader should not overlook other chapters, as the opportunities for interdisciplinary learning here are vast.

In 1888, Sebastian Finsterwalder pioneered repeat photography in studying glaciers in the Tyrolean Alps, and, very early on, Otto Klotz of the Canadian Topographic Survey realized its full potential, remarking that with quantitative photography 'the study of the motion of glaciers will then be reduced to an exact science'. Indeed, photogrammetric techniques are being pushed forward in the present day to quantify the dynamic behavior of glaciers!

The book begins with sections on various techniques in repeat photography including standards in data and metadata collection, photo archiving and, of course, how to locate previous camera stations both traditionally and with integrated approaches involving GIS systems like Google Earth which draw upon both satellite imagery and digital elevation models. While the possibility for casual use of repeat photography exists, this volume, by providing descriptions and good references for further reading, emphasizes the beginnings of careful image interpretation and quantitative image matching but does not venture as far as photogrammetry. Indeed, because no information about the cause of changes between photographs is included within the image, it is essential for practitioners of repeat photography to practice further careful critical consideration.

This volume also gives ample attention to the fascinating topic of how images are displayed. There are important considerations of the size, placement and cropping of images in print media and how this balances with cost. In addition, there are a couple of different examples of the combination of nearby but not exactly repeating photographs which are combined in panoramas that span not only space but also time. Multiple computer-based methods for interacting with repeat photographs (e.g. zooming/magnifying, image linking/matching, fading between images, combining with an interactive map) are described. However, due to the inability

to interact with these formats in their native forms, the lack of easy transferability for the reader and the lack of more examples (i.e. high-profile examples of a slider which wipes horizontally between images in outlets such as the *New York Times* website and NASA outreach pages), this reader is a little unfulfilled in this subject.

Two chapters highlight extensive application of glacier repeat photography in Alaska and Glacier National Park, Montana, USA. Fascinating history is provided about programs in both areas, along with extensive examples of black-and-white and color images from both locations. Disappointingly, the color-plate images are too small to have significant visual impact, but this is more than compensated for by the informative and insightful captions accompanying each image. Discussion of not just changes in ice volume and periglacial processes but also the utility of these images in education and advocacy makes the chapters much more than a laundry list of shrinking glaciers. Despite the very well-written and -presented examples in these two chapters, it is a shame that the volume does not build upon them by pointing the reader towards other relevant online resources (e.g. GlacierWorks, the Extreme Ice Survey, and the US National Snow and Ice Data Center).

From the Long-Term Ecological Research project in the McMurdo Dry Valleys, Antarctica, and the Desert Laboratory Repeat Photography Collection to assessing impacts of agricultural policies in South African landscapes and the significant cultural and human-use shifts that time can bring to a landscape, perhaps the greatest value of *Repeat photography* lies in its interdisciplinary focus. The techniques and insights acquired in one field can potentially lead to novel and breakthrough developments in another field, something the reader should certainly keep in mind when studying *Repeat photography*.

As the editors pithily remark, 'Ultimately, repeat photography is a technique rooted in the passage of time.' Beyond discussion of film vs digital media, this book provides many nuanced views on the role that technology has played in the acquisition and interpretation of repeat photographs, and concludes by turning an eye to future developments in the field. Repeat photography definitely has a timelessness to it, perhaps as much because of as in spite of technological developments. Overall, this volume will serve as a very useful starting point for those interested in the development and application of repeat photography in glaciology and beyond, instigate careful thought about future directions of repeat photography, and provide a stepping stone to exploring this wide-reaching technique.

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