

# LATITUDINAL ECOSYSTEM (LAT-ECO) RESPONSES TO CLIMATE ACROSS VICTORIA LAND, ANTARCTICA

## Executive Summary

This report is derived from the interdisciplinary discussion regarding the Victoria Land, Antarctica, Coastal Biome: Marine-Terrestrial Biocomplexity Across a High-Latitude Environmental Gradient that was convened through a National Science Foundation workshop from 26-29 April 2001 at the Byrd Polar Research Center, The Ohio State University (<http://www-brpc.mps.ohio-state.edu/victorialand>).

The principal goal of this workshop was to establish common research themes among diverse Earth system scientists with a view toward:

1. providing the scientific and logistic framework for a coordinated interdisciplinary research initiative along the north-south trending Victoria Land coastal region of Antarctica; and
2. investigating marine-terrestrial biocomplexity along the latitudinal environmental gradient of Victoria Land, Antarctica, as a global barometer of climate change.



**FIGURE 1:** Victoria Land, Antarctica, viewed from the southwestern Ross Sea (P.A. Berkman)

This workshop built on earlier planning sessions hosted by Antarctica New Zealand (Peterson and Howard-Williams 2001), the Programma Nazionale di Ricerche in Antartide (Cattaneo-Vietti, this report) and the United States Antarctic Program which involved a broad suite of discussions about developing a Victoria Land latitudinal gradient initiative (see <http://www-brpc.mps.ohio-state.edu/victorialand>). Based on these previous discussions (Box 1), an interdisciplinary steering committee from the United States (editors for this report) was established to coordinate the discussion with a view toward developing an interdisciplinary and

international research initiative that could be supported by the United States Antarctic Program and National Science Foundation in collaboration with other national Antarctic programs and the international scientific community.

The steering committee collaborated in identifying participants for the workshop based on their backgrounds; interests; collegial personalities; research experiences; familiarity with relevant datasets; and diversity of perspectives from minorities, women and young scientists. The steering committee also organized the specific thematic sessions for workshop presentations, breakout groups, writing sessions and discussions. With their effective contribution, this workshop involved nearly forty United States, Italian and New Zealand scientists (Appendix 3: List of Participants) who are studying:

- limnology and oceanography;
- marine and terrestrial ecology and paleoecology;
- meteorology, remote sensing analyses and climate modeling;
- glaciology and geomorphology;
- geochemistry and geochronology;
- sediment- and ice-core paleoclimatology; and
- geographic information system analyses and information management.

within the context of the National Science Foundation biocomplexity program ([http://www.nsf.gov/home/crssprgm/be/ere\\_be-competitions.html](http://www.nsf.gov/home/crssprgm/be/ere_be-competitions.html)) to develop *new collaborations of scientists from a broad spectrum of fields*:

*to better understand the complex interplay of biological, chemical, and physical components of the environment [in a manner that involves] quantitative approaches, education, and global perspectives.*

Each of the participants contributed an extended abstract that is discussed in the following sections and printed in Appendix 1 (Extended Abstracts) and Appendix 2 (Citations).

The basic agenda and anticipated products from this Victoria Land workshop involved marine ecosystem and environmental dynamics on Day 1; terrestrial ecosystem and environmental dynamics on Day 2; and information integration during Days 3 and 4. Each day involved three keynote presentations in the morning followed by disciplinary, interdisciplinary and group discussion sessions in the afternoon. We would like to thank the following individuals for their excellent keynote presentations: Martin Jeffries, Daniel Costa and Kathy Licht (Day 1); Diana Wall, Peter Doran and Howard Conway (Day 2); and John Hobbie, Eric Steig and Carolyn Merry

(Day 3). We also thank Polly Penhale (United States Antarctic Program), Clive Howard-Williams (New Zealand) and Riccardo Cattaneo-Vieti (Italy) for their informative presentations on national Antarctic program interests in the Victoria Land research initiative during Day 1. We also thank David Bromwich, Berry Lyons, Paul Mayewski, Ross Powell and Ray Smith for sharing helpful information on affiliated global change research programs on Day 2 and interdisciplinary programs on Day 3. Leaders and rapporteurs for the afternoon discussions involved nearly half of the workshop participants and we would like to thank these individuals for their effective contributions. Information from these presentations and discussions provides the basis for addressing the workshop objectives described in Box 2.

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Most of all - we would like to thank all of the workshop participants as well as interested members of the research community who were unable to attend for sharing their creativity, enthusiasm and insights about implementing an interdisciplinary research initiative along the latitudinal gradient of Victoria Land, Antarctica. The collection of ideas from these individuals is represented in this report.