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REGIONAL SENSITIVITY TO CLIMATE CHANGE IN ANTARCTIC TERRESTRIAL AND LIMNETIC ECOSYSTEMS (SCAR-RISCC): LOCAL SIGNALS, GLOBAL MESSAGES

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Researchers in the SCAR- RiSCC program have been examining the interactions among climate change, indigenous and alien species, and species and ecosystems function in terrestrial and limnetic environments spanning an Antarctic environmental gradient of 30° latitude. This international, concerted and cooperative effort has resulted in the crystallising and clarification of many major principles regarding life in the most southern biome.

Currently, parts of the Antarctic are the only places on the planet where we can examine natural biological phenomena with the knowledge that human actions have not yet substantially altered the ecological processes. The resounding signal of the Antarctic is that of isolation and life at the end of a spectrum of planetary conditions, yet 'simple' and 'extreme' have now been clearly shown to be relative terms and largely inappropriate in light of new knowledge. Water has been shown to be the most fundamental element to the existence of life and standard biogeographic factors such as distance between land masses, age of habitat, local environmental variables and human contact are as much relevant in the Antarctic as elsewhere.

Selection pressures of the past have resulted in adaptations with emphases in stress–tolerance, plasticity and variation in life histories, but reduced competitive ability. Thus Antarctic ecosystems are vulnerable to the impact of colonisation by better competitors that may have more advantage under changing climatic conditions. The most probable route of such competitors is via humans as the appeal of the Antarctica as a place of wilderness and unspoilt beauty are the very reasons that motivate many people to visit the biome. In doing so, there is the real risk of breaking Antarctica's isolation and seriously threatening Antarctica's unique position as a 'place of science' as well as altering its intrinsic values.