Geophysical Research Abstracts
Vol. 16, EGU2014-4310, 2014
EGU General Assembly 2014

Has anthropogenic warming been greater at higher elevations? Can satellite-derived data complement sparse mountain data?

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A number of studies have found that anthropogenic warming in mountain regions of the world has been greater at higher elevations (compared to lower elevations) over the last few decades. However, other research has found little or no evidence of such a pattern. Sparse observational networks, and the difficulty of maintaining high quality data collection programs in remote, high elevation regions contribute to these uncertainties. Resolving this matter has important implications for water resources in many areas, both in the mountains and downstream, as snow and ice will be affected if warming proceeds at a faster rate in the high mountain ranges. Furthermore, CMIP5 simulations indicate that (free air) warming in future scenarios is likely to be enhanced with elevation, especially in the Tropics. There is an urgent need for new approaches to tracking temperature changes in mountain regions. We seek ideas from those working with satellite-based data to consider how remote sensing technology could be applied to this pressing problem.