Submitted Abstract

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First Author	
First Name	Anna (1,2,3)
Last Name	Napoli
Submitting Author	
First Name	Anna
Last Name	Napoli
Correspondence	anna.napoli@unitn.it
Co-Authors >> E-Mails will be not listed	Von Hardenberg, Jost (4,5); Parodi, Antonio (3); Pasquero, Claudia (5,6)
Organisations	1: University of Trento, Italy 2: Università degli studi di Genova, Italy 3: CIMA Research Foundation, Italy 4: Politecnico di Torino, Italy 5: ISAC-CNR, Italy 6: Università degli studi di Milano-Bicocca, Italy
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Abstract

Climate change has a strong impact on the environment in mountain areas, especially since mountain ecosystems depend on climatic conditions that vary with altitude. In recent years, it has become clear that warming strongly depends on elevation. In this study, we examine projected climate change in the Greater Alpine Region using the Weather Research Forecasting (WRF) model. Historical 30-year simulations (1979-2008) and climate change projections (2039-2068) were performed at high spatial resolution (4 km grid spacing) and with initial and boundary conditions provided by the global EC-Earth model. A focus on the altitudinal dependence of historical and future ETCCDI Climate Change indices is presented here: the results indicate that both temperature and precipitation are affected by climate change with an altitude dependence changing seasonally. Physical mechanism at the base of those differences are discussed.