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Seasonal contrasts of precipitation change over Greece from a high-resolution RCM simulation.

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The RegCM3 regional climate model is used in order to downscale the output data produced by ECHAM5 in it's AR4 simulations for the years 1991-95 and 2091-95 under the A1B scenario. Data are downscaled first to 50km and subsequently to 11km. In the higher resolution control run RegCM3 captures well the pattern of precipitation over the complex Greek terrain, with the largest amounts falling on the west side of the mountain range of Pindos. The climate change results show that precipitation increases over the mountain ranges during the cold season but decreases drastically throughout the country during the warm season. The combination of diminished precipitation and enhanced temperature during the warm season poses the threat of extreme water shortages in the area during the summer as well as the danger of desertification acceleration. This study underlines the need for immediate action in order to enhance the replenishment of the water resources during winter so as to secure the availability of water in Greece in the future.