Geophysical Research Abstracts, Vol. 9, 01352, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-01352
© European Geosciences Union 2007

Increased aridity in the Mediterranean region under greenhouse gas forcing from high resolution regional climate model projections

X.J. Gao (1, 2), F. Giorgi (2) , Y. Xu (1), J.S. Pal (2)

(1) National Climate Center, Beijing, China (gaoxj@cma.gov.cn)

(2) Abdus Salam International Centre for Theoretical Physics, Trieste, Italy

We use three measures of aridity, the Koppen climate classification, the UNEP Aridity Index and the Budyko dryness index, to estimate the possible effects of late 21st century climate change on the Mediterranean region under increased greenhouse gas concentrations (A2 and B2 IPCC scenarios) as simulated with a high resolution (20 km grid interval) regional climate model. Analysis with all three aridity measures indicates that by the end of the 21st century the Mediterranean region might experience a substantial increase in the extension of dry and arid lands, particularly in the central and southern portions of the Iberian, Italian, Hellenic and Turkish peninsulas and in areas of eastern Romania, Bulgaria, the Middle East and Northern Africa. This is due to large warming and pronounced decrease in precipitation. Fine scale topography and coastlines features affect the aridity change signal. We thus identify the southern Mediterranean as a region particularly vulnerable to water stress and desertification under climate change conditions.