

Abstract for GR-TR Conference on Statistical Mechanics and Dynamical Systems

Talk Invited

Invited Talk

Effects of Climate Change on Eastern Mediterranean Region with a special focus on Greece and Turkey

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For a physicist, climate change is not a possibility but a fact. The simple reason behind this argument is the fact that the Earth receives an average power of 342W/m^2 from the Sun and it only radiates back 341.3W/m^2 which leaves us with an excess energy of $0.7\text{Joules/second/m}^2$ and this excess energy inevitably warms up the Earth. Therefore the question is not whether the Earth warms up but it simply is which region of the Earth will warm up more than the others. Unfortunately the answer to that question is not a happy one for the Greek and Turkish communities as many predictions show significant warming in our area.

In this talk I will be presenting three sets of results. The first set comes from the global coupled atmosphere ocean simulations showing the changes for the whole Earth until 2100 using different scenarios with very low resolution. This set clearly shows that our region warms up much more than the average and the precipitation also decreases significantly.

The second set consists of the results of European project called PRUDENCE where low resolution regional climate model simulations were performed for the whole European region. The benefit of this project is to be able to observe the results of quite a few different regional models even though they have reasonably low resolution.

Finally I will present the results of the higher resolution simulations we have performed for the Aegean basin using ICTP's regional climate model RegCM4.0. As it is lately the norm, the model is run using a SRES scenario A1B which is in the middle of the optimistic and pessimistic scenarios. For the global enforcement data we have used EH5OM5 Global dataset of Max Planck Climate Research Center. The results show significant warming and decrease in the summer precipitation in our region.

This work has been supported by Bogazici University BAP Project No. 5130.