



Ben-Gurion University of the Negev  
Blaustein Institutes for Desert Research

The Swiss Institute for Dryland Environmental and Energy Research  
Alexandre Yersin Department of Solar Energy and Environmental Physics

Title:

## **Challenges in Climate Modeling and Observations “over the Mid-East”**

Speaker:

**Prof. Pinhas Alpert**  
Department of Geophysics, School of Geosciences  
Tel Aviv University

Abstract:

Global and regional multi-model evaluation indicates strong warming and drying of the Mediterranean region being a global "hot-spot". Best regional climate models currently for Mid-East & Israel at the 20/25 km horizontal grid are good for temperature. For precipitation, models sometimes still need bias correction primarily due to orographic effects.

Precipitation predictions: Japanese and RCM models both show increased interannual variability and probability for increases of multi-year droughts. Additional information from ensemble of climate models will improve our ability to answer questions such as “what is the probability that there will be a multi-year drought or severe heat wave in the coming decades?” and help inform our policy and adaptive response. Different ensemble approaches are employed to project changes in some significant climate indicators for the 21st century. The specific challenges in reducing the uncertainties for this region will be highlighted.

In the second part of my talk, I will review our innovative method for monitoring the atmosphere with data from the cellular communication systems. This monitoring includes rainfall, fog and air-moisture. Principles of cellular monitoring employing data collected from commercial companies that we published in *Science* (Messer et al., 2006) & *Nature* (Alpert et al., 2016) as well as a few examples will be shown.

H. Messer, A. Zinevich and P. Alpert, Environmental monitoring by wireless communication networks, *Science* **312**, 713 (2006).

N. David, P. Alpert and H. Messer, The potential of commercial microwave networks to monitor dense fog-feasibility study, *Journal of Geophysical Research: Atmospheres* **118**(20), 11,750-11,761 (2013).

N. David, O. Sendik, H. Messer and P. Alpert, Cellular network infrastructure-the future of fog monitoring?, *BAMS*, 1687-1698 (2015).

P. Alpert, H. Messer and N. David, Meteorology: Mobile networks aid weather monitoring, *Nature* **537**, 617 (2016).

**Tuesday, May 23, 2017, 11:00**  
**Lecture room, Physics Building (ground floor)**