Dr. Hussain Alsarraf

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Speaker Biography:

Dr. Hussain Alsarraf is an Associate Professor of physics at the department of mathematics and natural sciences, American university of Kuwait. Dr. Alsarraf earned his B. S and M.S from Creighton University, USA, and his Ph.D. from the University of Nebraska-Lincoln, USA in 2013. His primary research interests are in the fields of atmospheric physics, and numerical predictions. His recent project was working with the land surface physics models to enhance the reanalysis and future predictions for temperatures, and soil temperatures over the region in 2050-2060. Dr.Alsarraf is currently working on using Numerical model to predict the soil moisture changes in multiple layers over the Arabian Peninsula by years 2050-2026.

Presentation Title: **Projected Climate Change Over Kuwait Simulated Using a WRF High Resolution Regional Climate Model**

Abstract:

This study evaluates three different land surface models in case of the weather forecast research (WRF) model to predict the maximum temperatures during summer. The thermal diffusion of the five layers (5L), rapid update cycle (RUC), and Noah were selected based on the environment topography. The WRF simulations over the Arabian Peninsula and Kuwait were conducted during the summer from May to September for a decade (2000-2010) to evaluate the sensitivity of the WRF model with respect to dynamic downscaling from the community climate system model (CCSM 4) in three nested-grid resolutions. The land surface model in WRF considerably affects the temperature simulations over the desert region. The observation and simulation were observed to exhibit optimal agreement when the WRF simulations with Noah land surface were used for predictions. The future predictions for May to September (2050-2060) predicted an increase of 1-2°C during summer over the Arabian Peninsula and Kuwait. The results reveal that the more effective 4-km high-resolution WRF domain obtained using the Noah land surface model should be considered for weather and climate predictions over the Arabian Peninsula and Kuwait.