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Meghívó

a Magyar Meteorológiai Társaság Róna Zsigmond Ifjúsági Körének és az MTA Meteorológiai Tudományos Bizottság Légkördinamikai és Szinoptikus Meteorológiai Albizottságának **2024. április 12-én, pénteken 10 órakor** kezdődő közös előadóülésére.

Az ülés programja:

Eun Soon IM (associate professor, The Hong Kong University of Science and Technology): Regional climate modelling for assessing anthropogenic influences on extreme heat stress in China

Seon Ki PARK (professor, Ewha Womans University, Seoul, Korea): Towards Superparameterization: Combinational Optimization of Parameters and Parameterization Schemes

Az előadások előtt Eun Soon Im röviden bemutatja a Hongkongi Egyetemen elérhető posztgraduális képzési lehetőségeket és az ehhez kapcsolódó ösztöndíjakat.
Az előadásokat követően az MMT Róna Zsigmond Ifjúsági Kör tisztújítására (elnökválasztás) kerül sor.

Helyszín:

Eötvös Loránd Tudományegyetem Természettudományi Kar Kari Tanácsterem
1117 Budapest, Pázmány Péter sétány 1/a. Északi Tömb 7. em.

Minden érdeklődőt szeretettel várunk!

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Breuer Hajnalka
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Zempléni Zsuzsanna
titkár
MMT Róna Kör

Székhely
1024. Budapest,
Kitaibel Pál utca 1.

Postacím
1525 Budapest,
Pf.: 38.

Telefon
(36) 1-346-4725

E-mail
titkarsag@mettars.hu

Honlap
www.mettars.hu

Facebook

Instagram

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Az előadások összefoglalói:

Eun Soon IM: Regional climate modelling for assessing anthropogenic influences on extreme heat stress in China

The most relevant anthropogenic activities that can significantly modify the Earth's climate system are greenhouse gas (GHG) emissions and land-use/land-cover changes. A regional climate model (RCM), with its high-resolution capabilities over the targeted region, stands out as a crucial tool for isolating specific climate responses to anthropogenic forcings and deepening our understanding of the underlying physical mechanisms, despite the presence of inevitable uncertainties. As a showcase of RCM utilization, this presentation demonstrates how accelerating global warming, induced by continuous GHG emissions, along with urban growth, can intensify heat stress risks in the Pearl River Delta (PRD) and the Yangtze River Delta (YRD), where dangerous and intolerable level of heat stress have already been witnessed. To better represent the transient nature of urban growth, future urban density and extent are updated annually in the non-hydrostatic RCM system based on various socio-economic assumptions (e.g., SSP1 and SSP5 scenario), which is differentiated from the majority of long-term climate change experiments that assume static urban land-use properties. Under the business-as-usual scenario, the unprecedentedly extreme heat stress is projected to emerge in far future (2080-2099). In contrast, the effect of urbanization appears to be more dominant in near future (2030-2049) as urban density is projected to peak around the 2040s and then gradually decrease. The reduction of relative humidity is found in the intensely urbanized areas locally, but it does not significantly lower heat stress because the positive contribution of increased temperature is more dominant. As a result, highly urbanized regions still exhibit higher heat stress compared to other areas. In addition, urban heat island effect is more pronounced for compact areas with high urban density (i.e., PRD) and at night. Despite the smaller temperature increase from urban heat island effect compared to global warming, it can play a critical role in exacerbating heat stress, adding to the already dangerous humid and hot conditions.

Seon Ki PARK: Towards Superparameterization: Combinational Optimization of Parameters and Parameterization Schemes

Numerical prediction of climate/weather/environment is an important source for adequate policy making in an era of changing climate. It requires a coupled modeling system, such as atmosphere-land surface-chemistry, etc.; its performance can be improved through better estimation of parameters and choice of proper parameterization schemes. Numerical climate/weather models provide the analysis data of model variables at given horizontal/vertical grid resolutions, which are useful especially in data void areas, as well as the future state of climate/weather. Some recent efforts to improve the regional weather/climate/environment prediction will be introduced in terms of estimating optimal parameter values (especially for the quantitative precipitation forecasting) and seeking an optimized set of parameterization schemes, through combinational optimizations of parameterization schemes and parameter values sequentially (i.e., superparameterization), by employing the coupled models (e.g., WRF-Noah-MP and WRF-Chem) and an evolutionary (intelligent) algorithm.