



Geofizički odsjek

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O B A V I J E S T

Dana **30.5.2011. (ponedjeljak!)** u 13¹⁵ održat će se u okviru seminara i kolokvija na Geofizičkom odsjeku PMF-a sljedeće izlaganje:

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Dynamics of Tropical Cyclogenesis

ABSTRACT: Two recent field programs (TCS-08 and PREDICT) have provided a wealth of data on the process of tropical cyclogenesis. This talk focuses on what we have learned from TCS-08, which was based in Guam during August and September of 2008. We analyze airborne Doppler radar and dropsonde data derived from this project to come up with a complete picture of the vorticity budget of one developing typhoon and a number of non-developing systems. Development appears to be associated with the formation of convection exhibiting strong, low-level convergence. We identify such convection with Michael Montgomery's "vortical hot towers" (VHTs). The vorticity equation tells us that low-level convergence is needed for spinup of a warm-core vortex. The question then becomes, what environment is needed to promote the formation of VHTs? Recent work by Raymond and Sessions (2007) using a cloud-resolving model in weak temperature gradient mode shows that convection occurring in an environment near radiative-convective equilibrium (RCE) has a "top-heavy" vertical mass flux profile, with maximum vertical mass flux occurring in the upper troposphere. However, if the lower troposphere is slightly cooler and the upper troposphere is slightly warmer than RCE, the mass flux profile changes dramatically, with a maximum in the lower troposphere. This profile is related via mass continuity with strong, low-level inflow. An environment modified in this manner is associated geostrophically with the existence of a mid-level vortex. Thus, the production of a sufficiently strong and broad-scale vortex in the mid-troposphere (by mesoscale convection or other mechanism) appears to be one path to the formation of a subsequent warm-core vortex and the spinup of a tropical cyclone. This supports in many respects the picture of cyclogenesis developed by Bister and Emanuel (1997).

Pozivaju se studenti, apsolventi i svi zainteresirani da prisustvuju predavanju, koje će se održati u predavaoni br. 2 Geofizičkog odsjeka PMF-a, Horvatovac 95, Zagreb. Studentima 2. godine diplomskog sveučilišnog studija fizika – geofizika, kao i studentima doktorskog studija fizike, smjer: geofizika (meteo-podsmjer) je prisustvovanje ovom predavanju obavezno.