



Geofizički odsjek

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O B A V I J E S T

Dana 13.3.2008. (**četvrtak!**) u **15¹⁵** će se održati u okviru seminara i kolokvija na Geofizičkom odsjeku PMF-a sljedeće izlaganje:

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Combining Regional Climate Modelling and Dynamic Ecosystem Modelling to Investigate Climate Changes and Their Impacts over Europe

ABSTRACT: Coupled processes and mechanisms linking atmospheric and terrestrial ecosystem dynamics play an important role in climate change, since interacting feedbacks have the potential both to amplify and dampen the magnitude of change. Earth System Models in which a GCM is coupled to a model of terrestrial biogeochemistry and land surface dynamics and applied at the global scale have been developed and used to demonstrate that changes in climate forcing can lead to climate-induced biome shifts that may significantly exacerbate the forcing – a positive feedback. Climate scenarios for the coming century point towards a northward expansion of boreal forests into tundra and partial deforestation in the Tropics, both of which are likely to play an important role in global climate change (Bonan *et al.*, 2003). The primary mechanisms for this are reduced albedo at high latitudes and reduced hydrological cycling in the tropics. While the feedbacks have been described at continental to global scales using global models, the underlying processes are local to regional in character, and are also likely to play an important role in regional climate change. To our knowledge no study has yet investigated the full nature and scope of biospheric feedbacks on climate at the regional scale using dynamic models run at high resolution. In this presentation we describe the development of a regional 'Earth System' model, RCA3-GUESS, coupling a regional climate model, RCA3 (Kjellström *et al.*, 2005), with a process-based model of vegetation dynamics and ecosystem biogeochemistry, LPJ-GUESS (Smith *et al.*, 2001). We go on to describe the application of the model to investigate feedbacks of vegetation changes on the climate of Europe under an emissions scenario for the coming century. In a control simulation for 1961-1990 over Europe with climate boundary conditions from the ERA40 reanalysis dataset, the model reproduced observed temperature and rainfall distributions as well as regional patterns in vegetation structure, composition and CO₂ exchange. Coupled interannual variability in summer temperature, soil water and leaf area index was simulated for dry-climate areas

like the east Mediterranean. Results for a scenario simulation over Europe 1961-2100 using RCA3-GUESS with boundary conditions from ECHAM5-A1B will also be presented.

Pozivaju se studenti, absolventi i svi zainteresirani da prisustvuju predavanju, koje će se održati u predavaoni br.2 Geofizičkog odsjeka PMF-a, Horvatovac bb, Zagreb.