

Session Programme Topic 4

The land surface in the climate system

Convener: Hans Peter Schmid, Andreas Marx

Climate exerts a great influence on the land surface, and vice-versa. In the global greenhouse, the land surface (soils-water-vegetation) is arguably the largest “broker” (source or sink) for the most important greenhouse gases: water vapor, CO₂, methane, and nitrous oxide. Moreover, the land surface is the most dynamic “hub” for the transformation and cycling of energy and water through the climate-Earth system. Land surface-atmosphere exchange processes form the backbone of any predictive model that accounts for the source-sink behavior of soils and the biosphere, and their interaction with climate. This “broker”- and “hub”-role of the land surface in the climate system is significantly affected by environmental stressors (e.g., drought, flooding, heat, ozone, pests), as well as by land-management practices (e.g., agriculture, forestry) and land use – land cover changes (LULCC).

This session solicits contributions on observations or modelling of hydrological and biogeochemical/-physical cycling, as well as LULCC, up to regional scales.

Monday, 6 October 2014

Poster Session:

Umweltforum, Room WK, Winterkirche: 15:45 – 18:00

- TP4-P-01: Klein, Ch., Ch. Biernath, Ch. Thieme, F. Heinlein, E. Priesack: The influence of dynamic vegetation models including harvest on the energy fluxes and the feedback effects between weather and land surface models
- TP4-P-02: Fang, Z., H. Bogena, S. Kollet, H. Vereecken: High Resolved Long Term Simulation for a Complicated Forest Catchment with Litter Layer and Fractured Bedrock System
- TP4-P-03: Zurba, K., J. Matschullat: Short-rotation forestry vs. rapeseed - what about GHG emissions?
- TP4-P-04: Göhler, M., J. Mai, M. Cuntz: Use of eigendecomposition in a parameter sensitivity analysis of the Community Land Model
- TP4-P-05: Markkanen, T., T. Aalto, A. Arslan, M. Aurela, K. Böttcher, M. Holmberg, M. Kangwa, P. Kolari, T. Laurila, T. Manninen, S. Metsämäki, A. Mäkelä, M. Peltoniemi, J. Susiluoto, T. Thum, T. Vesala, J. Pulliainen: Climate change indicators and vulnerability of boreal zone applying innovative observation and modelling techniques (MONIMET)
- TP4-P-06: Franz, D., E. Larmanou, K. Kohnert, A. Serafimovich, F. Koebsch, T. Sachs: Eddy covariance CO₂ and CH₄ fluxes in a rewetted fen in NE Germany
- TP4-P-07: Cho, M.-H., K.-O. Boo, G. Martin, J. Lee, G.-H. Lim: The impact of land cover generated by dynamic vegetation model on present and future climate over East Asia
- TP4-P-08: Remedio, A.R.C., D. Rechid, D. Jacob: Sensitivity study on land-atmosphere coupling over the Amazon

Wednesday, 8 October 2014

Umweltforum, Room PH, Plenary Hall ('Großer Saal')

- 10:00 TP4-O-01: Mauder, M., F. Eder, K. Träumner, H. P. Schmid, R. L. Desjardins, T. Sachs, S. Metzger, J. Hartmann, D. Yakir, E. Rotenberg: On the relevance of mesoscale transport for in-situ energy balance measurements
- 10:15 TP4-O-02: Shannak, B., U. Corsmeier, C. Kottmeier, K. Träumner, A. Wieser: Influence of airflow characteristics on the locating of wind farms in forests
- 10:30 TP4-O-03: Schädler, M., H. Auge, F. Buscot, S. Klotz: Investigating the consequences of climate change under different land use regimes – the Global Change Experimental Facility (GCEF)
- 10:45 TP4-O-04: Koebsch, F., M. Koch, S. Glatzel, J. Hahn, T. Sachs, G. Jurasinski: Ecosystem response in the initial revitalization phase - A multi-year record of greenhouse gas exchange after peatland rewetting

11:00 TP4-O-05: Dannenmann, M., C. Bimüller, S. Gschwendtner, M. Leberecht, J. Tejedor, S. Bilela, R. Gasche, M. Hanewinkel, A. Baltensweiler, I. Kögel-Knabner, A. Polle, M. Schloter, J. Simon, H. Rennenberg: Climate change impairs nitrogen cycling in European beech forests

11:15 COFFEE BREAK (Umweltforum, Room S8, Seminar room 8, 1st floor)

Umweltforum, Room PH, Plenary Hall ('Großer Saal')

11:45 TP4-O-06: Krebs-Kanzow, U., V.C. Khon, Y.V. Wang, J.O. Kaplan, B. Schneider, R.R. Schneider: Climate and CO₂ effects on the vegetation of southern tropical Africa over the last 37,000 years

12:00 TP4-O-07: Heidbach, K., H.P. Schmid, M. Mauder: Experimental evaluation of flux footprint models

12:15 TP4-O-08: Kraus, D., S. Weller, S. Klatt, E. Haas, R. Kiese, K. Butterbach-Bahl: Measuring and modelling greenhouse gas pollution swapping of methane (CH₄) and nitrous oxide (N₂O) in a diversified rice cropping system

12:30 TP4-O-09: Han, X., H.-J. Hendricks Franssen, H. Bogaen, H. Vereecken: MODIS land surface temperature assimilation and verification at Rur catchment

12:45 TP4-O-10: Greve, P., B. Orlowsky, B. Mueller, J. Sheffield, M. Reichstein, S.I. Seneviratne: Global assessment of trends in wetting and drying over land

13:00 LUNCH BREAK (Umweltforum, Room S8, Seminar room 8, 1st floor)

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Umweltforum, Room PH, Plenary Hall ('Großer Saal')

14:55 TP4-O-11: Hagemann, S.: Role of soil moisture for dry biases over Amazon and Congo catchments simulated by MPI-ESM

15:10 TP4-O-12: Menberg, K., P. Blum, P. Bayer: Influence of recent climate change on groundwater temperatures in shallow aquifers

15:25 TP4-O-13: Wagner, S., B. Fersch, H. Kunstmann, F. Yuan, Z. Yu: Development and application of a coupled atmospheric-hydrological model system, suitable for regional spatial and climate relevant temporal scales

15:40 TP4-O-14: Daniels, E.E., R.W.A. Hutjes, G. Lenderink, A.A.M. Holtslag: Feedbacks of the land surface and urban areas on precipitation in the Netherlands

15:55 TP4-O-15: Fersch, B., D. Gochis, S. Wagner, H. Kunstmann: The impact of groundwater-soil moisture coupling on WRF-Hydro modelled water budgets and surface exchange: a case study for the Ammer catchment in Southern Germany