



Nitrogen deposition, land cover conversion, and contemporary carbon balance of Europe

G. Churkina (1,2), S. Zaehle (2), J. Hughes (3), N. Viovy (4), M. Jung (2), Y. Chen (2), M. Heimann (2), C. Roedenbeck (2), and C. Jones (4)

(1) Leibniz-Centre for Agricultural Landscape Research, Muencheberg, Germany (churkina@zalf.de), (2) Max-Planck Institute for Biogeochemistry, Jena, Germany, (3) Met Office Hadley Centre, Exeter, UK, (4) LSCE, GIF-SUR-YVETTE, France

In Europe, atmospheric nitrogen deposition has more than doubled, forest cover was steadily increasing, and agricultural area was declining over the last 50 years. What effect have these changes had on the European carbon balance? In this study we estimate responses of the European land ecosystems to nitrogen deposition, land cover conversion and climate. We use results from four ecosystem process models such as BIOME-BGC, JULES, ORCHIDEE, and ORCHIDEE-CN to address this question. We discuss to which degree carbon balance of Europe has been altered by nitrogen deposition in comparison to other drivers and identify areas which carbon balance has been most effected by anthropogenic changes.