

Home

Online Library HESS

- Recent Final Revised Papers
- [Volumes and Issues](#)
- Special Issues
- Library Search
- Title and Author Search

Online Library HESSD

Alerts & RSS Feeds

General Information

Submission

Review

Production

Subscription

Comment on a Paper

Impact Factor  
2.270

ISI  
indexed



[Volumes and Issues](#) [Contents of Issue 2](#) [Special Issue](#)

Hydrol. Earth Syst. Sci., 6, 197-209, 2002  
www.hydrol-earth-syst-sci.net/6/197/2002/

© Author(s) 2002. This work is licensed under a Creative Commons License.

## Climate change impacts on nutrient loads in the Yorkshire Ouse catchment (UK)

F. Bouraoui, L. Galbiati, and G. Bidoglio

Institute for Environment and Sustainability, Joint Research Centre of the European Commission, TP 460, I-21020 Ispra (VA), Italy

Email for corresponding author: faycal.bouraoui@jrc.it

**Abstract.** This study assessed the impact of potential climate change on the nutrient loads to surface and sub-surface waters from agricultural areas and was conducted using the Soil and Water Assessment Tool (SWAT) model. The study focused on a 3500 km<sup>2</sup> catchment located in northern England, the Yorkshire Ouse. The SWAT model was calibrated and validated using sets of five years' measurements of nitrate and ortho-phosphorus concentrations and water flow. To increase the reliability of the hydrological model predictions, an uncertainty analysis was conducted by perturbing input parameters using a Monte-Carlo technique. The SWAT model was then run using a baseline scenario corresponding to an actual measured time series of daily temperature and precipitation, and six climate change scenarios. Because of the increase in temperature, all climate scenarios introduced an increase of actual evapotranspiration. Faster crop growth and an increased nutrient uptake resulted, as did an increase of annual losses of total nitrogen and phosphorus, however, with strong seasonal differences.

**Keywords:** SWAT model, climate change, nutrient loads

[Final Revised Paper](#) (PDF, 747 KB)

Citation: Bouraoui, F., Galbiati, L., and Bidoglio, G.: Climate change impacts on nutrient loads in the Yorkshire Ouse catchment (UK), Hydrol. Earth Syst. Sci., 6, 197-209, 2002. [Bibtex](#) [EndNote](#) [Reference Manager](#)

Copernicus Publications  
The Innovative Open Access Publisher

Search HESS

Library Search

Author Search

News

- New Service Charges
- Financial Support for Authors
- ISI Impact Factor: 2.270

Recent Papers

01 | HESSD, 17 Mar 2009:  
A general real-time formulation for multi-rate mass transfer problems

02 | HESSD, 16 Mar 2009:  
Calibration of a crop model to irrigated water use using a genetic algorithm

03 | HESSD, 16 Mar 2009:  
A Bayesian approach to estimate sensible and latent heat over vegetation

04 | HESS, 13 Mar 2009:  
Soil moisture retrieval through a merging of multi-