Supplementary Material to 'Pristine levels of suspended sediment in large German river channels during the Anthropocene?'

Thomas O. Hoffmann[1], Yannik Baulig[1], Stefan Vollmer[1], Jan H. Blöthe[2], Karl Auerwald[3], Peter Fiener[4]

[1]Bundesanstalt für Gewässerkunde, 56068 Koblenz, Germany
[2]Institute of Environmental Social Sciences and Geography, University of Freiburg, Schreiberstraße 20, 79098 Freiburg, Germany
[3] Aquatic Systems Biology Unit, Technical University of Munich, Mühlenweg 22, 85354 Freising, Germany
[4]Institute of Geography, University Augsburg, Alter Postweg 118, 86165 Augsburg, Germany

Correspondence to: Thomas O. Hoffmann (thomas.hoffmann@bafg.de)

Additional Tables

➔ Tables can be found in attached excel file

Table captions

Table S1: Summary of suspended sediment monitoring station used in this study.

Table S2: Results of trend analysis including summary of number of used samples, number of good years (with more than 150 samples per year). Q_m, SSC_m and SSL_m represent average discharge, average suspended sediment concentration and average suspended sediment load between 1990 and 2010. b_{lin} and p_{lin} are regression coefficient (steepness) and p value derived from linear regression. b_{Sen} and p_{MK} are Sens's slope and Mann-Kendell p-value. b_{winter}, p_{winter} b_{summer} and p_{summer} are Sens's slope and Mann-Kendall p-values for winter and summer months, respectively. Changes of the rating parameters (a and b) are benoted by Δa and Δb. Gray shaded values indicate p-levels > 5% and thus represent insignificant changes.

Table S3: Agricultural land use changes in Germany between 1990 and 2010, separated for West Germany (including the 'old' states of the former German Federal Republic) and East Germany (including the 'new' states of the former German Democratic Republic). We limited the data compilation to total arable land, grass land and erosive crops (that mainly include maize, potatoes, and sugar beet). Furthermore, we calculated the summable C-factors for these land cover types according to Auerswald et al (2021).

Additional Figures

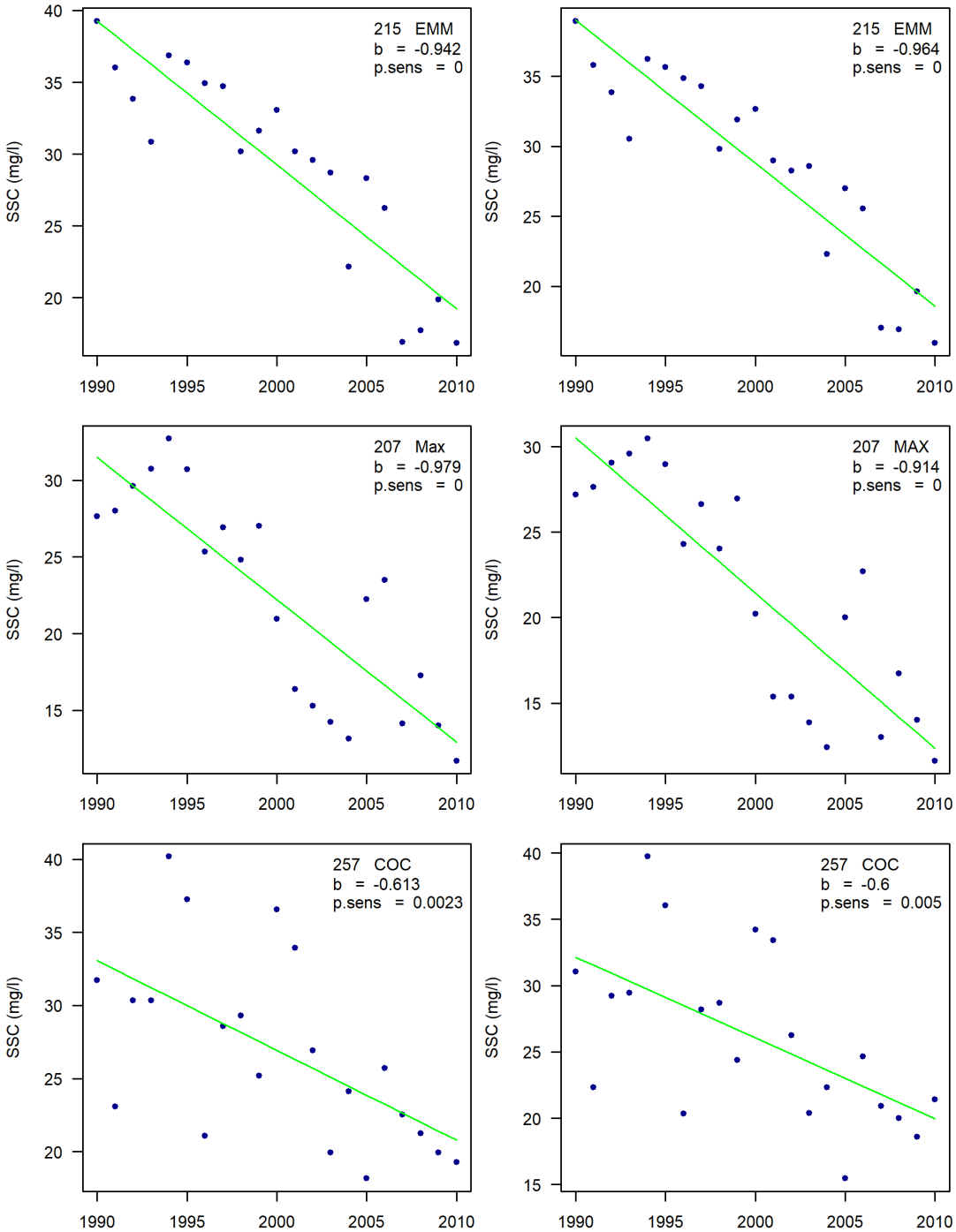

Figure S1: Comparison of trends calculated for the stations Emmerich (station ID = 215, top line) and Maxau (station ID = 207, middle line), both stations are located at river Rhine and station Cochem (station ID 257, bottom line) located at the river Moselle. The left column shows trends calculated using annual average SSC without gap filling and the right column show trends in which SSC data gaps were filled. Data gaps for SSC were filled using SSC/Q-rating curves based on loess regression (using R-base package).

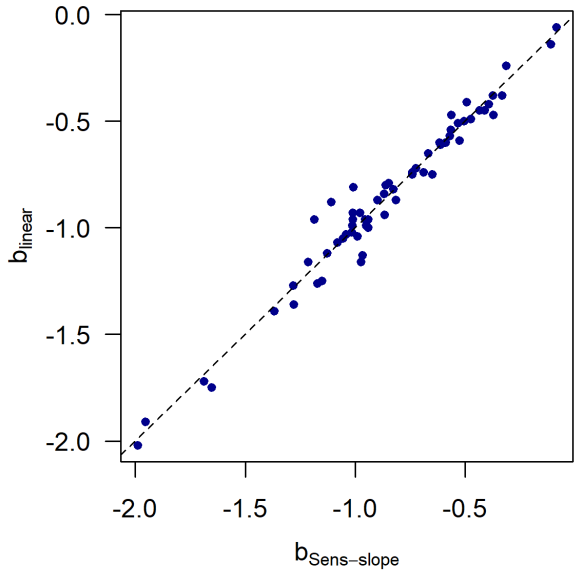

Figure S3: Scatter plot of linear trend (b_{linear}) and trend derived using Sens' slope ($b_{Sens\text{-}slope}$). Dashed line represents 1:1 line.