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**Geochemistry of the dissolved loads of the Liao River basin in northeast China
under anthropogenic pressure: Chemical weathering and controlling factors**

Hu Ding, Cong-Qiang Liu^{*}, Zhi-Qi Zhao, Si-Liang Li, Yun-Chao Lang, Xiao-Dong
Li, Jian Hu, Bao-Jian Liu

State Key Laboratory of Environmental Geochemistry, Institute of Geochemistry,
Chinese Academy of Sciences, Guiyang 550002, China

Abstract

This study focuses on the chemical and Sr isotopic compositions of the dissolved load of the rivers in the Liao River basin, which is one of the principal river systems in northeast China. Water samples were collected from both the tributaries and the main channel of the Liao River, Daling River and Hun-Tai River. Chemical and isotopic analyses indicated that four major reservoirs (carbonates (+gypsum), silicates, evaporites and anthropogenic inputs) contribute to the total dissolved solutes. Other than carbonate (+gypsum) weathering, anthropogenic inputs provide the majority of the solutes in the river water. The estimated chemical weathering rates (as TDS) of silicate, carbonate (+gypsum) and evaporites are 0.28, 3.12 and 0.75 t/km²/yr for the main stream of the Liao River and 7.01, 25.0 and 2.80 t/km²/yr for the Daliao River, respectively. The associated CO₂ consumption rates by silicate weathering and carbonate (+gypsum) weathering are 10.1 and 9.94 ×10³ mol/km²/yr in the main stream of the Liao River and 69.0 and 80.4 ×10³ mol/km²/yr in the Hun-Tai River,

^{*} Corresponding author. Tel.: +86 851 5891164; fax: +86 851 5891609

E-mail address: liucongqiang@vip.skleg.cn

Postal address: Institute of Geochemistry, Chinese Academy of Sciences, 46 Guanshui Road, Guiyang 550002, China

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