



Suspended sediment apportionment in a South-Korean mountain catchment

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Due to the rapid agricultural expansion and intensification during the last decades in South-Korea, large areas of hill slope forests were transformed to paddies and vegetable fields. The intensive agriculture and the easily erodible soils in our catchment are a major reason for the increased erosion causing suspended sediments to infiltrate into the close drinking water reservoir. The drinking water reservoir Lake Soyang provides water supply for over ten million people in Seoul. Landscape managers need to know the exact origin of these sediments before they can create landscape amelioration schemes.

We applied a compound-specific stable isotope (CSSI) approach (Alewell et al., 2015) to apportion the sources of the suspended sediments between forest and agricultural soil contribution to the suspended sediments in a different catchment and applied the same approach to identify and quantify the different sources of the suspended sediments in the river(s) contributing to Lake Soyang. We sampled eight soil sites within the catchment considering the different landuse types forest, rice paddies, maize and vegetables. Suspended sediments were sampled at three outlets of the different sub-catchments. Soils and suspended sediments are analysed for bulk carbon and nitrogen isotopes, compound-specific carbon isotopes of plant-wax derived long-chain fatty acids and long-chain n-alkanes. Fatty acid and alkane isotopes are then used in mixing calculations and the mixing model software IsoSource to find out the contribution of the different source soils to the suspended sediments. We present first data of the source soils and the suspended sediments.

C. Alewell, A. Birkholz, K. Meusburger, Y. Schindler-Wildhaber, L. Mabit, 2015. Sediment source attribution from multiple land use systems with CSIA. *Biogeosciences Discuss.* 12: 14245–14269.