H41B-06 0950h
Soil Organic Carbon Yield from the New Zealand Landscape: A First Approximation

Aleksey Sidorchuk1 (64 6 356 7154; sidorchuka@landcare.cri.nz); Mike Page1; Murray Jessen1; Les Basher1; Ian Lynn1; Murray Hicks2 (64 03 3488987; mhicks@niwa.cri.nz)

1Landcare Research, Private Bag 11052, Palmerston North, New Zealand
2National Institute of Water and Atmospheric Research, PO Box 8602, Riccarton, Christchurch, New Zealand

A first approximation of the particulate soil organic carbon yield from NZ terrain was calculated from total suspended sediment yield and organic carbon content in soil using the soil organic carbon budget equation. These calculations require: - a map of the specific total suspended sediment yield from the rivers to the ocean. - maps of soil organic carbon content in the soil layers (0 - 0.1, 0.1 - 0.3 and 0.3 - 1.0 m). - an estimate of proportion of sediment by different erosion processes from each soil layer for each NewZealandLandResourceInventory polygon. - an estimate of sediment delivery ratio for different erosion processes for each NZLRI polygon. A map of the total suspended sediment yield to the ocean was compiled on the basis of the relationships between sediment yields and precipitation depth and rock type, measured at more than 110 stations (Hicks et al., 1996). The organic carbon content in soils was calculated on the basis of soil type, climate and land use (Scott et al., 2001) for three soil layers. Sediment yield proportion from each soil layer was estimated from erosion process type and erosion severity, based on NZLRI classification. Sediment delivery ratio was estimated partly from the field measurements (as in Page et al., 1999), and partly from expert knowledge of each erosion process for different erosion terrains. The organic carbon flux was calculated for the whole of NZ on 100 by 100 m grid for each of the three topsoil layers. The carbon flux under indigenous forest was calculated separately to provide an estimate of the proportion of ”natural” and ”human-induced” carbon flux.