

# Linking erosion and environmental change the potential of fallout radionuclides

**T. A. Quine**

**Y. Zhang**

**P. Wallbrink**

The need to document and predict erosional responses to environmental change presents an important challenge to research scientists, particularly in the light of growing concern over future climate change and increased pressure on land resources. Widespread applications of caesium-137 in erosion investigations and the more recent use of excess lead-210 have demonstrated the great potential of fallout radionuclides for assembling retrospective erosion rate data. However, if these data are to be used to address erosional responses to environmental change there is a need to derive information concerning changing rates of erosion. This paper considers approaches to deriving such data that include: comparison of radionuclide derived rates with contemporary experimental data; use of radionuclide data in erosion model validation; and comparison of data derived using different radionuclides. Examples from Europe and Australia will be used and attention will focus on tillage and water erosion. In comparison of data derived from different radionuclides, synchronous simulations are used in order to ensure internal consistency. The merits and limitations of this approach and the implications of dichotomies in data derived from different radionuclides are discussed.