Geophysical Research Abstracts
Vol. 19, EGU2017-10214, 2017
EGU General Assembly 2017

Mixing of Marine and Terrestrial Sources of Strontium in Coastal Environments

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$^{87}Sr/^{86}Sr$ from bulk soils, soil extracts and plant material have been used to investigate and quantify the extent of marine-derived Sr in the terrestrial biosphere. Samples were collected along coastal transects and $^{87}Sr/^{86}Sr$ biosphere values (plant and soil) converge to marine values with increasing proximity to the coast. R^2values indicate highly significant trends in certain regions.

The National Soils Database (NSDB), TELLUS and TELLUS Border datasets, all of which are geochemical surveys have been employed to further test the extent of marine elemental contribution. Collectively these data cover all of Ireland and Northern Ireland, with varying degrees of sampling density. A strong spatial correlation exists between the Chemical Index of Alteration (CIA; (Al_2O_3-(CaO*+Na_2O)-K_2O)) in topsoil (CIA $<$60; 27% n = 11651) and areas of blanket peat. The enrichment of Ca and Na in these regions would suggest a significant marine geochemical contribution. Topsoil CIA can therefore be used to identify areas likely to feature significant marine inputs and identify regions where the $^{87}Sr/^{86}Sr$ budget may deviate from bedrock values.