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Iodine and selenium in soils from East Anglia, UK

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The importance of iodine and selenium in human and animal health is already widely recognised, and targeted studies have been undertaken in many areas of chronic deficiency problems, as well as those of selenosis (excess selenium). The systematic mapping and, therefore, understanding of the controls on these elements in regions where chronic health effects have not been identified has, until now, been restricted as a result of the relative expense of analytical methods. The newly released British Geological Survey (BGS) Geochemical Baseline Survey of the Environment (G-BASE) dataset for East Anglia, UK, has comprehensive inorganic chemical data and a suite of physical properties and observations for 5700 soil samples collected over an area of 11400 km^2 at a sample density of 1 per 2 km^2. The soil iodine geochemical map is one of the most comprehensive and high resolution ever produced for the UK or elsewhere and it is presented for the first time here.

This region, relative to other parts of the UK, is one of restricted variation in solid geology and topography. Therefore, a limited range of selenium values, and a predominant control of distance from the coast in terms of iodine concentrations may be expected. However, complex spatial geochemical distributions are observed and the underlying solid and superficial deposits control large concentration variations in both elements. This parent material control is something that is very rarely recognised in iodine geochemistry and may be an important determinant preventing iodine deficiencies inland of this region. In contrast, selenium concentrations show widespread insufficiency in areas important for the UK cereal growing industry, which may be of concern given that wheat and bread are vital components of human selenium dietary intake.