

Radiocesium distribution in soils of Tenerife Island (Canary Islands, Spain)

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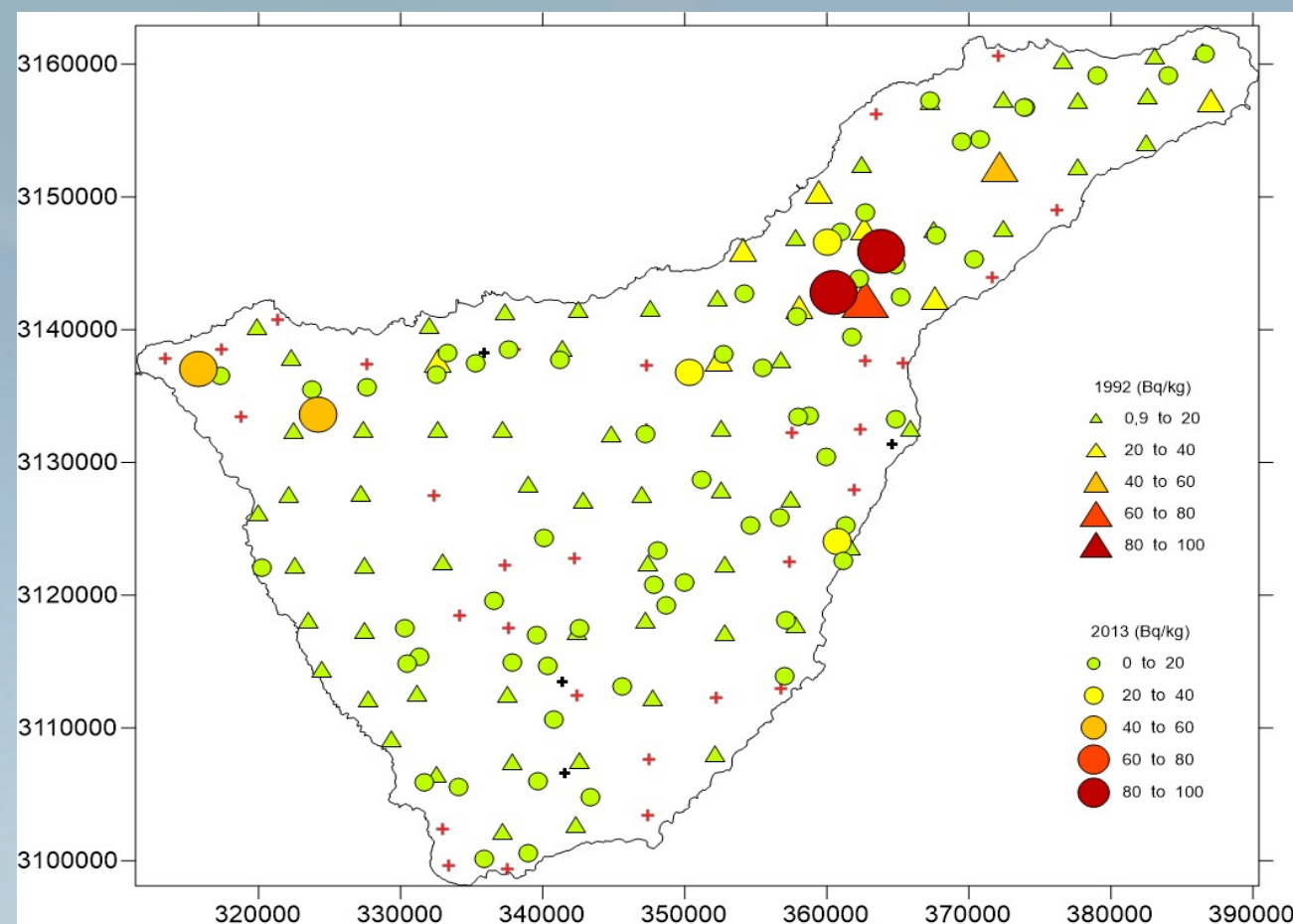
Introduction

Large amounts of ^{137}Cs were released into the environment due to global nuclear weapon testing, from the 1950s to the 1970s, and nuclear power plant accidents, among which the most important was the Chernobyl accident in 1986. Most recently it has been released into the environment as the result of the Fukushima Daiichi Nuclear Power Plant accident, following the earthquake and tsunami of 11 March 2011 (López-Pérez et al., 2013). Although ^{137}Cs occurs, in most sites, as a product of direct atmospheric fallout, it can also be transported attached to dust particles (Hernández et al. 2007; Karlsson et al 2008; López-Pérez et al 2020).

Materials and methods

- ^{137}Cs concentrations were measured in 73 soil samples collected in 2013 in Tenerife.
- Sampling sites were randomly selected on a predefined 3x3 km sampling grid covering the whole island and superficial samples were collected from uncultivated fields.
- A second dataset of ^{137}Cs concentrations recorded in 103 soil samples collected in 1991 (22 years before) have been used to provide information on the spatial and temporal variability of this anthropogenic radionuclide at this site.
- Radiometric measurements were performed by gamma spectrometry with a coaxial-type germanium detector (Canberra Industries Inc., USA).

Results and discussion



- ^{137}Cs in the 1991 survey ranged from 0.08 to 100.90 Bq kg⁻¹.
- ^{137}Cs in 2013 ranged from 0.08 to 88.85 Bq kg⁻¹.
- Comparing the results of both campaigns, ^{137}Cs were found to be rather similar, despite the 22 years gap between the measurements.

Location of ^{137}Cs activities measured in 1991 and 2013 on soil samples collected in Tenerife island. Red and black crosses represent values below the MDA in 1991 and 2013 respectively. Data from 1991 has not been corrected for decay.