

# EXPERIMENTAL DATA SETS FROM A GRASSLAND ECOSYSTEM IN THE VICINITY OF THE LA HAGUE REPROCESSING PLANT

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## *Abstract*

The TOCATTA model developed at IRSN is dedicated to the realistic assessment of  $^{14}\text{C}$  transfer from atmosphere to plants. To better understand the underlying processes, and to acquire information for model validation, an *in situ* laboratory was established in an area impacted by the atmospheric releases of the La Hague reprocessing plant. This choice was led by the availability of release information allowing reconstituting on an hourly basis the  $^{14}\text{C}$  input to the surrounding environment. According to the environmental components and processes taken into consideration in the model, an associated experimental programme (VATO – for VALidation of TOCATTA), was launched in 2006. It aimed to estimate the fluxes of  $^{14}\text{C}$  in a grassland ecosystem (air, rain, plant, soil water) in relation to the evolution of the carbon concentration in air (day/night), the weather conditions and the land use (grazing, maize silage and hay). Several types of data were collected, in order to fulfill the code needs. Some of them are already shared within part of the community of radioecologists, in the framework of the BIOPROTA forum (Smith and Smith (2014); Limer et al, 2015).

We now offer to enlarge their distribution to interested people. Issued from three successive campaigns (2006-2007-2008), they include meteorological data (temperature, humidity, wind characteristics, precipitation...), plant physiology data (biomass, growth rate, canopy dilution factor...), soil parameters ( $^{14}\text{C}$  stocks, decomposition and volatilisation rates...), releases ( $^{14}\text{C}$ ) and  $^{14}\text{C}$  activity measurements (soil, grass, rain...).

Taking advantage of the scientific opportunities offered by this field laboratory, a similar work was initiated in collaboration with EDF regarding the transfer of  $^3\text{H}$  in the same system, aiming to establish i) kinetics of OBT/TOL formation in plants from air vapour, rain and soil water, ii) HTO dry and wet deposit and iii) kinetics of HTO formation in soil from HT in air. In addition to the previous physiological data, LAI will be available. HTO and OBT activity measurements in leaves will complete the  $^3\text{H}$  data set that would be available for sharing over the medium term.