

GIS and IS

Building a framework for automating GIS operations needed for soil science research.

Deadline for application: September 5th, 2012

Duration: 12 months

Salary: Between 1570 and 2095 €/month, net of charges depending on experience

Location: INRA (National Institute for Agronomic Research) InfoSol Unit, Orléans, France

Starting date: November 1st to December 1st, 2012

Rationale and objectives

The InfoSol Unit at INRA Orléans is gathering all the data on French soil properties and geographical distribution. Numerous databases are available at the regional and national scale according to various types of data and geographical supports, such as:

- A systematic soil monitoring network of French soils (i.e. ca 2200 sites, distributed according to a 16 to 16 km grid, SOC data available for the 0 to 0.3 and the 0.3 to 0.5 m layers).
- Numerous legacy soil profile data (from soil inventory and mapping, irregularly spread over the French territory, various soil depths, years of sampling from 1960 to nowadays).
- Numerous soil test analysis on the agricultural topsoil, either georeferenced or aggregated at the municipality level

Several research projects carried out at InfoSol involve jointly these various datasets, and other datasets related to variables such as land use and climatic drivers. This kind of usage requires repetitive GIS operations such as joining spatial layers, aggregating or disaggregating data. An automated framework for these tasks needs to be setup. We are looking for a candidate who would be interested in being in charge of these tasks within the context of various research projects.

We will address the following issues, focusing on the French Region Centre:

Identifying the possible tasks candidates for automation.

Implementing these tasks using the current PostgreSQL (and PostGIS) and ArcG architecture used at Infosol.

Skills (items in bold are mandatory)

Engineer, Master or PhD

GIS - spatial analysis

Knowledges in soil or environmental sciences

Ability to work with R packages

SQL and postgresql

Geostatistics, Data mining, regression and classification tools, statistics

Scientific English reading, speaking and writing

Scientific referents

Dr Manuel Martin manuel.martin@orleans.inra.fr

Dr Dominique Arrouays dominique.arrouays@orleans.inra.fr

Dr Nicolas Saby nicolas.saby@orleans.inra.fr

How to apply?

Send a mail including CV and a cover letter to the referents

Relevant recent publications

Arrouays, D, Marchant BP, Saby NPA, Meersmans J, Orton TG, Martin MP, Bellamy PH, Lark RM, Kibblewhite M. 2012. Generic issues on broad scale soil monitoring schemes: A review. *Pedosphere*, 22(4), 456-469.

Meersmans J, Martin MP, De Ridder F, Lacarce E, Wetterlind J, De Baets S, Le Bas C, Louis BP, Orton TG, Bispo A, Arrouays D. On line. A novel soil organic C model using climate, soil type and management data at the national scale (France). *Agronomy for Sustainable Development*.

Meersmans, J, Martin, M.P, Lacarce E, De Baets, S, Jolivet, C, Boulonne, L, Lehmann, S, Saby, N.P.A, Bispo, A, Arrouays, D. On line. A high resolution map of the French soil organic carbon. *Agronomy for Sustainable Development*.

Orton TG, Saby NPA, Arrouays D, Jolivet CC, Boulonne L, Villanneau E, Paroissien JB, Marchant BP, Caria G, Barriuso E, Bispo A, Briand O. Early view. Inference and spatial prediction with below quantification limit data for analyzing the distribution of PCB concentrations across a region of France. *Journal of Environmental Quality*.