



NERI

National Environmental
Research Institute

University of Aarhus

Department of
Atmospheric Environment

File No.:
Ref.: SSJ

25 March 2008

IT developer/GIS

Position for design of software architecture and programming in relation to integration of air quality models and data into user-friendly applications in GIS

The Department of Atmospheric Environment (ATMI) at the National Environmental Research Institute (NERI) has a new permanent position for an IT developer/GIS.

Profile of the candidate

The perfect candidate should match most of the requirements listed below:

- Good team working abilities.
- Fast learning and readily sharing her/his knowledge.
- Well structured work approach and ability to communicate clearly in English (e.g. writing notes, documentation and software manuals). Knowledge of Danish is convenient but not a necessity.
- Able to keep close contact with many partners delivering inputs in a complex software system
- Knowledge of GIS, preferable ESRI products (ArcGIS)
- Knowledge and experience in design of IT architecture
- Knowledge of design of databases and user interfaces
- Experienced in software development e.g. Visual Studio 2005 incl. C#/C++, Delphi Pascal, Python or Visual Basic, and preferably use of DLL techniques, and preferable also web programming.

Terms of employment

The new permanent position is as an academic employee (37 hours a week). The salary will be according to collective agreement with bonus according to qualifications. Workplace is Department of Atmospheric Environment Frederiksborgvej 399, 4000 Roskilde.

Application deadline

April 20th, 2008. Send your application with CV marked "031-00910" as an email to nytjob@dmu.dk

Frederiksborgvej 399
PO Box 358
4000 Roskilde
Denmark
Tel.: +45 46 30 12 00
Fax: +45 46 30 11 14

Vejlshøjvej 25
PO Box 314
8600 Silkeborg
Denmark
Tel.: +45 89 20 14 00
Fax: +45 89 20 14 14

Kalø
Grenåvej 14
8410 Rønne
Denmark
Tel.: +45 89 20 17 00
Fax: +45 89 20 15 14

VAT No.: 10-85-93-87
dmu@dmu.dk



Further information

For further information please contact Senior Scientist Steen Solvang Jensen, phone: +45 46301281, email: ssj@dmu.dk

Further description of tasks

The Department of Atmospheric Environment is developing a new user-friendly Danish highway air pollution model (“OML-highway”) as a tool for environmental impact assessment and mapping of air quality along highways for the Danish Road Directorate. The model should be operational, user-friendly and integrated into a geographic information system (GIS), and organized in a single software package. The project runs to the middle of 2009. The candidate will have a key role in the technical development of this tool.

The proposed overall model strategy is to integrate the prototype OML highway model and supporting GIS tools and background models into a single GIS based application. The platform will be the software ArcGIS 9.x by ESRI. The German company Lohmeyer has previously developed a set of extensions to ArcGIS that form the package SELMA^{GIS} - a system for air pollution modelling and visualization that is deployed at many places in Europe. The concept of SELMA^{GIS} and part of the existing code will be reused in the OML-highway model and the company Lohmeyer will work as a sub-contractor (<http://www.lohmeyer.de/eng/>).

Details of the proposed system are described in the NERI-report:

OML Highway. Phase 1: Specifications for a Danish Highway Air Pollution Model. National Environmental Research Institute, University of Aarhus, Denmark.

NERI Technical Report No. 633. <http://www.dmu.dk/Pub/FR633.pdf>.

The successful candidate will be the main person having the overview over both the dataflow as well as technical realization of the OML-Highway GIS Interface. She/he will stay in close contact with air pollution model developers and GIS developers at ATMI and be the primary contact with Lohmeyer.

She/he will test and understand the program components provided by the subcontractor and be able of making smaller modifications and extensions.

She/he will assist ATMI to develop and test the necessary extensions that will allow ATMI's dispersion models to communicate with the GIS interface (e.g. as DLL).

She/he will assist the sub-contractor in case of questions to these ATMI calculation routines.

She/he will keep in touch with the future users of the model interface (ATMI and the Danish Road directorate) and give instruction on how to run and use the new model interface.

Future tasks in pipeline

There is a number of projects in pipeline that are likely to be funded in the near future.

One project focuses on development of a web application that is able to calculate a forecast for personal exposure of a bicyclist based on different self-defined routes through Copenhagen and the ability to receive this information on a mobile phone via SMS. The idea is to predict the cleanest route from A to B.

Another project idea is also a web application for a virtual Copenhagen where a user can navigate through Copenhagen in 3D. Our department will provide information about air quality to this system and also personal exposure estimates for different bicycle routes as outlined above.

A third project idea is a further development of an existing air quality and human exposure model system into a more user-friendly, operational and GIS and database system (airgis.dmu.dk). This project idea is similar to the present integration of a highway model into a GIS framework.

The candidate can also be expected to be engaged in specific technical development work concerning the department's obligations for publishing air quality data on the Internet and management of its air quality databases.

In Danish

The Danish description of the position can be found at http://www.dmu.dk/Om_DMU/Job_uddannelse/Opslag_00910_2008_IT-systemudvikler_ATMI.htm



Department of Atmospheric Environment at the National Environmental Research Institute

About the Department of Atmospheric Environment (ATMI) at the National Environmental Research Institute (NERI) under the University of Aarhus.

NERI's task is to establish a scientific foundation for environmental policy decisions. ATMI carries out research, monitoring, consultancy and information activities about air pollution. ATMI monitors air pollution in Denmark and in Greenland. We develop mathematical models to describe transport, transformation and deposition of air pollutants and carry out research in relation to air pollution monitoring and modelling. The models range in spatial resolution from local air pollution in a single street, to both nation-wide and global air pollution. NERI participates in many international collaboration networks within the field of air pollution, and it hosts websites for several such networks. Over the years we have built an expertise in combining measurement data and model calculations in order to describe and assess the effects of air pollution, and its impact on man and nature. ATMI is capable of supplying data, modelling tools for calculating air pollution, and expertise to assess air pollution problems, so they can be solved in the most efficient manner. All consultancy activities are based on internationally acknowledged scientific research. The department has an international work environment and projects are carried out in interdisciplinary teams.

ATMI web site: <http://www.dmu.dk/International/Air/>

Address in Danish:

Danmarks Miljøundersøgelser (DMU)

Afdelingen for Atmosfærisk Miljø (ATMI)

Frederiksborgvej 399

4000 Roskilde