

Information about MILIEU - Men in Urban Agglomeration, the Influence of climate and environmental issues

In 2009 the Freie Universität decided to support a new initiative of the Institute of Meteorology to unite Berlin-Brandenburg institutions to form a “Centre for Urban Earth System Studies” which was named “MILIEU”, inspired by the famous Berlin artist Heinrich Zille. The key drivers of the initiative were the increasing demand in the Earth system science community for an integrated approach to study urban agglomerations together with a strong interest on the policy side coming from the Berlin Senate. Gathering the expertise of the scientists involved in the project and equipped with funds provided by the German Excellence Initiative the project was structured into six research chains: “Vector borne diseases in an urban environment (RC₁)”; “Tracing hydrological change in complex urban systems (RC₂)”; “Climate Change and Human Health (RC₃)”; “Our Vanishing Night (RC₄)”; “Air quality in Cities (RC₅)”; “Green House Gases in the City (RC₆)”. In the course of the active collaboration phase it became clear that a stronger overarching structure was needed which led to two new research chains “Measurement data, uncertainties and climate scenario definition (RC₀)” and closely connected the “Integration (RC_X)” chain both hosted at the Institute of Meteorology.

Various computer models have been used in the different chains so far, to model the hydrological, meteorological, air pollution or green house gas issues respectively. The integrated data management system is thought not only to provide a general data pool but also to use a meteorological model for the urban system, suitable for calculating the meteorological parameters required by the different MILIEU research chains.

A tool potentially suitable for these purposes is the micro-scale meteorological model ENVI_{met}. It provides a complex setup of parameters that suit the particular setting of urban areas, in particular urban greens. ENVI_{met} calculates meteorological conditions using a coarse 3D grid that can contain buildings, vegetation, lakes and even air pollution sources. From those prevailing conditions ENVI_{met} can calculate a personal (human) comfort parameter, giving answers on their human health impacts.

ENVI_{met} has widely been used in urban analyses during the last years. However, questions of model evaluation remain, related to the high complexity of this model. In MILIEU we have a complex longtime measurement dataset of meteorological parameters available. There are also other microscale models that might fit the MILIEU purpose. Usually they are either less complex (with more parametrisation instead of real 3D calculation) or with a lower resolution. A microscale model from the German Weatherservice (DWD) might be used instead. Someone with an established understanding of microscale processes and with experience in model development and application would be of large help in understanding the advantages and disadvantages of alternative models and in finding the best tool for MILIEU.

Therefore, we are looking for a scientist (Post-Doc) with extensive knowledge in microscale meteorological modelling, crucial for an evaluation of the suitability of the models for the applications in MILIEU.