This study was focused on the problem that in environmental assessment exhaustive information is needed but data is always selectively collected. In this context, **spatial transferability** and **efficiency of environmental data** were studied using **PAH** as indicators of airborne pollution. Strictly speaking, it was tested if data measured in one representative of a certain ecosystem type may be transferred to further representatives of the same type, based on the assumption that the **ecological structure of an ecosystem** has a dominant impact on its pollution. First of all, a suitable set of factors was analysed which sufficiently describes the ecological structure of ecosystems in the context of the objective mentioned above. The factors found belong to **climate**, **topography**, **land use**, and **biometry**.

According to the base of research, a model had to be created that approximates the functional connection of both the factors describing the ecological structure of studied areas and the PAH immission. **General Regression Neural Network (GRNN)** is a particularly suitable model. Basing on the calculations of the GRNN PAH immission was forecasted for five ecosystems in Germany. Results were validated by chemical analysis of one-year-old spruce shoots from these areas. Using different input sets for approximation the most relevant factors for PAH immission were analysed. It could be shown that **the chosen model is suitable for the spatial transferability of environmental data**. However, the quality of prediction differs highly between more **volatile** and **less volatile compounds**. In addition, qualitative differences of predictions exist between the studied areas since the used model doesn't consider all of the factors influencing the PAH immission. In conclusion, the study clarifies the efficiency of environmental data from different monitoring programmes by common assessment.