

Preface

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Regular monitoring of ecosystems was initiated in Sweden during the 1970's. This was due to an increasing interest in environmental protection as a result of frequent reports of acidified lakes. The integration of monitoring biological and chemical indicators at a common site was established in 1981, as a part of the National Program for Monitoring of Environmental Quality (PMK), operated by the Swedish Environmental Protection Agency. Ultimately, the program of Integrated Environmental Monitoring (IM) included fifteen more or less fully monitored sites from southern to northern Sweden. The purpose was to monitor air pollution impacts in undisturbed areas, representative of the country's natural geographic regions. In 1994 it was decided to focus the monitoring efforts on a few, but more intensively monitored, sites. Hence, four small, hydrologically well-defined, conifer-dominated areas, without lakes or major mire areas, were established.

Having an effect-based approach, The Convention on Long-range Transboundary Air Pollution (CLRTAP) developed its policy instruments on a network of observations and changes in the environmental state. With its different sub-programs covering the most important aspects of the environment, a multi-disciplinary International Cooperative Programme on Integrated Monitoring of Air Pollution Effects on Ecosystems (ICP IM) has been a natural part of the effect-oriented activities under the 1979

Convention. The pilot phase of ICP IM was launched in 1989, based on the Swedish model. Sweden became the lead country for this activity, holding the Presidency of ICP IM, in collaboration with Finland, who manage the international database, submit data to the Convention and organize publication of reports and other documents from the program. The ICP IM sites are located in catchments/plots within natural or semi-natural areas and can be regarded as a Pan-European network of "supersites" for environmental monitoring. As an example, data from the ICP IM network have been a part of the underlying scientific basis for the development of the critical load concept for acidity, as well as for heavy metals.

This special issue of AMBIO highlights the importance of integrated high quality monitoring as a tool to study environmental changes at different levels, as a response to air pollution, eutrophication and acidification in a changing climate. High quality monitoring is also a prerequisite for all the highly developed models used today to assess and forecast environmental changes.

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