

Foreword

Urban areas are major sources of air pollution. Pollutant emissions affecting air quality in cities are considered to have adverse consequences for human health. Public and government concern about environmental issues arising from urban air pollution has increased over the last decades. The urban air pollution problem is widespread throughout the world and it is important to find ways of eliminating or at least reducing the risks for human health.

The fundamentals of the physical and chemical processes occurring during air pollutant transport in the atmosphere are nowadays understood to a large extent. In particular, modelling of such processes has experienced a remarkable growth in the last decades. Monitoring capabilities have also improved markedly in the most urban areas around the world. However, neither modelling nor monitoring can solve urban air pollution problems, as they are only a first step in improving useful information for future regulations. The defining of efficient control strategies cannot be achieved without a clear knowledge of the complete pollution process, i.e. emission, atmospheric transport and transformation, and deposition at the receptor.

Improving our ability to establish valid urban scale source-receptor relationships has been the objective of SATURN, one of the 14 subprojects of EUROTRAC-2. Similar to the other subprojects of this co-ordinated environmental project within the EUREKA initiative, SATURN brought together international groups of scientists to work on problems directly related to atmospheric chemistry and physics. The present volume summarises the scientific results of SATURN. The various chapters in the book reveal that research conducted in SATURN led to a significant state-of-the-art improvement in air pollution research.

A scientific synthesis such as the one attempted in the present volume has numerous contributors. As the co-ordinator of SATURN and the editor of its final report I would like to express my thanks: to the SATURN principal investigators who have carried out high-quality scientific work; to the chapter authors who all did an excellent job in presenting the major findings in a concise manner; to all other contributors to this final report who substantially supported the chapter authors; to the participating governments in EUROTRAC-2, all other funding agencies and the European Commission for funding our research (cf. overleaf); to Drs Pauline Migdley and Markus Reuther at the EUROTRAC-2 International Scientific Secretariat for their continuous support; to Dr. Petroula Louka, the SATURN Scientific Secretary, for her enthusiastic support in the co-ordination of SATURN and her decisive role in the preparation of the final report; to Sofia Eleftheriadou and Lazaros Sotiriadis for technical support; and, finally, to Mr. Christian Witschell and his colleagues at Springer for providing the opportunity to present the results of SATURN in a way which will bring them to the notice of the large communities of atmospheric scientists and environmental managers.

On behalf of all authors and contributors to this report, but also in the name of the whole SATURN community I acknowledge the financial support of:

The agencies: Academy of Finland; ADEME, France; AgipPetroli, Italy; British Council; CESI, Italy; Hungarian Meteorological Service; City Authorities of Watford and Westminster, UK; Committee for Nature Use, Environmental Protection and Ecological Safety of St. Petersburg City Administration; Czech Ministry of Education, Youth and Sport; Danish Ministry of Environment; Danish National Research Council; Eastern Electricity plc, UK; Economics and Social Research Council, Go-Ahead Group plc, ETI Group, and Rupprecht and Patashnick, UK; Engineering and Physical Sciences Research Council, EPSRC, UK; Environment and Health Protection Administration of Stockholm; FCT, Portugal; Finnish Ministry of the Environment; Finnish Ministry of Trade and Communications; Finnish Technology Development Centre; French Ministry of Environment; German Ministry of Science and Education; German Federal Environmental Agency; Hellenic General Secretariat of Research and Technology; ICCTI, Portugal; INDRA S.A., Spain; Italian Environmental Agency, ANPA; Italian University and Research Ministry; Mexican Petroleum Institute; Ministry of Environment & Planning, Portugal; Ministry of Science & Technology, Portugal; Ministry of Science and Technology, Spain; National Road and Traffic Administration of Stockholm; Natural Environment Research Council, UK; PAS, France; Province of Brescia, Italy; Regione Lombardia, Italy; Russian Foundation for Basic Research; Swedish Environmental Protection Agency; Swedish Agency for Innovation Systems; Thai Government; University of Aveiro, Portugal; UK Engineering and Physical Science Research Council; UK Government Department of Environment, Food and Rural Affairs, DEFRA.

The European Commission for the projects: AIR-EIA (INFO 2000 Programme); APNEE and APNEE-TU (Information Society Technologies); IMPACTE, CICYT REN2000-1754-C02-01/CLI and REN2000-1754-C02-01/CLI; IRENIE (Telematics for the Environment Programme); TRAPPOS (European Training and Mobility Project), SUTRA-EVK4-CT-1999-00013.

Other national funds: Austrian Science Fund grants P 12168-TEC, P12170-TEC and P-14075 TEC; BWPLUS (Sustainability Research programme of Baden-Wuerttemberg); CNRS programmes PATOM and PNCA; German Tropospheric Research programme; German Atmospheric Research 2000 programme; Finnish MOBILE and SIHTI projects; National Air Quality Monitoring programme and Urban Particles studies, Denmark; Czech project OE32 (E! 1489); Hellenic programmes of International cooperation with the UK, EUREKA (E! 1489), and YPER '97; Strategic Environmental Research programme, Environment and transport (TRIP); French PRIMEQUAL-PREDIT programme.

SATURN's Framework Project was financially supported by the Shell Sustainable Energy Programme

Nicolas Moussiopoulos
Thessaloniki, January 2003