

PREFACE

This Special Issue is dedicated to the studies on atmospheric air quality that are being carried out in South America. The material was prepared with the aim of providing an overview of the activities on the subject in a part of the world where data are relatively scarce. Besides bringing together representative work in one issue of the journal, the initiative has brought to the international scientific community some particular aspects of the air quality problems in the region, the specific problems that researchers must face in their work, and the dimension and tendencies in terms of air quality monitoring and control.

Probably the most evident characteristic of South America is the heterogeneity. With an area of 17.8 million square kilometres, approximately 12% of the dry land on Earth, and 350 million inhabitants, South America contains some spectacular contrasts: the largest rain forest on the planet as well as one of the largest and driest deserts; large uninhabited areas and a number of highly populated cities, some of them belonging to the largest urban areas in the world; severely hot and extremely cold weather conditions; widespread poverty and extreme wealth; among others.

Composed mainly of Spanish and Portuguese speaking countries, South America constitutes a unique region in all geographic, social and economic aspects and deserves special attention as far as environmental issues are concerned.

The studies presented in this issue cover mostly the central strip of the continent, in the region of the Tropic of Capricorn (see figure), where the population density is high and, consequently, where many research institutes and universities are situated. People from these institutions are the contributing authors.

Of the ten papers presented, five come from Brazil, four from Argentina, and one from Chile. Six papers address the atmospheric issues in cities with more than one million inhabitants (São Paulo, Buenos Aires, Córdoba and Santiago), two are related to medium size cities (Paulínia/Campinas and São Carlos in Brazil) and one covers a large region in Central Argentina.

The two works referring to Buenos Aires city deal with spatial and temporal distributions of CO and NO_x background concentrations (the paper by Mazzeo and Venegas) and daytime ventilation conditions in the Great Buenos Aires region (the paper by Ulke). Olcese and Toselli present and discuss the results of a modelling study

of the air pollution in Córdoba, Argentina. The biomonitoring of a large region in Central Argentina is the subject of the work by Pignata *et al.*

The São Paulo city ozone level is the subject of the paper by Guardani and Nascimento and the one by Andrade *et al.*: the former proposes a neural network-based modelling to predict the ozone levels in large urban areas, and the latter presents an urban-scale Eulerian model to simulate the ozone concentrations in the city. The papers by Coury *et al.* and of Tresmondi and Tomaz deal with the monitoring of atmospheric air in the cities of Paulínia and São Carlos, respectively, and discuss probable sources based on distinct models.

Finally, Jorquera *et al.* present the trends of particulate matter and ozone and population exposure in Santiago, covering a period of over a decade.

We think this collection of papers fulfills our goal of providing information on the air quality and air pollution trends in the region. At the same time, the papers provide an overview on the research activities in air quality in this part of the world.

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