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A data mining approach to elucidate the relationships between air pollution and respiratory diseases in big cities

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The sustainability of large cities is controlled by consumption, disposal, and environmental capacity. The weather patterns have been affected by the quick growing of the cities. These imbalances imply climate changes and negative consequences to the public health. In addition, due to the explosive growth in carbon dioxide emissions from fossil-fuel usage, researchers emphasize the importance in improving the quantitative control of the global carbon cycle as a central element to understand the patterns and projections of climate change. It is also discussed the importance in attributing observed CO_2 variations to human or natural cause. This research focuses on better understanding the relationships between air pollution and respiratory diseases. The methodology consists in applying data mining techniques on hospitalization due to respiratory diseases organized with atmospheric and urban variables. The knowledge acquired from this study - which is still in the early phase of data collection - could be useful for urban management and public health policies. Some qualitative associations between air pollutants in Curitiba and respiratory morbidity of childhood population have been discussed. Curitiba has a metropolitan area with population around 3 million. Some scientists highlighted the necessity of spreading methodological experiences from medium-size cities with relatively stable emissions to the more complex and representative environments of megacities (metropolitan areas with populations greater than 10 million). Moreover, this research should verify if the use of data mining techniques may potentially contribute to explain air pollution associated to the augment of the anthropogenic CO_2 signal in urban environments of megacities.

Biography

Fabio Teodoro de Souza has completed his PhD from Federal University of Rio de Janeiro (COPPE/UFRJ). He concluded his Post-doctoral studies in 2010 at the Tsinghua University in Beijing (China). He is Professor of the Pontifical Catholic University of Paraná (PUCPR) at the Post-graduate Program in Urban Management since 2011 and member of the International Network Routes towards Sustainability since 2014. He is Coordinator of a research project concerning air pollution and respiratory diseases financed by the National Council for Scientific and Technological Development. He published 4 articles with Impact Factor >1.4 (JCR).

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