International Journal of
Environmental Research and Public Health

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Spatial Modeling of Air Pollutant Variability

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Deadline for manuscript submissions:
closed (15 December 2022)

Message from the Guest Editors

Exposure to air pollution is associated with respiratory and cardiovascular hospital admissions (Ren et al., 2006), aggravation of existing heart and lung disease, premature mortality (Anderson et al., 2012; Dockery et al., 1993; Jerrett et al., 2005; Pope and Dockery, 2006), and lung cancer (Lepeule et al., 2012; Turner et al., 2011). Reducing misclassification in exposure assessment is critical for epidemiological studies (Michanowicz et al., 2016a, 2016b). As personal monitoring is not generally feasible for large cohorts, methods to accurately assess within-city variability in exposure to air pollution are required (Jerrett et al., 2005; Wu et al., 2017; Alexeeff et al., 2015).

Spatial modelling of air-pollution levels is becoming widespread in air pollution epidemiology research (Alexeeff et al., 2015). Several spatial modelling methodologies have been proposed for capturing ambient air pollution gradients. For example, spatial interpolation, such as kriging interpolation (Bayraktar and Turalioglu, 2005), predicts the pollutant level in an area based on a limited number of monitoring sites and a spatial autocorrelation algorithm.

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Editor-in-Chief

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Message from the Editor-in-Chief

Addressing the environmental and public health challenges requires engagement and collaboration among clinicians and public health researchers. Scientific discoveries and advances in this research field play a critical role in providing a rational basis for informed decision-making toward control and prevention of human diseases, especially the illnesses that are induced from environmental exposure to health hazards.

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