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Urban Biometeorology: analysis of the air pollution and climate change on cognition and physical abilities of geriatric population of São Paulo City

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This is a multidisciplinary Project, which emphasizes geriatric population impacts, i. e., over 65 years old, of meteorological variables and air pollutants (such as particulate matter) associated to human health, and concerning to the real climatology and climate change in the Metropolitan Region of São Paulo. This is a biometeorological study, human subdivision, based on ISB (International Society of Biometeorology). According to the society, the environmental effects are considered meteorotropics where one or more environmental variables (meteorological or climatic even air pollution) affect one or more individuals of a population. Atmospheric pollution will be analyzed using a personal particulate matter multi-collector, concerning the impact of unfavorable meteorological conditions where the impacts will be evaluated comparing the test results during dry season (high air pollutant concentrations) and wet season (low pollutant concentrations). Therefore, the aim of this study will be to evaluate the cognitive and physical performance of a geriatric population in a pre-selected group of aged people which are considered as capable (healthy). This performance is affected by environmental conditions which thermal comfort (where meteorological variables act together) and air pollution are the meteorotropic ones. Consequently, one of the aims of the study is to establish a human thermal comfort index for geriatric populations. Architectural premises (thermal performance and ergonomics) will be also developed. An acclimatized chamber will be used to simulate the extremes of São Paulo climate and to propose a thermal comfort index. Indoors (chamber) and outdoors will be used in order to compare the impact on the selected aged people. Finally, the climate change will be based on GCM's global models which show the meteorological variations in order to calculate their impact on a comfort index. The physical and cognitive performances and architectural premises (thermal performance and ergonomics) will be analyzed inside of the climatic chamber. The preliminary results for future (climate change for 2070-2100) comfort indexes present a reasonable impact for heat discomfort during the summer and less cold discomfort during wintertime.