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Title: Sources and Transport of Urban and Biomass Burning Aerosol
Black Carbon at the South-West Atlantic Coast

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Abstract: The total extent of the atmospheric impacts associated to the aerosol black carbon (BC) emissions from South America is not completely described. This work presents results of BC monitored during 3 scientific expeditions (2002, 2003 and 2004) on board of a Brazilian oceanographic ship Ary Rongel that covered the South-West Atlantic coast between 22°S - 62°S. This latitudinal band encloses major urban regions of South America and the outflow region of the SACZ (South Atlantic Convergent Zone), which is an important mechanism of advective transport of heat, moisture, minor gases and aerosols from the South America continental land to the Southern Atlantic Ocean. Our results showed that aerosol BC enhanced concentrations from urban/industrial origin can be transported to the South-West Atlantic Ocean due to the migration of polar fronts that frequently reach tropical/subtropical regions. Despite the decrease of aerosol BC concentrations southwards, several observed peak events were attributed to regional urban activities. Most of such events could be explained by the use of back trajectories analysis. In addition, a global model

simulation is presented (Goddard Institute for Space Studies - GISS GCM BC simulation) to explore the origins of aerosol BC in the South-West Atlantic. The model allowed isolating the biomass emissions from South America and Africa and industrial (non-biomass) pollution from other regions of the globe. This model suggests that the apportionment of about half of the aerosol BC at the South-West Atlantic may derive from South American biomass burning.