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**The consideration of non-anthropogenic emissions for air quality modelling  
in South Africa**

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**Abstract**

Air quality modelling requires the identification of all relevant sources of emissions and the accurate calculation of the emissions rates. Many of these sources include anthropogenic activities that need to be accounted for in any emissions inventory to appraise their impact on air quality. Frequently the anthropogenic sources are the easiest to control through various emissions mitigation strategies. However emissions from natural sources can also contribute significantly to air pollution levels and are thus just as important to quantify to avoid underestimation in air quality in simulations. Biomass burning plays a key role in southern Africa's environmental concerns (highlighted by both the Southern African Regional Science Initiative field campaigns, SAFARI<sub>92</sub> and SAFARI<sub>2000</sub>) as it is associated with land-cover change as well as the release of pollutants into the atmosphere within a relatively short period of time. Biomass burning emissions inclusion in any air quality modelling over southern Africa is necessary. Biogenic emissions can be considered as just as important, especially, if chemical transformation modelling is required. Biogenic Volatile Organic Carbon (BVOC) emissions as well as NO<sub>x</sub> from the soil may contribute significantly (depending on vegetation and soil types) within a model domain. Together, biomass burning and biogenic emissions establish a baseline emissions inventory onto which anthropogenic emissions can be added. This paper provides a description of various models and data sources for deriving model ready emissions inventories for biomass burning and biogenic emissions. The results from these models are also presented and discussed.