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On the use of ATSR fire count data to estimate the seasonal and interannual variability of vegetation fire emissions

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Abstract. Biomass burning has long been recognised as an important source of trace gases and aerosols in the atmosphere. The burning of vegetation has a repeating seasonal pattern, but the intensity of burning and the exact localisation of fires vary considerably from year to year. Recent studies have demonstrated the high interannual variability of the emissions that are associated with biomass burning. In this paper I present a methodology using active fire counts from the Along-Track Scanning Radiometer (ATSR) sensor on board the ERS-2 satellite to estimate the seasonal and interannual variability of global biomass burning emissions in the time period 1996--2000. From the ATSR data, I compute relative scaling factors of burning intensity for each month, which are then applied to a standard inventory for carbon monoxide emissions from biomass burning. The new, time-resolved inventory is evaluated using the few existing multi-year burned area observations on continental scales.

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