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Title: BIOMASS BURNING IN SOUTHEAST ASIA: IMPACT ON ATMOSPHERIC CHEMISTRY AND BIOGEOCHEMICAL CYCLES

Abstract: R. BALASUBRAMANIAN, Environmental Science and Engineering Program, Faculty of Engineering, National University of Singapore, Singapore 117576 Biomass burning, the burning of living and dead vegetation for land-clearing and land-use change, has been in practice in many tropical countries such as Brazil, Indonesia, Nigeria, and Mexico. Intense forest fires can also ignite subsurface organic soil components (e.g. peat), which can continue to smolder long after the original surface fires are put out. Combustion of vegetation and peat has only recently been recognized as a major source of atmospheric pollution. The immediate effect of burning is the production and release of gases and particles into the atmosphere, in quantities that in some cases can be significant not only locally and regionally but also on a global scale. Thus, smoke haze from large vegetation fires can have a significant impact on the atmospheric environment and also on biogeochemical cycles. In recent years, Southeast Asian countries have been affected repeatedly by episodes of smoke haze from forest fires in Indonesia. In 1997 and 1998, the region was shrouded in a haze for 3 months due to extensive forest fires, which was worsened by prolonged drought linked to the El Nino weather phenomenon. Over the past six years, we carried out a number of intensive field studies at several strategic locations to investigate the physical, chemical, and optical characteristics of aerosols emitted from uncontrolled forest fires in the region. In addition, we studied the influence of meteorological parameters on the concentration of both gaseous and particulate pollutants, and the oxidizing capacity of the atmosphere, especially during the burning period. The environmental implications of the recent smoke haze episodes experienced in Southeast Asia will be presented and discussed.

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