MODELLING THE IMPACT OF URBAN AREAS ON PRECIPITATION

E.B Omidiora[1] M.O Farinde [2]and P.A Owolawi [3]
[1] Pollution Hazards Free Environmental Group,Nigeria
[2] M.O Farinde Federal University of Technology Akure, Nigeria.
[3] P.A Owolawi Center for Rural Telecommunication and Information Technology
University of Kwazulu- Natal, South Africa

Among the causes ascribed to the modifications of precipitation induced by urbanization
(Shepherd et al .2002), most studies suggest that dynamic forcing destabilization associated with the heat Island and surface roughness is the most significant, more so than microphysical or moisture enhanced roughness.
Recent results of numerical studies (see Thielen et al .2000 and Shepherd, 2002, for example) show the impact of the surface sensible heat flux and roughness of urban surfaces on convective rain. The influence of topography and urban heat Island effects on the outbreak of convective storms under unstable meteorological conditions were investigated. This provides a hot-spot convection leading to an increase in cloudiness over an immediately down wind, which may cause it to act as a barrier to the regional wind flow, forcing the air to rise.
In this paper are presented some steps of a study of the influence of an urban area on convective clouds and precipitation. Of particular interest is the degree to which spatial variations of surface heterogeneity impact these phenomena, and whether the processes involved can be represented approximately within a single-column model of surface energy balance applied on a rectangular grid.