

## Effects of land use change on riverine suspended sediment concentration in the Kanto region, Japan

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Suspended sediment concentration (SSC) is a major determinant of river water quality, with important implications for contaminant transport, potable water supply, amenity and ecology. Previous research in central Japan revealed that riverine SSC tended to decrease with time during the late 20th century due to reductions in agricultural land and improved treatment of domestic and industrial effluents. This trend, however, was obscured in locations where population rapidly increased in the upstream catchment areas. To explore this issue further, we examined temporal changes in land use and relationships with SSC changes for the Kanto region, central Japan, using GIS. We analyzed riverine SSC data at 246 monitoring stations, and raster land-use data, with a 10-m resolution, in and around the Tokyo Megalopolis for the late 20th century. Although SSC is known to be affected by river discharge, data from the gauging suggest that any changes in SSC were linked to sediment supply, rather than changes in river flow intensity. We classified the temporal trends in SSC into five types and compared these with upstream land-use changes. At sites where upstream land use had been modified into residential, commercial and industrial development, there were no clear decreasing trends in SSC, suggesting that land clearance during commercial, residential and industrial development resulted in temporary increase in exposure of bare land surfaces, and that rainfall on these exposed surfaces resulted in enhanced soil erosion and increased supply of fine sediments to the rivers.