POTENTIAL CONTRIBUTIONS OF DIGITAL CARTOGRAPHY AND SPATIAL ANALYSIS IN ASSESSING IMPACTS OF ACID DEPOSITION

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ABSTRACT

Industrial nations in northern middle latitudes have become acutely aware of adverse effects of acid rain, or acid deposition. One strategy to achieve better understanding of the problem, and to win support for a mitigation program, is to estimate tangible costs to building materials. A key facet of this strategy is to compile a region-by-region inventory of the amount, kind, and location of building materials susceptible to acid deposition. A spatial approach to this problem assumes that the presence, form, and function of buildings—and of the materials of which buildings are constructed—are related to the patterns of land use. The presence or absence of buildings and other infrastructures is a primary clue in the mapping of land use and land cover. Prototype metropolitan and regional building materials inventories are already underway, and automated cartographic and geographic information system techniques are used to perform several related tasks: (1) to adapt an existing digitized land use and land cover inventory, in combination with other data sets, in a problem-solving context; (2) to relate land use data to statistical areas used in the Census of Population and Housing; (3) to stratify sample areas and choose sample buildings for determining the amount of selected building materials present per unit area of each land use class and area sampling frame; and (4) to generate prototype computerized thematic maps, graphics, and area statistics. In addition to the ongoing building materials inventory, the same approach is being considered to assess the impact of acid deposition on other broad land use categories already existing in the data base such as forest land, agricultural lands, and areas of inland water.