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Title:
Analysis of association between remotely sensed (RS) data and soil transmitted helminthes infection using geographical information systems (GIS): Boaco, Nicaragua

Abstract:
Soil-transmitted helminths are intestinal nematodes that can infect all members of a population but specially school-age children living in poverty. Infection can be significantly reversed with anthelmintic drug treatments and sanitation improvement. Implementation of effective public health programs requires reliable and updated information to identify areas at higher risk and to calculate amount of drug required. Geo-referenced *in situ* prevalence data will be overlaid over an ecological map derived from RS data using ARC Map 9.3 (ESRI). Prevalence data and RS data matching at the same geographical location will be analyzed for correlation and those variables from RS data that better correlate with prevalence will be included in a multivariate regression model. Temperature, vegetation, and distance to bodies of water will be inferred using data from Moderate-Resolution Imaging Spectroradiometer (MODIS) and Landsat TM and ETM+. Elevation will be estimated with data from The Shuttle Radar Topography Mission (SRTM). Prevalence and intensity of infections are determined by parasitological survey (Kato Katz) of children enrolled in rural schools in Boaco, Nicaragua, in the communities of El Roblar, Cumaica Norte, Malacatoya 1, and Malacatoya 2). This study will demonstrate the importance of an integrated GIS/RS approach to define sampling clusters without the need for any ground-based survey. Such information is invaluable to identify areas of high risk and to geographically target control programs that maximize cost-effectiveness and sanitation efforts.