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Modeling Sea-Level Rise Effects on Population using Global Elevation and Land-Cover
Data.

Global datasets of moderate resolution have recently become available for population, land cover, and elevation. These data can be used to model the effects of sea-level rise on human population. Whereas the 30 arc-sec resolution of the data are not sufficient to provide details in local areas for results of global warming and the associated melting of icecaps, the data do provide global trends of rising water and allow identification of broad areas where large numbers of people could be affected. The data also support localized modeling of catastrophic events, such as the Indonesian Tsunami and Hurricane Katrina, that lead to large surges of sea water. A global model has been developed that tracks the land area and the population counts affected with a specific sea-level rise. The model is implemented as an animation that shows land areas as they are covered with the rising seas. A key to the development of this model has been the implementation of new projection and resampling methods that provide accurate results for global raster data of continuous elevation, categorical land cover, and population counts.

Keywords: sea-level rise, global simulation, raster projection, population, elevation, land cover