

Solving Large Scale Land Use Allocation Models in Raster GIS. Robert G. Cromley and Dean M. Hanink, University of Connecticut, Storrs, CT.

One of the more common applications of raster-based geographic information systems (GIS) is as an aid in multi-criteria land use decision problems. The size of raster representations of land use problems is often a determining factor in the type of methodology used in solving such problems. Previous land use allocation models integrated with a raster GIS have used either decision heuristics or exact methods based on linear programming models. The former is fairly scale independent but produces only approximate answers whereas the latter produces optimal solutions but to date is scale dependent. This paper presents a specialized dual simplex method adapted to the generalized assignment problem that can be used to solve large scale land use allocation problems. The dual approach only requires that information for one pixel be stored at a time thus allowing the solution of problems based on any size raster database.