

SHAPESELECTFOREST: A NEW R PACKAGE FOR MODELING LANDSAT TIME SERIES

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Abstract—We present a new R package called ShapeSelectForest recently posted to the Comprehensive R Archival Network. The package was developed to fit nonparametric shape-restricted regression splines to time series of Landsat imagery for the purpose of modeling, mapping, and monitoring annual forest disturbance dynamics over nearly three decades. For each pixel and spectral band or index of choice in temporal Landsat data, the package delivers an optimally smoothed rendition of the trajectory constrained to behave in an ecologically sensible manner, assuming one of seven possible “shapes”. It also provides parameters summarizing the temporal pattern including year(s) of inflection, magnitude of change, and pre- and post- inflection rates of growth or recovery. In addition, the package contains functions for deriving annual predictions of forest disturbance, as well as graphical displays of the shape fits.

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