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USE OF A STANDARD DEVIATION BASED TEXTURE CHANNEL FOR LANDSAT CLASSIFICATION OF FOREST STRATA

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A classification procedure for identifying volume homogeneous timber strata from Landsat imagery is under examination in the rugged forest lands of northern California's Klamath National Forest. A unique feature of this procedure is the addition of a texture channel created from Landsat Band 5 by calculating the standard deviation of density values within a 3-by-3 pixel moving window. Once calculated, the standard deviation is scaled, associated with the center location of the 3-by-3 window, and output in spatially registered image format. This synthesized texture channel exhibits low values in areas of continuous canopy cover and higher values in areas of discontinuous canopy. Highest values occur at abrupt vegetation boundaries.

When combined with the conventional four Landsat bands in an unsupervised classification, the texture channel promotes discrimination of numerous site-specific classes. These classes are merged as necessary to produce a strata map appropriate for locating the random samples necessary for volume inventory. Use of this Landsat-based procedure should be very effective in reducing the high cost of compiling strata maps from conventional manual procedures involving airphoto interpretation.