Forest Cover Type via Cartography

From the official documentation of the Remote Sensing and GIS Program, Department of Forest Sciences, College of Natural Resources, Colorado State University:

The actual forest cover type for a given observation (30 x 30 meter cell) was determined from US Forest Service (USFS) Region 2 Resource Information System (RIS) data. Independent variables were derived from data originally obtained from US Geological Survey (USGS) and USFS data. Data is in raw form (not scaled). This study area includes four wilderness areas located in the Roosevelt National Forest of northern Colorado (Neota, Rawah, Comanche Peak, and Cache la Poudre). These areas represent forests with minimal human-caused disturbances, so that existing forest cover types are more a result of ecological processes rather than forest management practices. The areas have different types of major tree species: spruce/fir (type 1), lodgepole pine (type 2), Ponderosa pine (type 3), cottonwood/willow (type 4), aspen (type 5), Douglas fir (type 6), and Krummholz (type 7).

Our goal is to predict the forest cover type from the following cartography variables:

CoverType: forest cover type designation (1 through 7 - see above)

Elevation: elevation in meters

Aspect: aspect in degrees azimuth

Slope: slope in degrees

HorDistHydro: horizontal distance to nearest surface water in meters

VertDistHydro: vertical distance to nearest surface water in meters

HorDistRoad: horizontal distance to nearest roadway in meters

HorDistFire: horizontal distance to nearest wildfire ignition points in meters

Hillshade9: hillshade index at 9am (0 to 255 index)

Hillshade12: hillshade index at 12pm (0 to 255 index)

Hillshade3: hillshade index at 3pm (0 to 255 index)

Note that the original data set also contains 40 binary variables indicating different soil type designations; they are not included here to constrain the problem.