Estimating Tree Growth Models from Complex Forest Monitoring Data: Appendix H

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Appendix H: Comparison of conditions at BFRS with FHA data from a similar latitude

Comparing slope, elevation, and insolation at BFRS with ranges derived from Forest Inventory and Analysis (FIA) plots from 37.87718 to 39.97781 in latitude (USDA Forest Service 2011) and restricted to "California mixed conifer" vegetation type, we can see that BFRS represents a small fraction of elevation (only approximately 8 %) and insolation (only approximately 6 %) conditions for white fir and represents a slightly larger fraction (approximately 52% of the variation from the FIA plots) of topographic slope conditions, but still not by any means a representative set of conditions for the mixed conifer forest type in this latitudinal range in CA.

Annual water deficit values for the years of our inventories only represent 82 % of the variation seen since 1985 from PRISM data (PRISM Climate Group 2011), and Blodgett is typically wetter than other sites. For example, annual water deficits averaged 176 mm at BFRS between 1976-2009, and a study by van Mantgem and Stephenson (2007) reported deficits at BFRS between 200 and 250 mm. Thus water supply may not be as strong a limiting factor for the trees in this study. In addition, as Clark et al. (2011) showed, tree fecundity (rather than growth or survival) was the most sensitive demographic parameter to climate.

Different basal area conditions, on the other hand, are well represented at BFRS, with the ranges of values comparable to those in the FIA plots.

References

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