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Gregory V. Jones is an associate professor and research climatologist in the Geography Department at Southern Oregon University who specializes in the study of how climate variability and change impact natural ecosystems and agriculture. He holds a BA and Ph.D. from the University of Virginia in Environmental Sciences with a concentration in the Atmospheric Sciences. His research interests include climatology, hydrology, and agriculture; phenology of plant systems; biosphere and atmosphere interactions; climate change; and quantitative methods in spatial and temporal analysis. His dissertation was on the climatology of viticulture in Bordeaux, France with a focus on the spatial differences in grapevine phenology, grape composition and yield, and the resulting wine quality. He conducts applied research for the grape and wine industry in Oregon, has given hundreds of international, national, and region presentations on wine-related research, and is the author of numerous book chapters, reports, and articles on wine economics, grapevine phenology, site assessment methods for viticulture, climatological assessments of viticultural potential, and climate change.

**The Climate of High Altitude – Characteristics of Light, Temperature, and Weather at High Altitudes**

Climates of elevated areas need to be carefully considered in any agriculture system due to the departure of their characteristics from those of surrounding lowlands. However a wide range a definitions of what constitutes “high elevation” can make a simple summary of the influences difficult. One must consider whether elevation is absolute; meaning the highest places on earth that a given crop is grown, versus relative; meaning the highest locations a given crop is grown in a given region. In general the climates of higher altitudes can be characterized by a rather distinctive combination of temperature, radiation, wind and rainfall patterns, as well as a larger variability of climate, both spatial and temporal (at scales from days to seasons) compared with lowlands at the same latitude. In both absolute and relative relief cases, climate variables undergo systematic changes with elevation, most notably a decrease in temperature, however many aspects of climate change in complex ways with increases in elevation. It is often argued that the altitudinal belts parallel latitudinal climate variations, but this applies only as a first approximation, as changing slope, aspect and other effects can largely compensate or exacerbate the effect of altitude alone.

The main controlling factors for altitudinal variations in climate are differences in latitude, elevation, and exposure to the sun. From these influences the most common climatic results of higher elevations are those of decreased pressure, reduced oxygen availability (in the highest of zones), differential precipitation patterns, diurnal wind patterns, decreased temperature, and increased insolation; where the last two combine to produce a typical “hot sun and cold shade” condition. This presentation will examine the nature of climate with changes in elevation, paying attention to those characteristics which are important for quality winegrape production.