LIDAR-BASED ANALYSIS OF CINDER CONE MORPHOLOGY AT NEWBERRY VOLCANO, CENTRAL OREGON: STATUS REPORT ON PRELIMINARY STUDIES ASSOCIATED WITH THE IDES PROGRAM AT OREGON STATE UNIVERSITY

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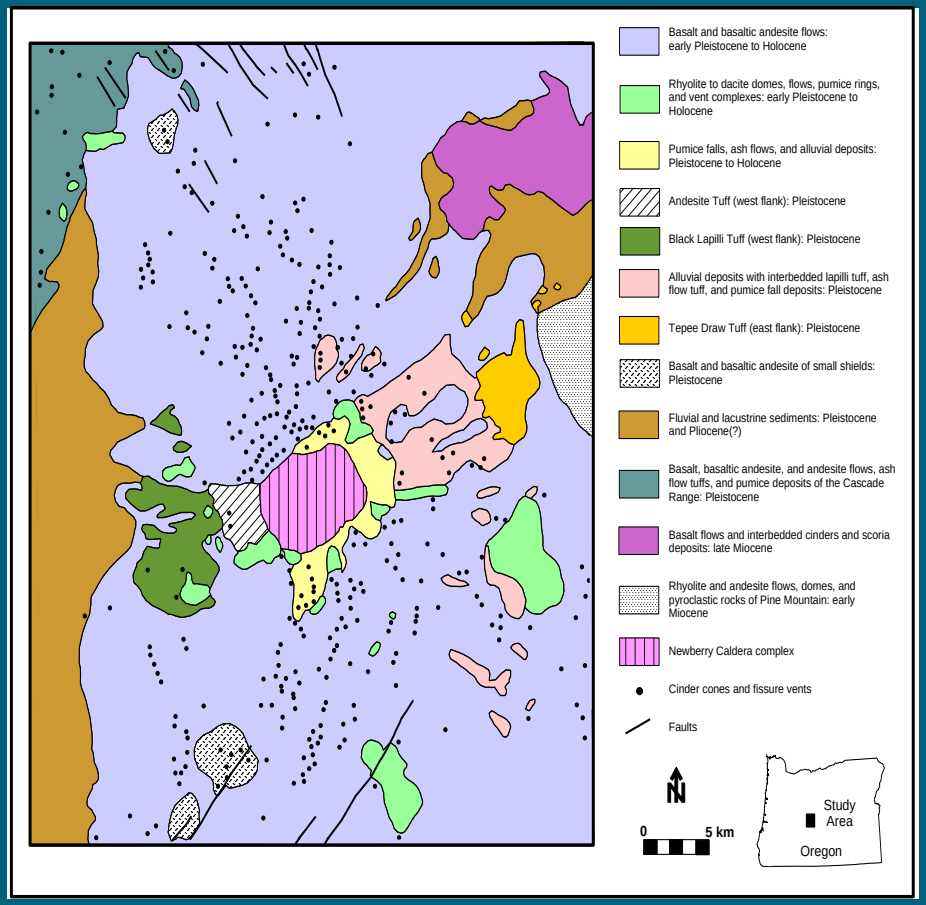
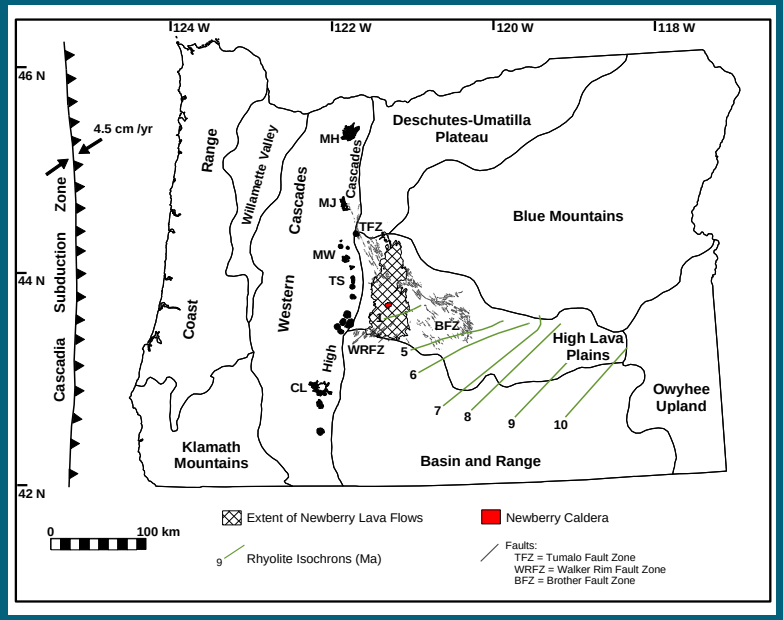
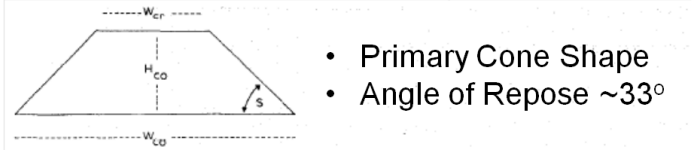




Generalized geologic map of Newberry Volcano (after Jensen and Chitwood, 2000) and generalized map of Oregon emphasizing the regional geologic and tectonic framework of Newberry Volcano.

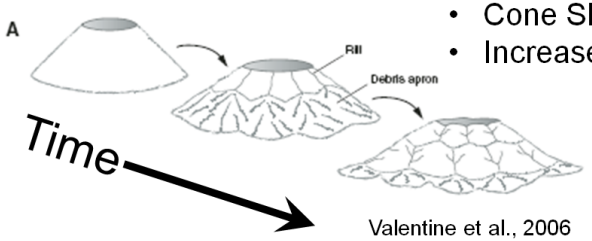
Cinder Cone Degradation and Apron Development Model



- Primary Cone Shape
- Angle of Repose ~33°

Fig. 1. Schematic diagram illustrating measured values for cinder cones: W_{cr} = crater diameter; W_{co} = cone basal diameter; H_{co} = cone height; S = average cone slope.

- Cone Height Decrease
- Cone Slope Decrease
- Increased Drainage Density



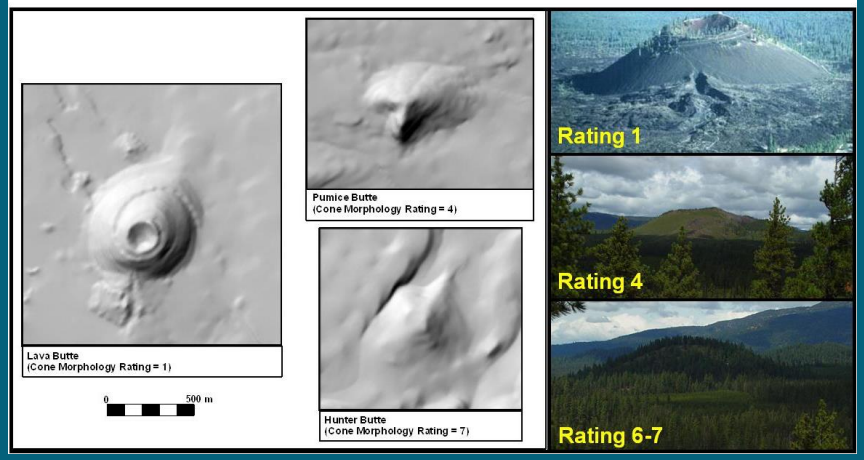
Valentine et al., 2006

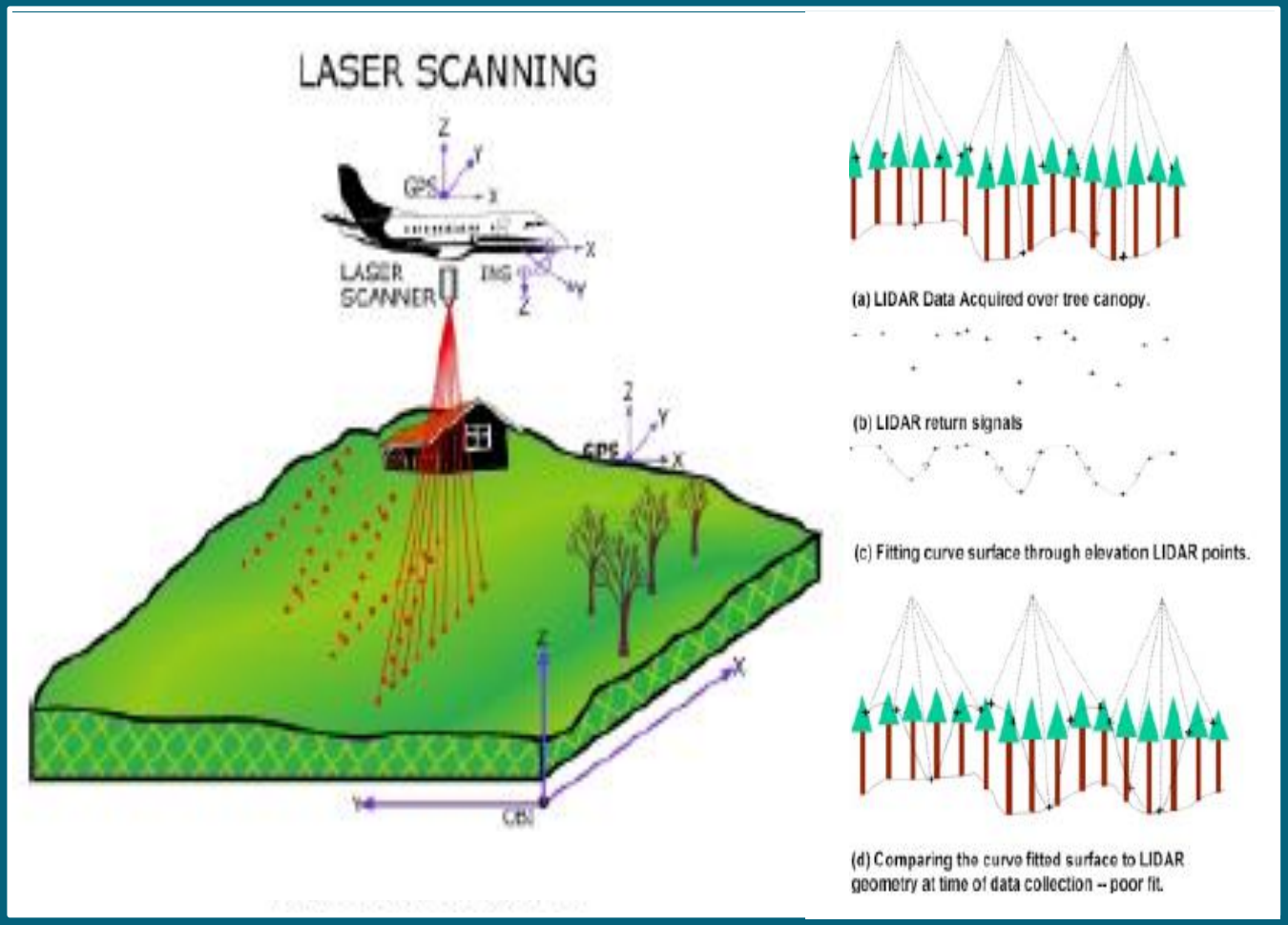
Cinder cone degradation and apron development model (Valentine et al., 2006).

10-m DEM relief maps for three select cinder cones at Newberry Volcano (after Taylor et al., 2007). Shaded relief maps were used to visually rank each cone in the data set according to qualitative appearance of shape, slope configuration, and vent morphologies (inset table).

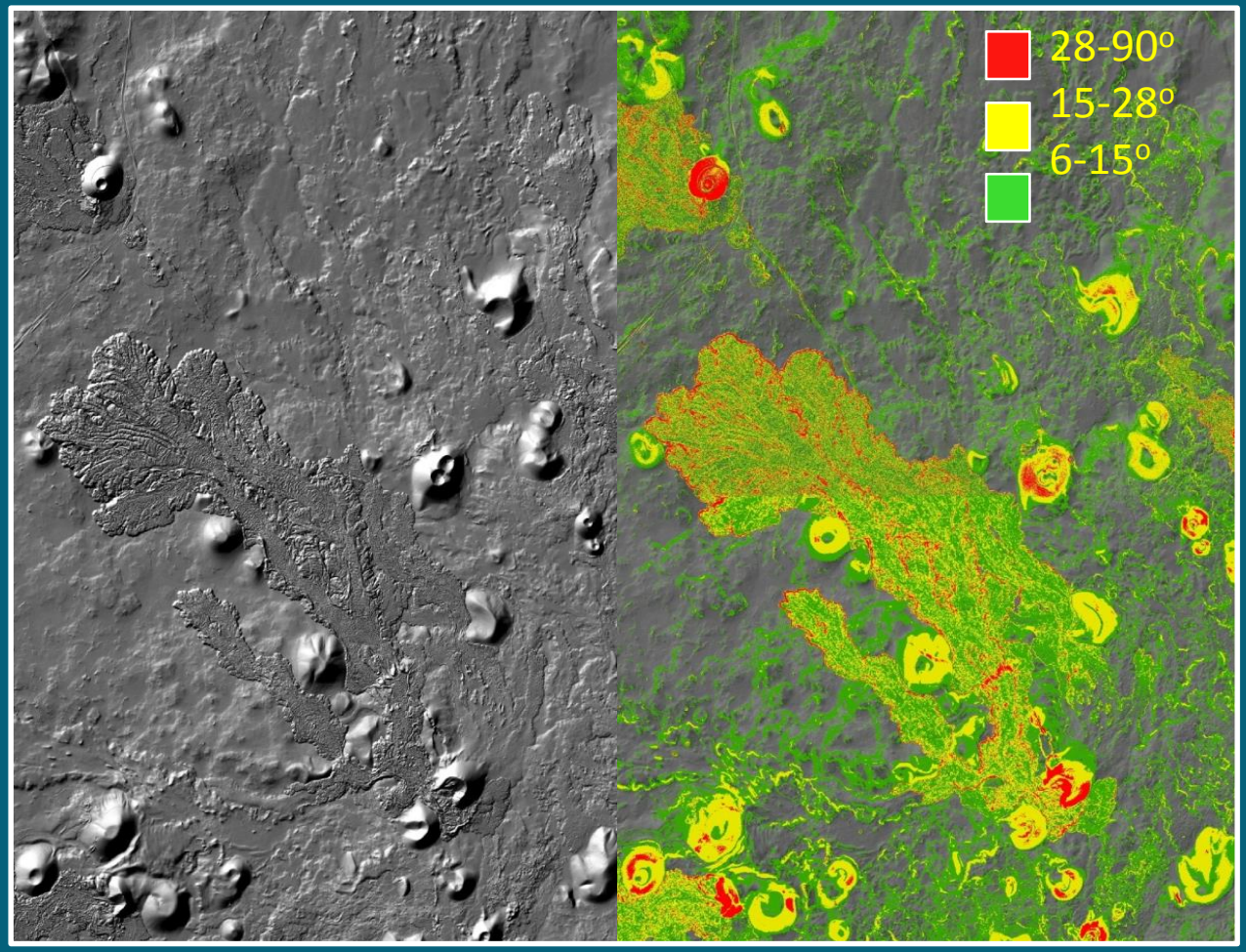
Table 1. Explanation of Qualitative Cone Morphology Rating

1	Good-Excellent	Cone shape with vent morphology
2	Good	Cone shape with less defined vent morphology
3	Moderate-Good	Cone shape, lacks well-defined vent morphology
4	Moderate	Cone shape, no vent
5	Moderate-Poor	Cone shape, poor definition
6	Poor	Lacks cone shape
7	Very Poor	Lacks cone shape, very poorly defined morphology





Diagrammatic illustration of LiDAR collection method (Burtch, 2002).



Digitized LiDAR hill-shade showing flow margin mapping technique (K. Dana, pers. comm., 2011).