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## SYNTHETIC-APERTURE RADAR IMAGERY AND DIGITAL SHADED-RELIEF MAP OF NORTHWEST NEBRASKA--PROBABLE STRUCTURES AND GEOMORPHIC FEATURES OF THE REGION

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SYNTHETIC-APERTURE RADAR IMAGERY AND DIGITAL SHADED-RELIEF MAP OF NORTHWEST  
NEBRASKA--PROBABLE STRUCTURES AND GEOMORPHIC FEATURES OF THE REGION

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In 1988 the U.S. Geological Survey published a radar image mosaic of an area roughly that of the Alliance, Nebraska 1° x 2° topographic map at the same scale, 1:250,000. Striking near-parallel valley trends in the vicinity of Chadron, Nebraska, may be related to jointing or possible faulting. Two sets, oriented approximately N30E and N28W, are obvious in the area east of Chadron. Sets south of Chadron on the Pine Ridge trend approximately N40E and N50W. On the Pine Ridge west of Fort Robinson in Sioux County some E-W and N-S features are also apparent. Other features that may be structurally related are prominent N20W and N30W drainages that cross Box Butte County and seem to continue into the Sand Hills affecting dune position. The

Toadstool Park (?Whalen) Fault shown by DeGraw (1971, Figure 5) also appears present on the image.

Geomorphic features that show up well on the image include stream drainages, different types of sand dunes, areas of gross inverted topography where major non-alluvial channels crossed parts of the area, and the obvious NW-SE topographic trends in the Pierre Hills north of the Pine Ridge, across the Pine Ridge and across parts of the Sand Hills. These latter trends are well depicted on the U.S. Geological Survey digital shaded relief portrayal of the conterminous United States (1991). What is more fascinating is that the depiction shows this grain across parts of the Great Plains in Montana, North and South Dakota, Nebraska, Kansas, and parts of states to the south. The "hanging valleys" between the North and South Platte rivers are some of these features formed in all probability by mainly eolian processes.