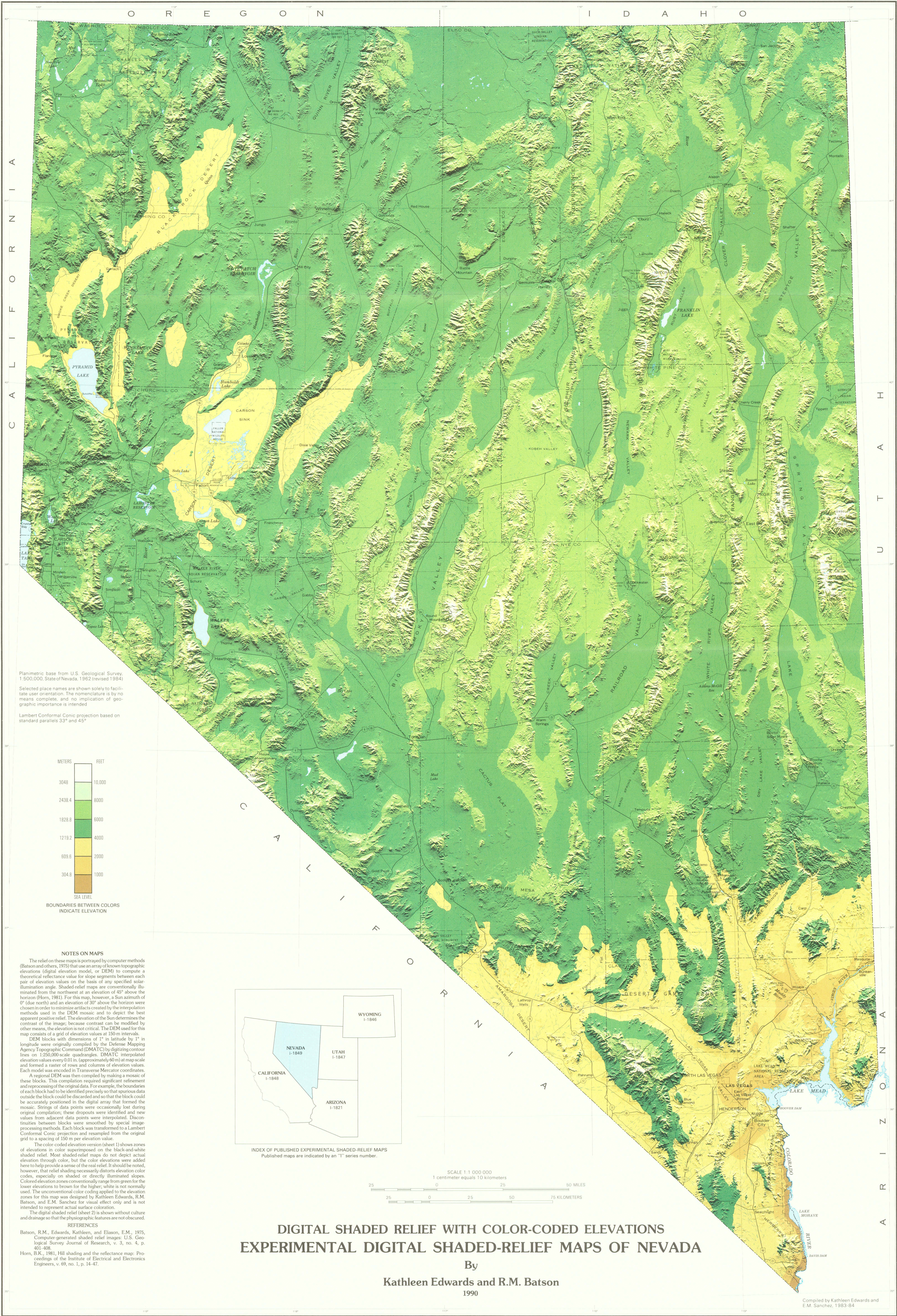
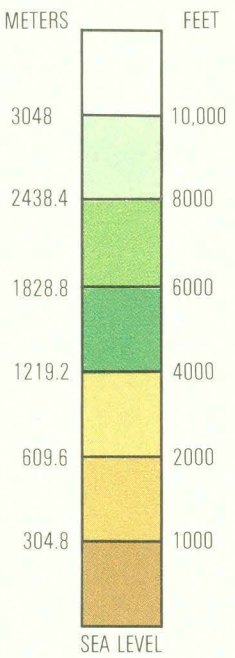




Planimetric base from U.S. Geological Survey,
1:500,000, State of Nevada, 1962 (revised 1984)

Selected place names are shown solely to facilitate
user orientation. The nomenclature is by no
means complete, and no implication of geo-
graphic importance is intended.

Lambert Conformal Conic projection based on
standard parallels 33° and 45°



BOUNDARIES BETWEEN COLORS
INDICATE ELEVATION

NOTES ON MAPS

The relief on these maps is portrayed by computer methods
(Batson and others, 1975) that use an array of known topographic
elevations (digital elevation model, or DEM) to compute a
theoretical reflectance value for slope segments between each
pair of elevation values on the basis of any specified solar
illumination angle. Shaded-relief maps are conventionally il-
luminated from the northwest at an elevation of 45° above the
horizon (Horn, 1981). For this map, however, a Sun azimuth of
0° (due north) and an elevation of 30° above the horizon were
chosen in order to minimize artifacts created by the interpolation
methods used in the DEM mosaic and to depict the best
apparent positive relief. The elevation of the Sun determines the
contrast of the image; because contrast can be modified by
other means, the elevation is not critical. The DEM used for this
map consists of a grid of elevation values at 150-m intervals.

DEM blocks with dimensions of 1° in latitude by 1° in
longitude were originally compiled by the Defense Mapping
Agency Topographic Command (DMATC) by digitizing contour
lines on 1:250,000-scale quadrangles. DMATC interpolated
elevation values every 0.01 in. (approximately 60 m) at map scale
and formed a raster of rows and columns of elevation values.
Each model was encoded in Transverse Mercator coordinates.

A regional DEM was then compiled by making a mosaic of
these blocks. This compilation required significant refinement
and reprocessing of the original data. For example, the boundaries
of each block had to be identified precisely so that spurious data
outside the block could be discarded and so that the block could
be accurately positioned in the digital array that formed the
mosaic. Strings of data points were occasionally lost during
original compilation; these dropouts were identified and new
values from adjacent data points were interpolated. Discon-
tinuities between blocks were smoothed by special image-
processing methods. Each block was transformed to a Lambert
Conformal Conic projection and resampled from the original
grid to a spacing of 150 m per elevation value.

The color-coded elevation version (sheet 1) shows zones
of elevations in color superimposed on the black-and-white
shaded relief. Most shaded-relief maps do not depict actual
elevation through color, but the color elevations were added
here to help provide a sense of the relief. It should be noted,
however, that relief shading necessarily distorts elevation color
codes, especially on shaded or directly illuminated slopes.
Colored elevation zones conventionally range from green for the
lower elevations to brown for the higher; white is not normally
used. The unconventional color coding applied to the elevation
zones for this map was designed by Kathleen Edwards, R.M.
Batson, and E.M. Sanchez for visual effect only and is not
intended to represent actual surface coloration.

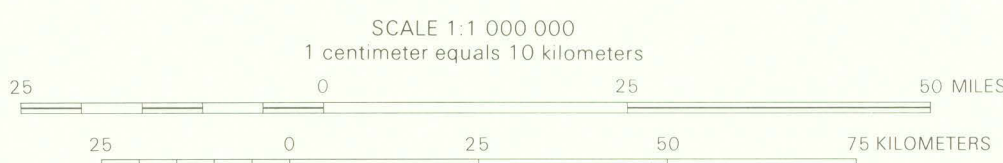
The digital shaded relief (sheet 2) is shown without culture
and drainage so that the physiographic features are not obscured.

REFERENCES

Batson, R.M., Edwards, Kathleen, and Eliason, E.M., 1975,
Computer-generated shaded relief images: U.S. Geo-
logical Survey Journal of Research, v. 3, no. 4, p.
401-408.
Horn, B.K., 1981, Hill shading and the reflectance map: Pro-
ceedings of the Institute of Electrical and Electronics
Engineers, v. 69, no. 1, p. 14-47.



INDEX OF PUBLISHED EXPERIMENTAL SHADED-RELIEF MAPS
Published maps are indicated by an "I" series number.



DIGITAL SHADED RELIEF WITH COLOR-CODED ELEVATIONS EXPERIMENTAL DIGITAL SHADED-RELIEF MAPS OF NEVADA

By
Kathleen Edwards and R.M. Batson
1990

Compiled by Kathleen Edwards and
E.M. Sanchez, 1983-84