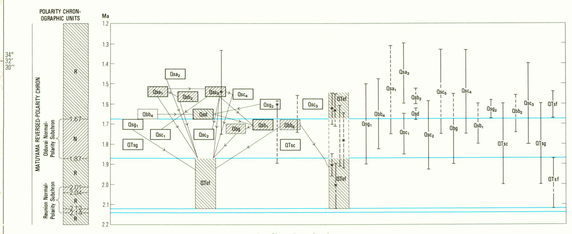
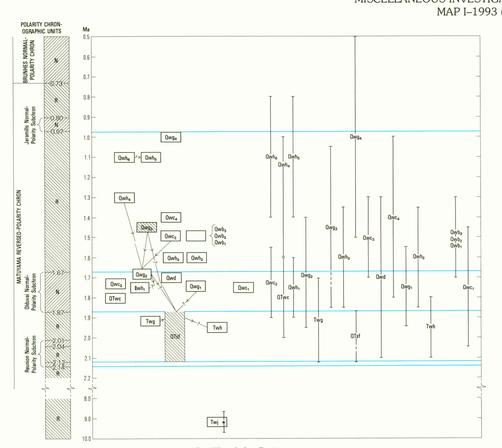
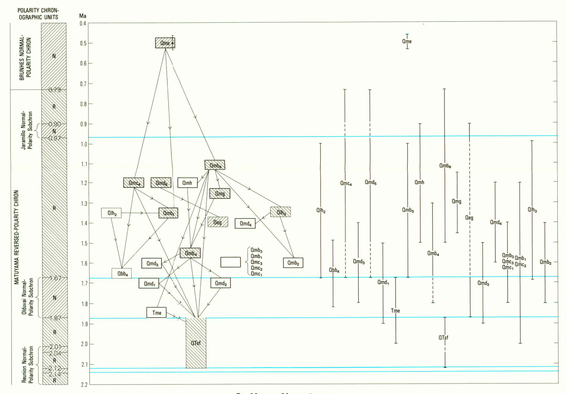


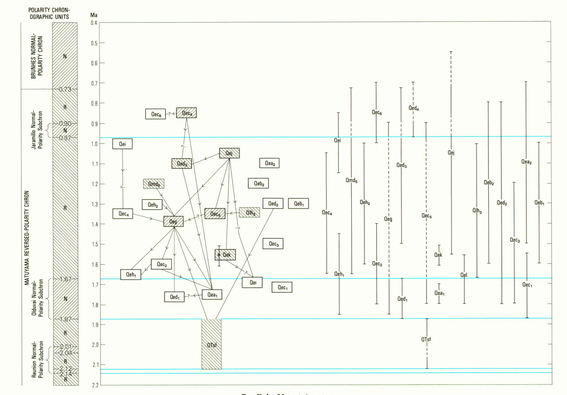
A. Show Low Creek area.



B. White Lakes Basin area.

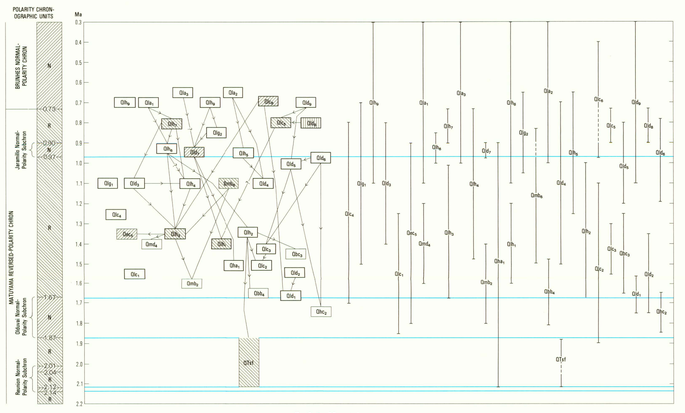


C. Morgan Mountain area.

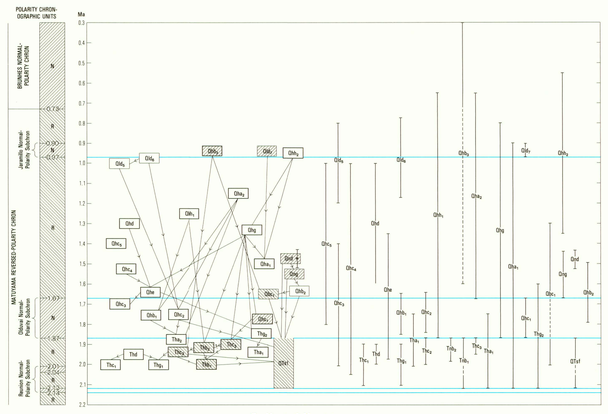


D. Ecks Mountain area.

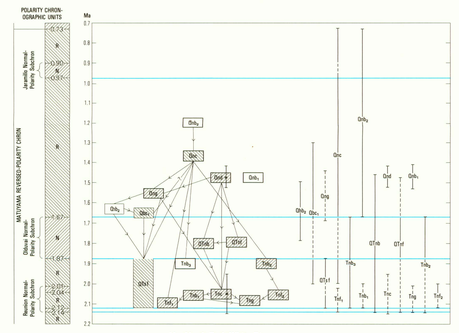
E. Blue Ridge Mountain area.



F. Lake Mountain area.



G. Haystack Mountain area.



H. North Fork White River area.

Figure 4. The complex stratigraphic relations of the volcanic flow units in each geographic area in the western part of the Springerville volcanic field, and the range in age of each flow unit.

The volcanic units are placed in a chronologic framework by combining basalt stratigraphy with K-Ar ages from Condit and Shafiqullah (1985) and the magnetopolarity of units as interpreted within the polarity-chronologic sequence of Mankinen and Dalrymple (1979). The parts of the figure display all information except geomorphology used to place these units chronologically; in addition, they show the estimated age limits for each unit. Ranges in age for units have been estimated by combining the above information with observations on flow and cinder cone morphology. The following seven conventions apply:

(1) The polarity-chronologic sequence (Mankinen and Dalrymple, 1979) between the present and 2.14 Ma is shown on the left side of each figure. The magnetopolarity of the Earth's field at any time period can be found on this scale. Ideally, a lava flow should preserve the polarity at its time of eruption, and can thus be placed in the time period of corresponding polarity (see convention 6).

(2) Boxes representing map units are placed in this chronologic framework on the left side of the figure. Vertical lines showing the probable range in time during which a unit may have been emplaced are shown on the right side of the diagram. The boxes are placed in the center of this interval. Dashed-line segments indicate an interval when deposition is not permitted by any combination of K-Ar, stratigraphic or magnetopolarity data (for example, unit Qnc on fig. 4*H*, a unit of reversed polarity, with upper and lower age limits that include periods of normal polarity).

(3) Light-lined boxes represent map units from an adjacent geographic area, included to completely represent stratigraphic relations within each area. The only exception is that of unit QTsf, which occurs in or adjacent to all geographic subdivisions (see convention 7).

(4) Stratigraphic relations are shown by lines connecting boxes; an arrow points from overlying to underlying units (see the description of volcanic units).

(5) K-Ar ages of dated units are shown on the left part of the diagram by an asterisk placed in the appropriate box. Length of the vertical line indicates the one-sigma error; dashed line indicates a period not permitted by stratigraphic or magnetic data.

(6) Line patterns indicate the magnetopolarity of a unit. Diagonal lines with a positive slope (up to the right) indicate normal polarity; lines with a negative slope (down to the right), negative polarity. One unit (Qlds), with transitional polarity, has a vertical line pattern. Some apparent mismatches between the magnetopolarity of a unit and its position in the polarity-chronologic sequence are due to insufficient data to assign the unit to a single continuous polarity-chronologic unit that matches its polarity. Further complications to placement of units within Mankinen and Dalrymple's polarity-chronologic scheme (1979) may result from an as yet unrecognized normal subchron suggested by Tauxe and others (1983) and Burbank and Khan Tahirkheli (1985) and supported by work in this field by Castro and others (1983) on unit Qnd and possibly unit Qsca, having K-Ar ages of 1.47±0.06 Ma and 1.53±0.21 Ma, respectively. Because this is as yet an unrecognized event, correlations have used the polarity-chronologic sequence of Mankinen and Dalrymple (1979); the result of including this event in the present correlation diagram would be to constrain more tightly the range in time during which a unit was emplaced.

(7) Composite unit QTsf is composed of at least two flow sheets, with ages separated by the Olduvai Normal-polarity Subchron (16 paleomagnetic sites on the unit all have reversed polarity). Field relations and K-Ar age on unit Qbby support this; in addition, in several locations where the two sheets can be distinguished, a 10-cm-thick soil zone separates them. Field relations also suggest that the top flow sheet is present only in the southwestern part of the Springerville volcanic field, hence the lower age of the unit is shown for correlation purposes on all parts of the figure except that for the Show Low Creek area (fig. 4*A*).

LITHOLOGIC MAP OF THE WESTERN PART OF THE SPRINGERVILLE VOLCANIC FIELD, EAST-CENTRAL ARIZONA

By
Christopher D. Condit

1991

Base from U.S. Geological Survey 1:24,000–scale quadrangles

Geology mapped 1978–83
Manuscript approved for publication, May 20, 1988

INTERIOR—GEOLOGICAL SURVEY, RESTON, VA—1991

SCALE 1:50 000

CONTOUR INTERVAL 10, 20 AND 40 FEET
DOTTED LINES REPRESENT 10 AND 20 FOOT CONTOURS
NATIONAL GEODETIC VERTICAL DATUM OF 1929

APPROXIMATE MEAN DECLINATION, 1991