September 21-23, 2001

University of Arizona

Lunar and Planetary Lab

Meteor Crater

and San Francisco Volcanic Field

Field Trip
Ptys 554 Fall Field Trip
21-23 September, 2001

APPROXIMATE ITINERARY

8:30 am, Friday, September 21--Depart LPL Loading Dock

   Drive West on Speedway to Oracle Road
9:30   Drive North, stop briefly at El Capitan slide, mile 153 on Rte 77, en route to Globe
       Drive through Tonto Basin and Payson, then toward Mormon Lake
3:30   Turn off at Tilton, Proceed West 9 mi to Stoneman Lake
4:00   Descend into Stoneman Lake collapse depression
6:00   Make camp on Anderson Mesa

7:30 AM Saturday, September 22--Break Camp

   Drive East ca. 30 mi on I-40 to Meteor crater turnoff
9:00 AM Arrive Meteor Crater, register at Visitor Center and walk from visitor platform to
       East part of crater rim. Return to vehicles, drive to South Rim to view shocked quartz
       outcrops.
1:00 PM lunch at ruined mine buildings.
1:30 Depart for San Francisco Volcanic Field and Merriam Crater
3:00 Arrive at Grand Falls of the Little Colorado
7:00 Camp near Government Knoll (milepost 230 on State rte 180, 2 mi East on Forest
       road 245, 1 mi south on 171)

8:00 AM Sunday, September 23--Break Camp

   Explore Government Cave lava tube
11:00 Arrive Sunset National Monument for tour of San Francisco volcanic field
       (State rte 89 North from Flagstaff)

   Stops (See Map): O’Leary Peak (Lunch)
                   Bonito aa lava flow
                   Drive through cinder field
                   Strawberry crater
                   SP Crater (if there is time)

3:30 PM Depart for Tucson via I-17 and I-10
8:00 PM Arrive Tucson, unload vehicles

=FINIS=

Tentative Drivers: Milazzo, Zavacky.
Fig. 1  Landforms of Arizona. A physiographic diagram of Arizona showing the relative positions of major structural-physiographic features. This style of illustrating features takes on more meaning when compared to the geologic map. Elevations are given in feet. Redrawn from Erwin Raisz, 1939.
Generalized section of S. Arizona Metamorphic Core Complex


Examples:
Santa Catalina Mts (Tucson)
Tonto Foothills
South Mountain (Phoenix)

on our route
Fig. 10.3 Picacho Mountains and cultivated surface of the Picacho Basin with diagrammatic representation of the rock sequence beneath the surface as determined by deep drilling—looking eastward.

Fig. 10.2 Diagrammatic representation of features associated with range and basin structural blocks and surface topographic expression.
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Generalized Geologic Map of Northeastern Arizona

Stratigraphic Position of Geologic Features

- Sunset Crater
- San Francisco Mountains
- Hopi Buttes
- Black Mesa
- Coal Mine Canyon
- Glen Canyon
- Vermilion Cliffs - Paria Canyon
- Painted Desert - Petrified Forest
- Site of Meteor Crater
- Monument Valley - Canyon De Chelly (E.)

Geology of Northern Arizona
Fig. 1—Sketch geologic map of Canyon Diablo region, Arizona.
GEOLOGIC MAP OF METEOR CRATER, ARIZONA
Fig. 6.3  Map showing the distribution of basaltic vents and of volcanoes of intermediate to silicic composition in the central and eastern parts of the San Francisco volcanic field.
GOVERNMENT CAVE

BEING EAST OF THE SAN FRANCISCO PEAKS; NORTH-EAST OF FLAGSTAFF, ARIZONA

ODOMETER 011.8

1st HART PRAIRE ENTRANCE

ODOMETER 000.0

FOREST ROUTE 125, THE TURN-OFF TO GOV'T CAVE, IS APPROX. 11.8 MILES FROM THE MUSEUM OF NORTHERN ARIZONA.

F.R. 171

245

DISTANCE?:

PROPRIETOR

GOOD CAMPING

These Distances were not recorded — fill in yer own!

RUBBED ROAD, MUDDY WHEN WET

A BACK ROAD ENTRANCE MAY BE AVAILABLE FROM HERE.

GOV'T CAVE ENTRANCE

STAY TO THE RIGHT AS YOU DESCEND INTO THE CAVE ENTRANCE. THERE IS MUCH ICE TO THE LEFT! IT IS APPROX. A 34 MILE WALK, TO THE END. COUNT ON ~20-30 MINUTES, ONE-WAY. ONE FORK, BUT THEY BOTH MEET. GO LEFT FOR HIGH CEILING, RIGHT FOR LOW CEILING, ~3'-3½' FEET.
Fig. 6.3 Map showing the distribution of basaltic vents and of volcanoes of intermediate to silicic composition in the central and eastern parts of the San Francisco volcanic field.
<table>
<thead>
<tr>
<th>Age</th>
<th>Feature</th>
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<tbody>
<tr>
<td>12 Myr</td>
<td>Hickey basalts on S. plateau edge</td>
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<tr>
<td>6 Myr</td>
<td>Basalts capping Switzer mesa, downtown Flagstaff</td>
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<tr>
<td>4-6 Myr</td>
<td>Oldest basalt flows on S. edge of SF volcanic field</td>
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<tr>
<td>2-3 Myr</td>
<td>Bulk of SF field basalt flows</td>
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<tr>
<td>2.8 Myr</td>
<td>N. Sugarloaf dacite and rhyolite flows</td>
</tr>
<tr>
<td>2.4 Myr</td>
<td>Black point flow</td>
</tr>
<tr>
<td>1-0.4 Myr</td>
<td>Main construction of SF peaks composite cone</td>
</tr>
<tr>
<td>0.5-0.6 Myr</td>
<td>Elden mountain dacites</td>
</tr>
<tr>
<td>0.5 Myr</td>
<td>Lowest basalt flows near Wupatki ruin</td>
</tr>
<tr>
<td>340,000 yr</td>
<td>Youngest flows near Merriam crater</td>
</tr>
<tr>
<td>245,000-175,000 yr</td>
<td>O'Leary peak silic flows</td>
</tr>
<tr>
<td>220,000 yr</td>
<td>Sugarloaf dacite dome</td>
</tr>
<tr>
<td>150,000 yr</td>
<td>Basalt flow dams Grand Falls</td>
</tr>
<tr>
<td>70,000</td>
<td>SP crater block lava flows</td>
</tr>
<tr>
<td>50,000</td>
<td>Strawberry Crater flows</td>
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<tr>
<td>1,065 AD</td>
<td>First ash falls, Sunset Crater. Sinagua pit houses crushed</td>
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<tr>
<td>1,250 AD</td>
<td>Bonito flow, end of Sunset Crater activity</td>
</tr>
<tr>
<td>2001+ AD</td>
<td>???</td>
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</tbody>
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