

MESOZOIC-CENOZOIC STRUCTURAL HISTORY OF CENTRAL UTAH  
WITH EMPHASIS ON THE SANPETE VALLEY AREA

James W. Collinson

ABSTRACT

The rocks of central Utah, particularly in the Gunnison Plateau, Sanpete Valley, and the Wasatch Plateau, recorded the complex orogenic and post-orogenic history of the Sevier belt and foredeep. During the Late Cretaceous as much as 4,000 m of coarse terrigenous foredeep sediment accumulated. Evidence of early Sevier thrusting is present near the base of the Cretaceous sequence at the south end of the Gunnison Plateau where coarse-boulder conglomerates suggest a proximal allochthonous source of Upper Precambrian-Cambrian quartzite and Paleozoic limestone. At least two episodes of Late Sevier folding affected foredeep sediments, producing the Gunnison Plateau syncline and the Sanpete Valley anticline. Erosion and deposition penecontemporaneous with folding resulted in two angular unconformities within the sedimentary sequence. Folds die out abruptly under the west margin of the Wasatch Plateau east of which a virtually complete record of Late Cretaceous nonmarine, coastal, and marine sedimentation is preserved.

During post-orogenic Cenozoic time, Laramide uplifts east of the Sevier belt blocked and modified earlier easterly drainage patterns, superimposing a new set of fluvial-lacustrine basins on Sevier structural elements. The Sanpete Valley anticline continued to be uplifted and it remained a topographic high as shown by angular unconformities along its flanks and by facies onlap of Paleocene-Eocene sediments. The predominantly vertical uplift of the anticline could have been caused by linear diapirism of Jurassic evaporitic shale that was concentrated along the core of the anticline by Sevier folding. Present physiographic features developed during the middle to late Cenozoic with the formation and faulting of the Wasatch monocline and the subsequent uplift of the Wasatch Plateau. Uplift of the Gunnison Plateau occurred along the

Gunnison fault, a major basin and range structure along the west side of Sanpete Valley. Recent activity along this fault is demonstrated by uplifted pediments, a displaced alluvial fan, and deformed Quaternary river gravels.