

**TECTONIC MAP**  
OF THE  
MID-CONTINENT REGION  
MODIFIED FROM  
TECTONIC MAP OF THE UNITED STATES  
U.S.G.S., A.A.P.G.  
1942

This map shows the location of the major uplifts, downwarps, fault zones, and tectonic belts in the Arkansas, Kansas, Missouri, and Oklahoma region. Adjustments in the earth's crust at different geological times since the Cambrian have resulted in the deformation of the rocks of the Mid-Continent Region. The time and magnitude of the deformation differed from place to place. In some areas the rocks were greatly uplifted or depressed, and in other places the rocks were severely compressed, folded, and faulted. Areas of maximum uplift are colored light green and areas of maximum downwarp dark green. Two intermediate shades of green represent regions of less intense uplift and downwarp.

This map was modified from the Tectonic Map of the United States published by the United States Geological Survey and The American Association of Petroleum Geologists (1942).

**GEOLOGICAL HISTORY**

The geological history of this area is shown below in summary form. As viewed from left to right, the sequence of small maps pictures the changes as they took place, from ancient to recent times.

For each historically important epoch (the time equivalent of a rock series) there is shown by individual small maps (1) the areas of uplift and subsidence, (2) the areas of erosion and deposition, (3) the areas of igneous activity, and (4) the areas of igneous activity. Only two epochs are represented in this summary: the Permian and the Triassic. It has been necessary because of space limitations to combine the Permian and the Missouri and Virgilian in the Permian, and the Leonardian and the Gadsdenian in the Permian.

The magnitudes of subsidence, uplift, and deposition are indicated by the size of the symbol. The larger the symbol, the greater the magnitude of the event portrayed. The precise meaning of each symbol and an explanation of the color scheme are in the legend.

The uppermost sequence of maps shows the areas of subsidence and uplift from the Cambrian to the Tertiary (Eocene) on the right. The larger blue and red dots indicate areas of greater subsidence and uplift, respectively. The red crosses represent areas of mountain-building activity. A series of related mountain-building events in a particular area, or during a particular interval of time, is referred to as an orogeny. These involve substantial folding and faulting of the rock layers, such as are found in the Ouachita, Arkoside, and Wichita Mountains. In other areas uplift may consist only of a gentle doming with moderate tilting of the strata. An example of this is the Ozark uplift. The precise meaning of each symbol and an explanation of the color scheme are in the legend.

The middle sequence of maps shows areas undergoing erosion, and areas covered by the sea; thus they depict sites of deposition. Areas of erosion are outlined by black crosses. The kind of sedimentary material deposited is shown by color: blue for lime, green for sand, red for mud, and black for evaporites (salt, gypsum, and anhydrite). The lowermost sequence of maps shows the age and kind of igneous activity (intrusive or extrusive), and the types of igneous rock (acidic or basic). Maps are included only for those epochs during which igneous activity occurred.

The three sequences of maps show the progressive changes in land-sea relationships. The linear

**PHYSIOGRAPHIC MAP**  
OF THE  
MID-CONTINENT REGION  
MODIFIED FROM  
LANDFORMS OF THE UNITED STATES  
BY ERWIN HAISE  
1957



**PHYSIOGRAPHIC MAP**

This map shows the configuration and distribution of the major landforms in Arkansas, Kansas, Missouri, and Oklahoma. Geological processes and rock characteristics combine to produce rolling hills and mountains, grasses and plateaus, hogbacks and cuestas.

Landforms of the Mid-Continent Region are related fundamentally to uplifts and depressions of the earth's crust developed initially during the Paleozoic Era. Water, ice, and wind are the principal erosional agents that produced the present-day surface irregularities. The type, composition, and texture of the rocks, and the local structure and sequence of the rock layers, are important controlling factors.

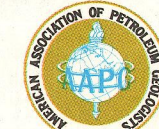
The earth's surface is changing continuously. New landforms evolve by alteration and gradual destruction of pre-existing forms and by the accumulation of freshly eroded rock materials.

The physiographic map supplements the other illustrations by showing the names of many surface features, by delineating areas of differential erosion, and by showing regional elevations. The other illustrations supply important information which helps to explain the geological origin of the prominent landforms. The relation of landforms in this area to landforms in adjacent states can be obtained from "Landforms of the United States" by Erwin Haize (1957).

**1966**  
**GEOLOGICAL HIGHWAY MAP**  
**MID-CONTINENT REGION**  
Kansas-Missouri  
Oklahoma-Arkansas

Compiled by  
Geological Highway Map Committee  
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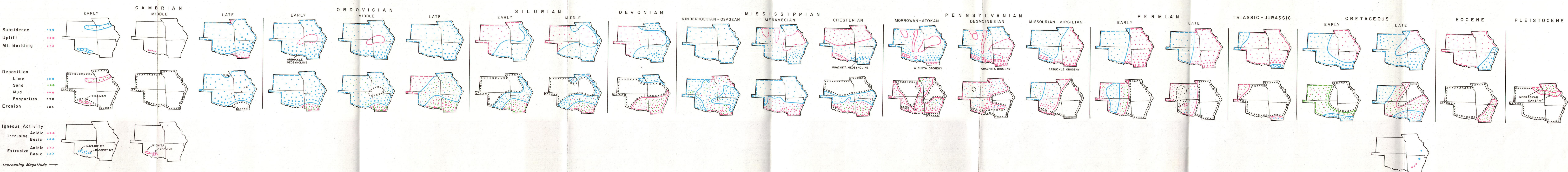
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**Sources of Geological Information of the MID-CONTINENT REGION**

- Primary Sources:**
- United States Geological Survey, Washington, D. C. 20240
  - Erwin Haize, 107 Washington Avenue, Cambridge, Massachusetts 02140
  - The American Association of Petroleum Geologists, P. O. Box 979, Tulsa, Oklahoma 74101
  - The Geological Society of America, 419 West 117th St., New York, N. Y. 10027
  - Arkansas Geological Survey, State Capitol, Little Rock, Arkansas 72201
  - Kansas Geological Survey, The University of Kansas, Lawrence, Kansas 66045
  - Missouri Geological Survey, Bull. Missouri 85401
  - Oklahoma Geological Survey, The University of Oklahoma, Norman, Oklahoma 73069
- Other Sources:**
- Geology departments of colleges and universities
  - Geological Societies:
    - Arkansas Geological Society, Box 1552, Ardmore, Oklahoma 73401
    - Kansas Geological Society, 501 East Marwood, Wichita, Kansas 67214
    - Liberal Geological Society, Box 402, Liberal, Kansas 67801
    - Oklahoma City Geological Society, Box 409, Oklahoma City, Oklahoma 73101
    - Tulsa Geological Society, 401 Orpheum Building, Tulsa, Oklahoma 74103
- Special Acknowledgments:**
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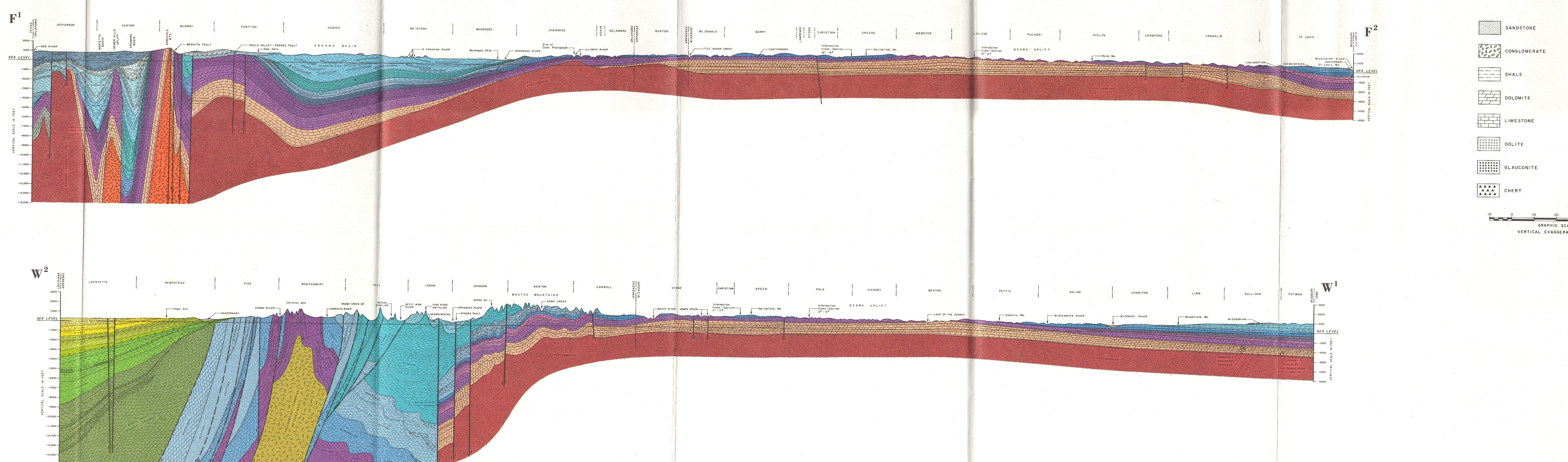
**CROSS SECTIONS**

The three cross sections illustrate the subsurface geology of the Mid-Continent Region. The locations of the three lines of section are shown by lines F-F', C-C', and W-W' on the Tectonic Map. These are regional segments of a nationwide cross-section network prepared for the map series.

The cross sections show (1) the surface configuration, (2) the relation of the underlying rocks to the surface profile, (3) the age, nature, attitude, thickness, distribution, and sequence of the rock layers, and (4) the location, nature, and magnitude of the structural elements. The names, colors, and lithologic symbols are the same as those used in the Geological Highway Map and the Generalized Chart of Time and Rock Units.

The surface profile was constructed from 1:250,000-scale topographic maps (United States Geological Survey). The basement profile was constructed from the Basement Map of the United States (The American Association of Petroleum Geologists and the United States Geological Survey).

The cross sections were compiled from publications of the State Geological Surveys of, and geological societies in, Arkansas, Kansas, Missouri, and Oklahoma; and other published sources.



- SANDSTONE
- CONGLOMERATE
- SHALE
- DOLOMITE
- LIMESTONE
- OLITE
- SLAUGONITE
- CHERT
- ANHYDRITE
- SALT
- PHYLLITE
- METASANDSTONE
- SLATE
- UNCONFORMITY
- NORMAL FAULT
- THRUST FAULT

GRAPHIC SCALE  
VERTICAL SCALE 1" = 1000'

**MID-CONTINENT REGION**  
**Geological Highway Map**  
KANSAS - MISSOURI  
OKLAHOMA - ARKANSAS

UNIVERSITY OF UTAH  
RESEARCH INSTITUTE  
EARTH & SPACE SCIENCES LAB.  
UT-686

1966