

ATLAS 3.0

SOFTWARE TOOLS FOR VISUALIZATION
AND EDITING OF GAS & OIL FIELD DATA

MICHIGAN TECHNOLOGICAL UNIVERSITY

ANALYSIS OF LINEATIONS AND FRACTURES IN THE MICHIGAN BASIN USING VINTAGE DATA

The Michigan Basin is a shallow intracratonic basin encompassing nearly the entire lower Michigan Peninsula. Much of the oil and gas in the basin is produced from fractured Paleozoic limestones. The basement underlying the Paleozoic sediments consists of an array of fault bounded blocks which influenced the structural and depositional patterns throughout the Paleozoic and into the present. The goal of this project is to characterize fractures in gas and oil reservoirs in carbonate rocks on a variety of scales using existing data. The Michigan Basin has been selected as the prototype carbonate basin and a software package, ATLAS 3.0, is a GIS package developed as part of the project to facilitate the analysis of fracture patterns and lineations. The purpose of this program is to aid in the conversion of data from paper copy to digital form. It also serves to organize scanned (raster) images of paper files, such as driller's reports, scout tickets, etc.. The software displays the data visually on a map that allows the user to select wells simply by pointing or outlining on the screen. This package is built around an ACCESS database and uses standard TIF images organized into ordinary DOS subdirectories. Examples are provided for the Michigan Basin, but the program is designed to adapt to any geographic locality.

In Michigan abundant data on field-scale fractures are available in paper copy, chiefly driller's reports and scout tickets. ATLAS 3.0 allows a user to view scanned images of paper copies at the same time a digital database is displayed. Changes can be made to the database directly from the image of the paper copy displayed on the screen and then output as digital files for use in other programs. The user can either edit an existing database containing well locations in longitude-latitude coordinates, or he can start a new database from scratch using the program to pop up the scanned images on demand. Wells can be color coded on the map display; blue for driller's report, red for scout ticket. ATLAS is written for MS Windows in Visual Basic using the ESRI GIS engine, MapObjects. It will display files available from various federal agencies for state and county boundaries, hydrography, roads, streams, streets and towns, cities and postal zip districts.

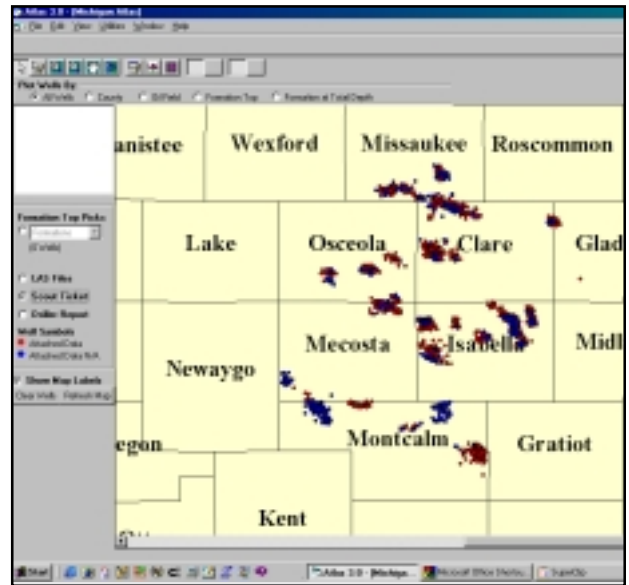


Fig 1. Screen shot of ATLAS 3.0 introductory form showing counties and well locations in the Michigan Basin. Wells are color coded to indicate availability of ancillary data such as scout tickets.

DOE AWARD NUMBER: DE-AC26-98BC15100

Project: Characterization of Fractures in Michigan Basin

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Atlas 3.0 comes with a limited Michigan dataset and can be obtained from:

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