

## ABSTRACT

### A GEOGRAPHIC INFORMATION SYSTEM FOR THE PINACATE VOLCANIC FIELD OF SONORA, MEXICO AND EXAMPLES OF SOME APPLICATIONS

GIS was used to develop an electronic model of the volcanic field and to integrate key datasets. The system was tested for its capability to produce derivative geologic maps. The GIS was used to query and analyze the data sets to address the question of the development of the field with regards to time and space. The GIS was used to analyze and highlight some aspects of the petrography and geochemistry.

Analysis of GIS data provided insight into the sequential development of the Pinacate Volcanic Field. Volcanic activity began along the western margin of the field and progressed to the east and southeast. The PVF GIS provides the scientific community with a common database and an analysis system for an area of great scientific interest. The Pinacate Volcanic Field GIS is a powerful, flexible, and extensible tool that can benefit earth scientists and others from a wide range of disciplines.

Alan Gaar Kunze  
May 2006