

PETROLEUM EXPLORATION IN SUBANDEAN BASINS
“Knowledge Integration - The key to success”

Basement map of the Venezuela Eastern Basin from gravity and magnetic inversion

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We present the basement map of the Venezuela Eastern Basin, at 1:500.000 scale, located between the coordinates 61° to 66° west longitude, and between 8° and 11° north latitude. The gravity anomalies are from Venezuela gravity anomalies database processed from satellite, aerial and marine surveys; whereas the magnetic anomalies are from geopotential combined models.

This map was obtained by gravity/magnetic inversion methods: Radial power spectrum, Euler deconvolution, Werner deconvolution; and gravity/magnetic modeling. The depth solutions obtained by applying these techniques, has been associated with the location and depth of sources that cause the anomalies, in this case, with the top of crystalline basement and geological structures involving the basement.

Exploration wells data and structurally interpreted seismic sections previously in the area, were used to validate the results. Synthetic anomalies of gravity and magnetism were generated with the aim of comparing the observed with the theoretical response, thus allowing a best fit of the three-dimensional model. The obtained results allow the interpretation of geological structures involving the crystalline basement, as well as proposing new prospective areas.