

IMPORTANT CONTRIBUTIONS IN GEOSCIENCES PROMISE TO REVOLUTIONIZE O&G&M EXPLORATION. No 1/6.

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Complex Source Theory (Edinson Alvarez 2025): A mechanism used by interdisciplinary groups of specialists in any field of science, where new concepts, new methodologies, new technology, and new knowledge are employed, obtaining new results, in order to resolve complex issues.. (Image Courtesy of Pixabay).

INTRODUCTION

The Sinú San Jacinto SSJJ basin and the lower Magdalena Valley Basin, according to C-R Posada Saldarriaga et al. 2024, offer significant hydrocarbon prospectivity potential estimated for VIM at 3.18 tcf for Gas and 0.731 tcf Wet Gas, and a lower value than this range is estimated for SSJJ. According to ANH 2022, the values for Oil are 2,165 and 4,922 Mmboe respectively. Different studies by ANH 2012 and Explorasur 2012, among others, report important surface sources of crude oil and gas, in addition to the existence of important O&G fields in the area.

METODOLOGY

These graphs show the prospective corridors of interest (buffer) published by the National Hydrocarbons Agency (ANH 2022) (gray, red, and purple areas in the graph) around the main producing fields.

This work uses innovative tools from Complex Source Theory (Edinson Alvarez 2025 Definition) to extend the prospective corridors proposed by the ANH 2022 (Figure 1).

In addition to traditional tools such as: Seismic interpretation, structural geology, geochemistry, stratigraphy, well information, reservoir information, flow lines, plays, and others..

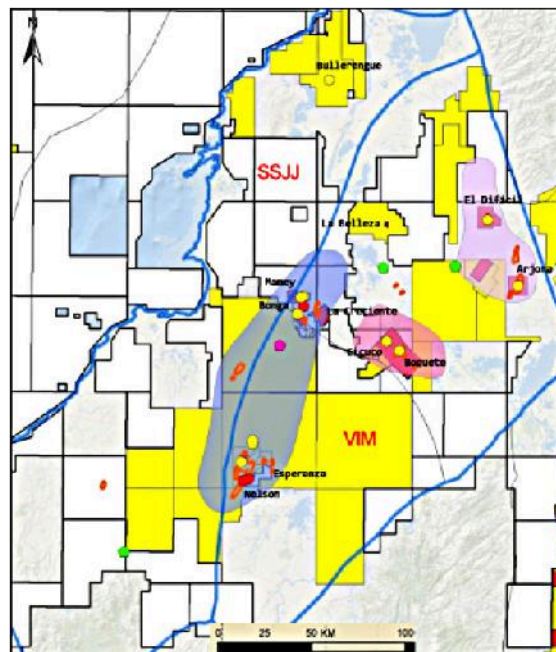


Figure 1. ANH 2022 prospective corridors, for the Sinú San Jacinto SSJJ and lower Magdalena Valley VIM basins.

RESULTS

All this information has been integrated, allowing us to determine or establish the prospective corridor in dark yellow. This work was submitted to Ecopetrol in July 2022. (Figure 2).

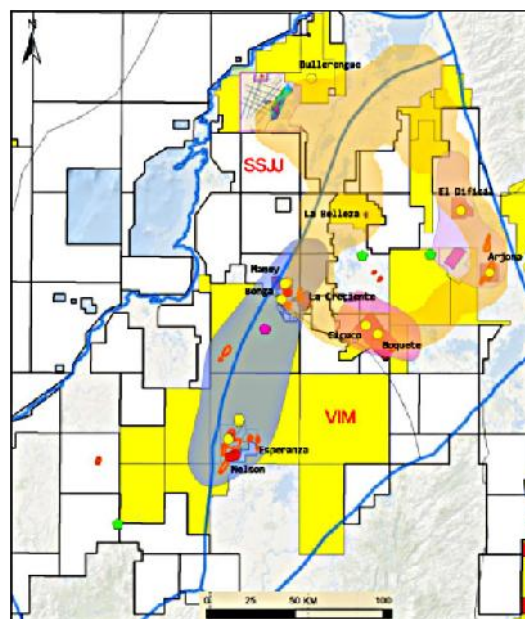


Figure 2. New prospective corridor proposed by the author, submitted to Ecopetrol in July 2022. Versus prospective corridors ANH 2022 for the Sinú San Jacinto SSJJ and Lower Magdalena Valley VIM basins. (Northern sector, Southern sector in the full report).

The good news came in 2023, when Canacol Energy reported the discovery of hydrocarbons in the DiviDivi1 well in January 2023 in the VIM basin, just within the new dark yellow predictive prospecting corridor, six months after it was presented to Ecopetrol. (Figure 3).

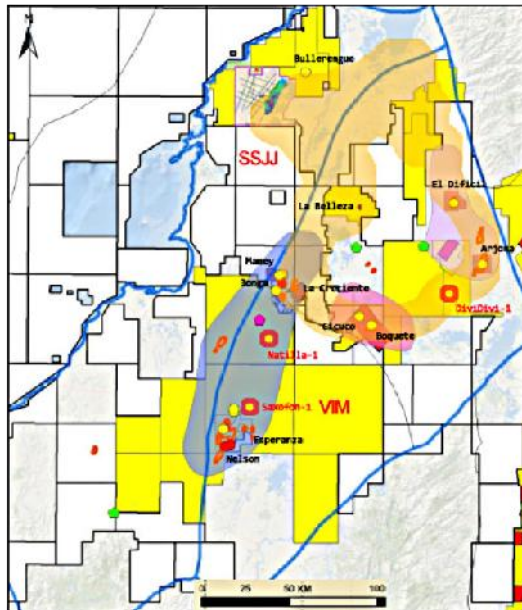


Figure 3. Canacol Energy announces the discovery of hydrocarbons in the DiviDivi1 well, within the proposed Dark Yellow prospect corridor in the VIM basin. Six months after the predictive model was presented.

Then, in December 2023, Lewis Energy-Hocol reported a new hydrocarbon discovery in the Bullerengue Oeste5 well in the Sinu Sanjacinto Basin, on the edge of the proposed new predictive prospect corridor (dark yellow). This is 17 months after the model was submitted (Figure 4).

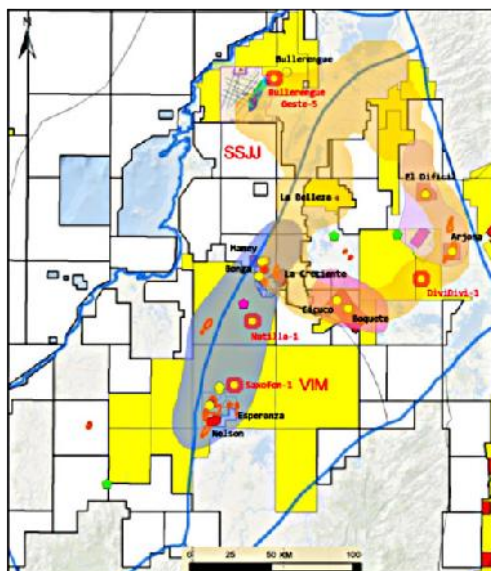


Figure 4. Lewis Energy-Hocol announces the discovery of a new hydrocarbon well, the Bullerengue Oeste5, within the Dark Yellow prospect proposed by the Author. In the

Sinu San Jacinto SSJ basin. Seventeen months after the predictive model was presented.

These two hydrocarbon discoveries, made in 2023, after the predictive model was submitted to Ecopetrol in July 2022, demonstrate the effectiveness of the model with proven results.

The above discoveries are outside the area of interest proposed by ANH 2022 (gray, red, and purple areas), Figure 5. However, they are within the range of the predictive model proposed by Author 2022 (dark yellow area in Figure 4).

This also demonstrates a positive result in terms of the scope, value, and contribution of the Complex Source Theory (EA2025) tools. In this case, to expand hydrocarbon prospectivity corridors in these basins, Also points out other positive results obtained with this new tool.

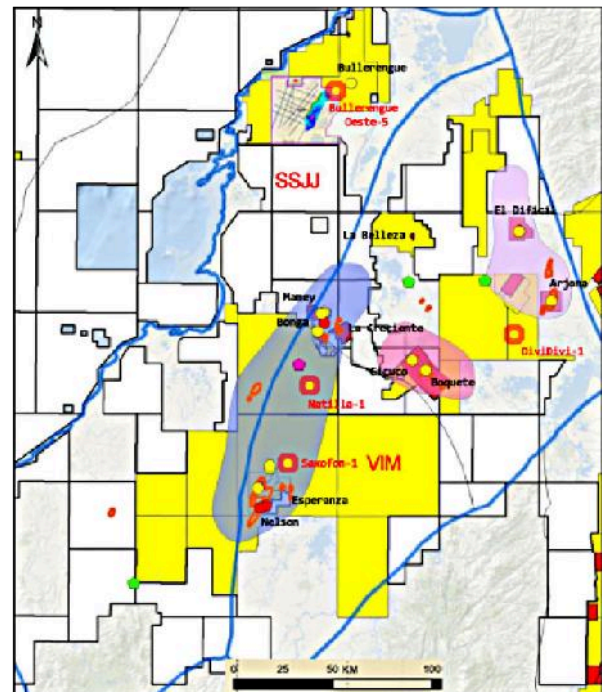


Figure 5. New discoveries by the companies Canacol Energy and Lewis Energy –Hocol, are located outside the ANH 2022 prospective corridors, for the Sinu San Jacinto SSJ and lower Magdalena Valley VIM basins.

DISCUSSION

It is important to highlight that the predictive model presented here requires rigorous analysis to identify the best prospects and exploration opportunities in order to obtain the best possible results. The structural aspect plays a very important role, which, according to various authors, is complex for the Sinu San Jacinto SSJ basin and somewhat less complex for the VIM lower Magdalena Valley. Added to this is the difficulty in obtaining seismic

images with good quality information. This latter aspect has also been overcome with SCT.

A more detailed analysis and solution to problems of high structural complexity can be consulted with the author of this article.

CONCLUSION

The above discoveries and/or results strengthen and help confirm the predictive model of a prospective corridor presented by Dr. Edinson Alvarez, a geologist specializing in exploration, Oil, gas and mining. This model, in addition to other results, will be included in a new release. Validating his Complex Source Theory,

It has deserved him recognition for his contributions to geoscientific knowledge in Colombia from the Institute of Stratigraphic Research (IIES) of the University of Caldas, PhD Andrés Pardo, Director; from the Master of Earth Sciences program at the University of Caldas, MSc Arley Gomez, Director; and from Clemencia Gómez, PhD, Professor of the Geosciences Department at the National University of Colombia.

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The God's grace guide us to develop the "Complex Source Theory", a new mechanism that allow us increasing traditional O&G&M discoveries, production, reserves, as new energies and CCUS.

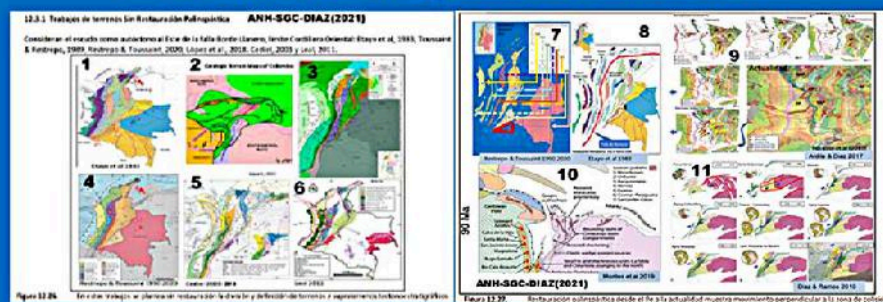
Geological mapping, surveys design, processor PSTM (Conv-3C-4C-TZ-OBC), geomodeller, seismic interpreter and reservoir characterization (Conventional-and-Unconventional Reservoirs). Stratigraphic sequence, seismic attributes, AVO analysis, fluids substitution, seismic inversion, risk and uncertainty, leads and prospects, reserves.

Discovery of New prospective corridors and O&G prospects, in Foothills, Llanos, Putumayo, VIM, VMM, GuajiraOff-Guajira, SSJJ, Colombia basin.

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**God's grace allows us to solve mystery
that has lasted more than 60 - 90 years.**

11 proposed models,
fail to answer all the questions that still exist.



Complex Source Theory will generate a revolution,
a radical transformation of the mining and energy industry,
giving different solutions for increase O&G&M discoveries,
reserves and production, in complex and normal areas.

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