



# AREAS ADVERTISEMENT 2022

**Assessment of Gas Prospectivity in Onshore Basins**

March 11<sup>th</sup>, 2022

## ASSESSMENT OF GAS PROSPECTIVITY IN COLOMBIA ONSHORE BASINS WITH HYDROCARBON COMMERCIAL PRODUCTION



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Carlos Julio Rodriguez  
Rest in peace

Passed away February  
11th, 2022

## ASSESSMENT OF GAS PROSPECTIVITY IN COLOMBIA ONSHORE BASINS WITH HYDROCARBON COMMERCIAL PRODUCTION

### Presentation outline

- 08:00 - 08:10 Introduction: **C. Escobar**
- 08:10 - 08:30 Regional Geological Setting & Reservoir Framework: **C. Escobar**
- 08:30 - 08:55 Petroleum system modeling, Play Fairway analysis, YTF: **C. Mora**
- 08:55 - 09:00 Wrap up . **C. Escobar**

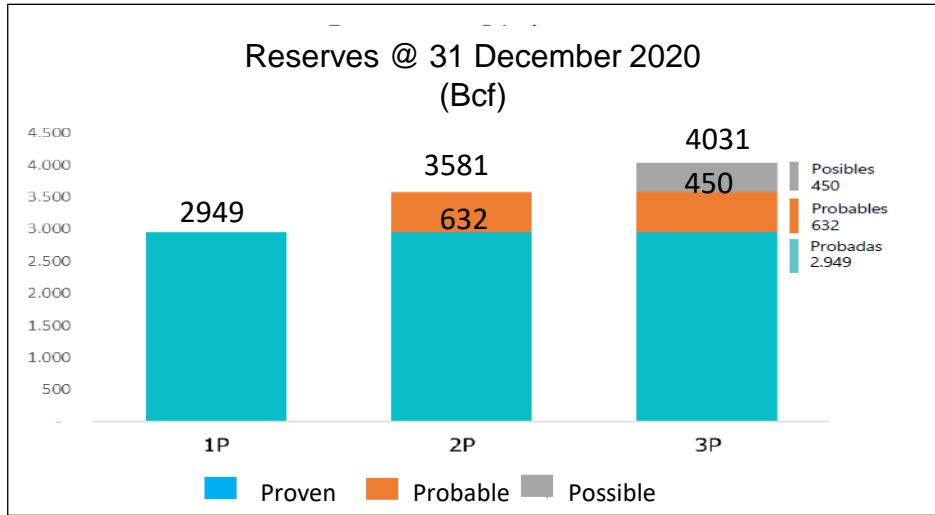
“Value Chain, Legal framework and Geopolitics of the Natural Gas Business in Colombia” -  
April 8<sup>th</sup>, 2022

“This fuel (Natural Gas) is **an essential service** for the country, not only because eight out of ten homes use it daily, but also because it contributes to protecting the environment. It is also considered the fuel of the energy transition” (Diego Mesa – Minister of Mines and Energy - Colombia, 2022)



# Current Natural Gas Reserves

## Reserves @ 31 December 2020

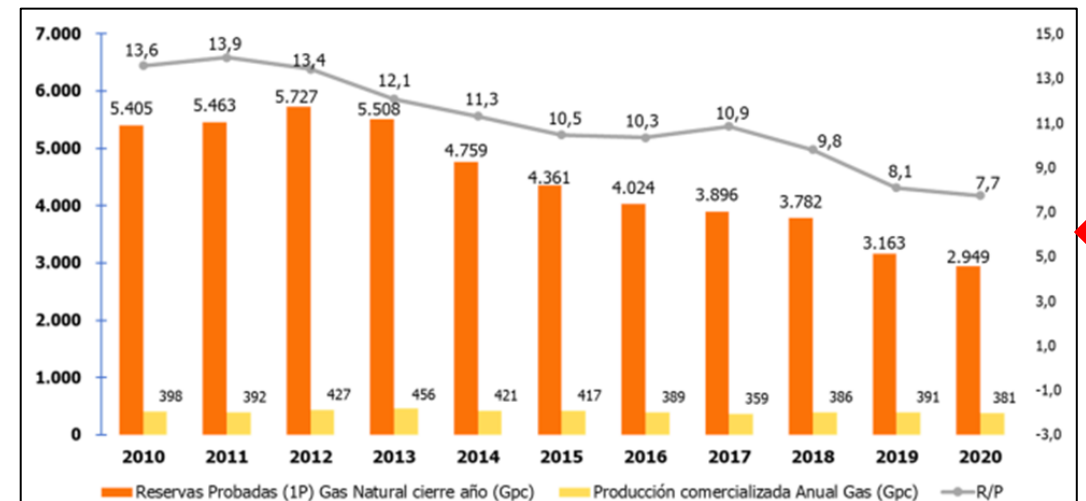
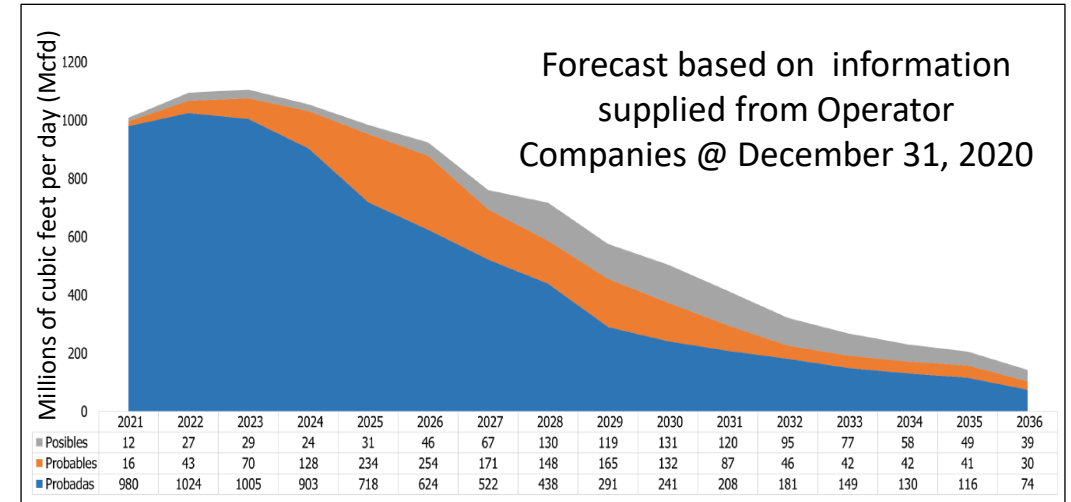


1 Bcf = 1 Gpc = 10<sup>9</sup> cubic feet

## REMARKS

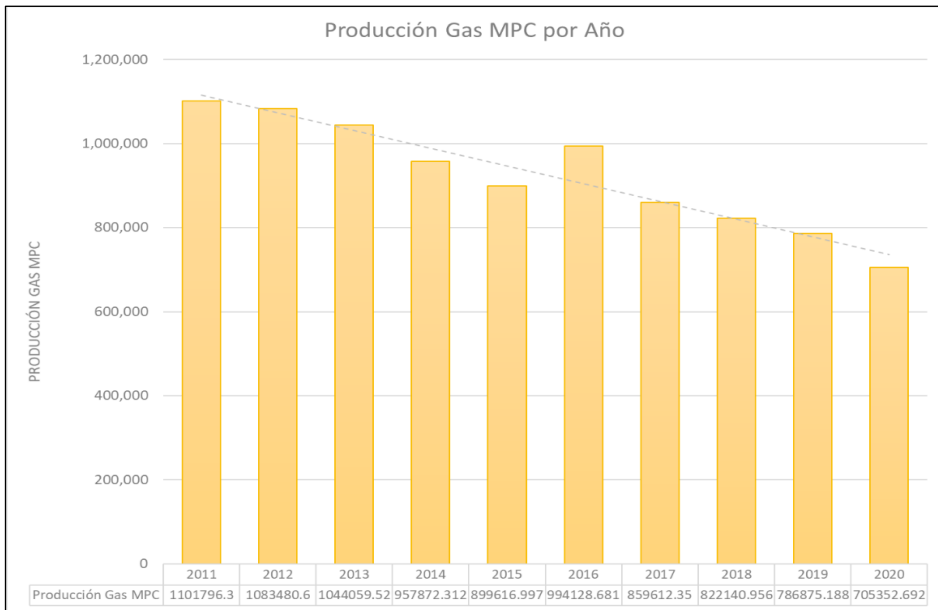
- P1, P2 and P3 reserves will be depleted by 2036. Proven will be last 7,7 years. If R/P is < 6 years, it is considered that country has not enough gas reserves
- There is a growing demand in country and only two major areas represent the offer of the fuel
- Each year country must replace 360 Bcf 1P reserves for no decreasing R/P factor
- The replacement for 1P reserves for 2020 was 167 Bcf representing 44% of the annual production
- If supply does not increase, there will be an unsatisfied demand from local sources so.... What to do?

## Reserves depletion forecast

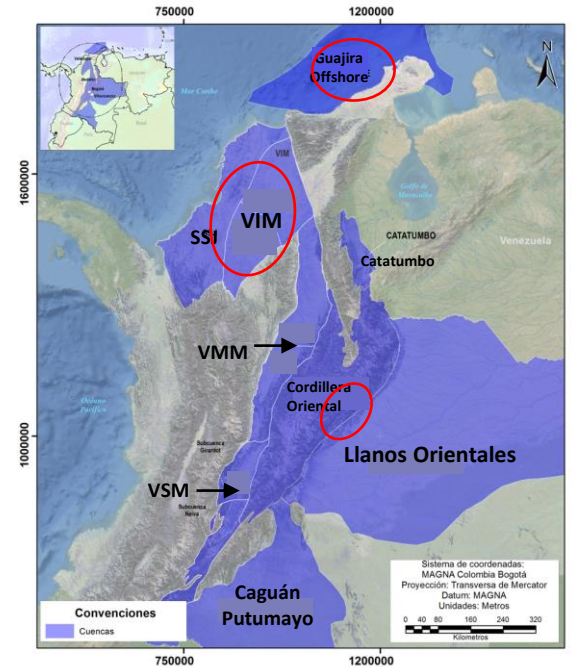
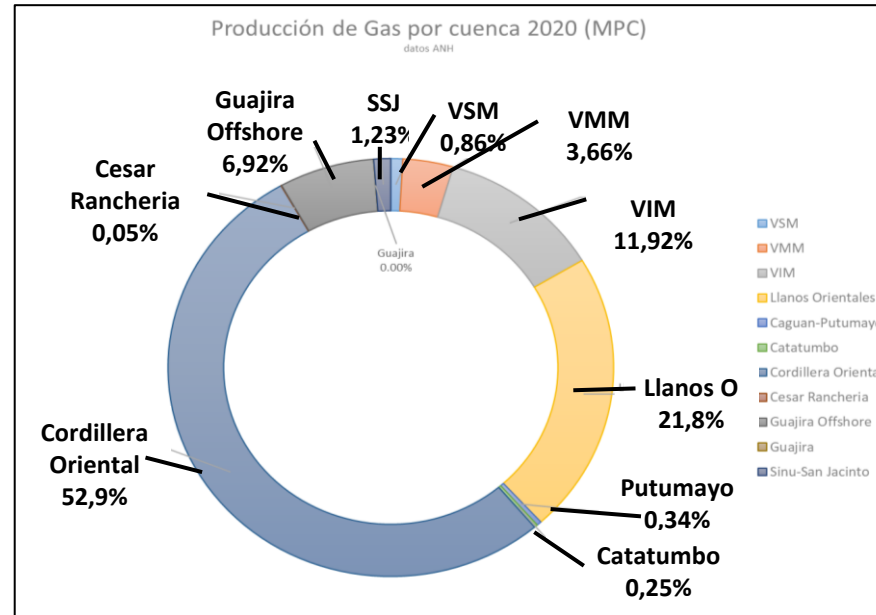


## 10 years behavior - P1 reserves, Commercial Production & R/P

## Annual gas production



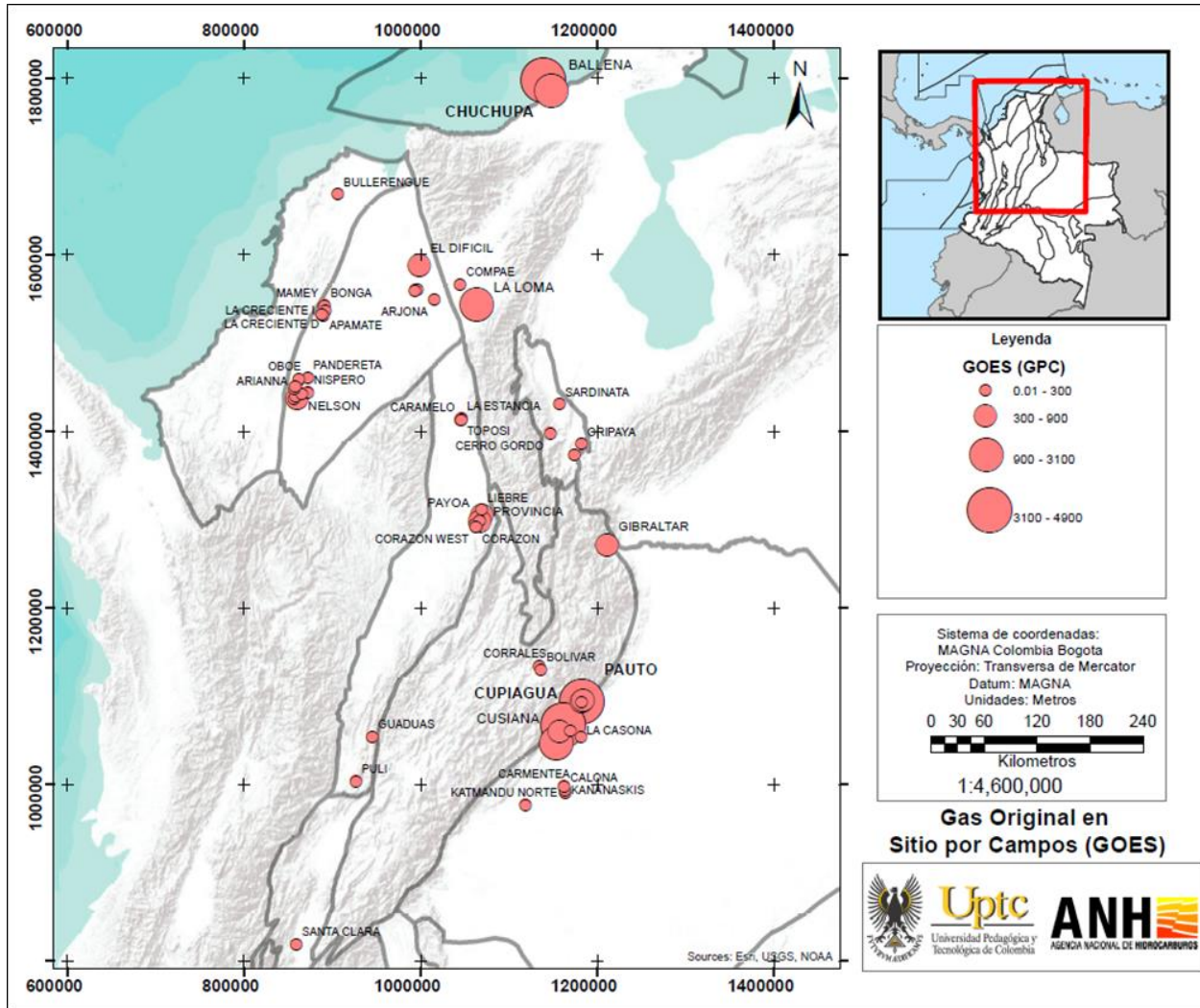
## Production by basin



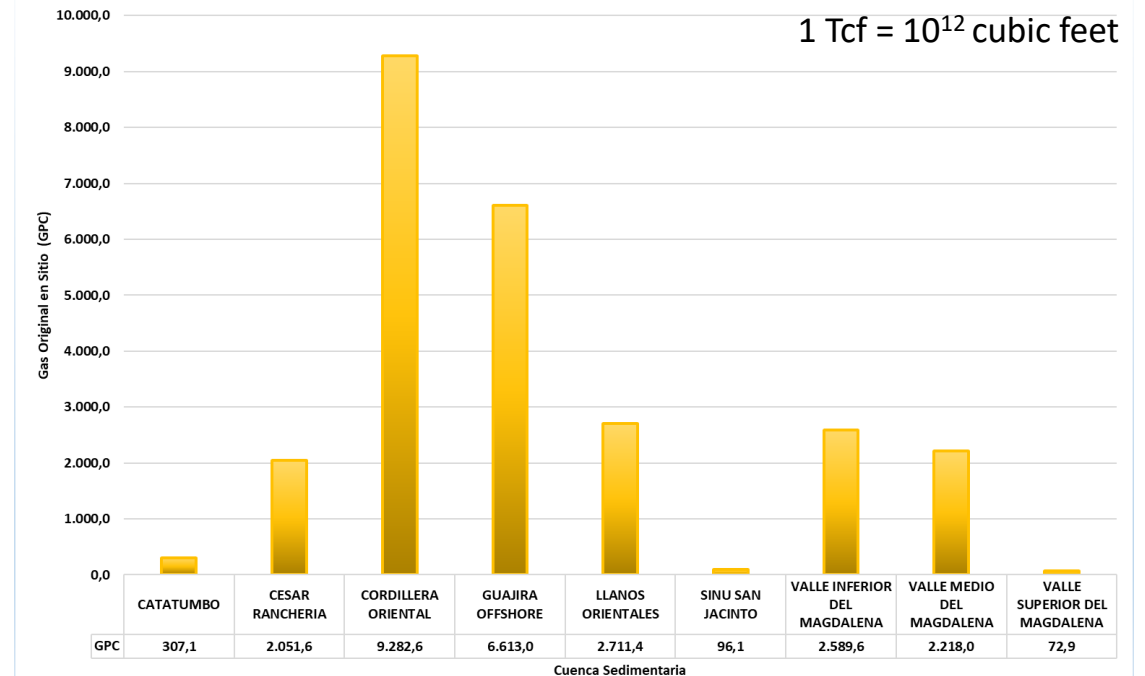
- 2020 Annual gas production was 705,353 Mcf (av 1932 Mcfd) - Non a typical year
- Gas production from 2019 to 2020 had a reduction of 10%
- 2021 total gas production was 667,427 Mcf (av 1830 Mcfd) – Reduction vs 2020 was 5.3%
- Main production is coming from Cordillera (Piedemonte fields), Llanos (Cusiana field), VIM and Guajira offshore

# Original Gas In Place

OGIP @ 31 December 2020 : 26 Tcf (60 fields free & associated gas)

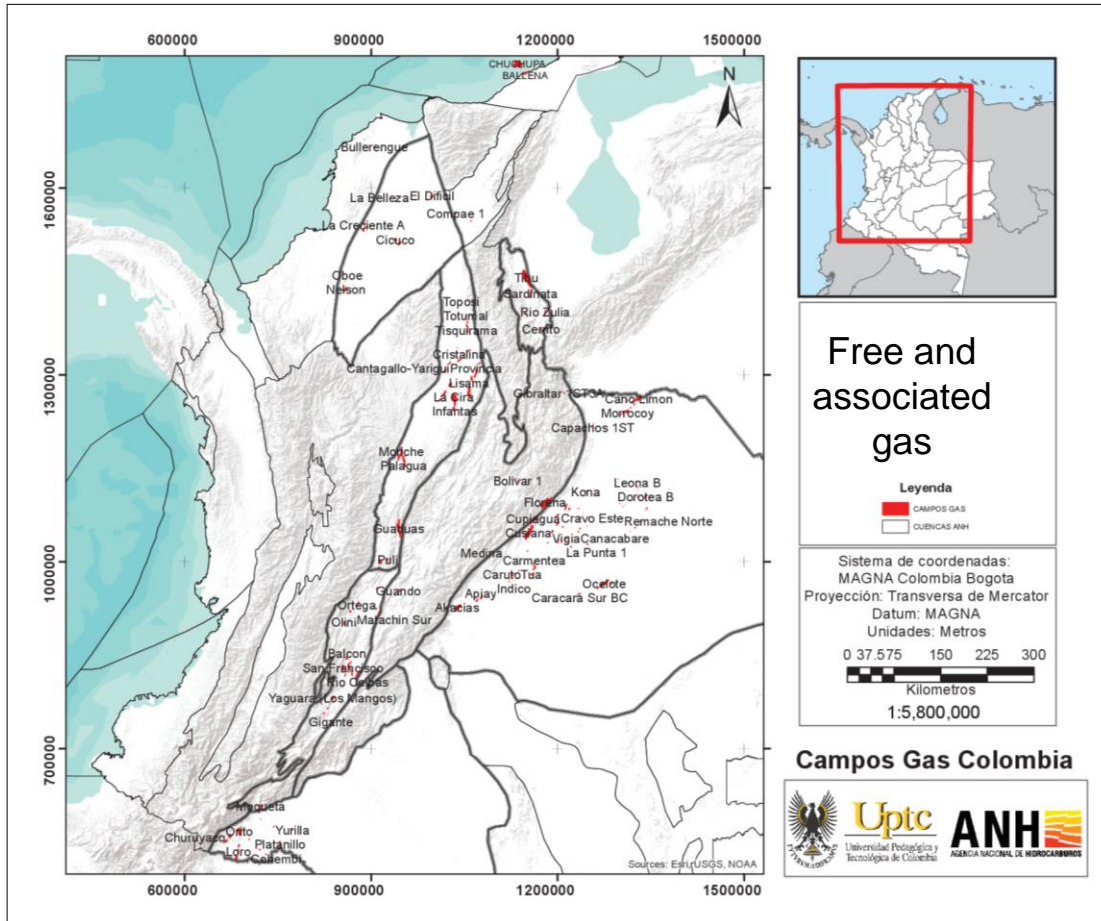


Field - Basin	OGIP - Tcf	Field - Basin	OGIP - Tcf
Chuchupa (Gua. Off.)	4.8	Ballena (Gua. Off)	1.8
Pauto (Cord.)	4.1	Provincia (MMV)	0.87
Cupiagua (Cord.)	3.1	Payoa (MMV)	0.76
Cusiana (Llan.)	2.6	El Dificil (LMV)	0.64
La Loma (Cesar)	2.0	Cup. – Recetor (Cord.)	0.58

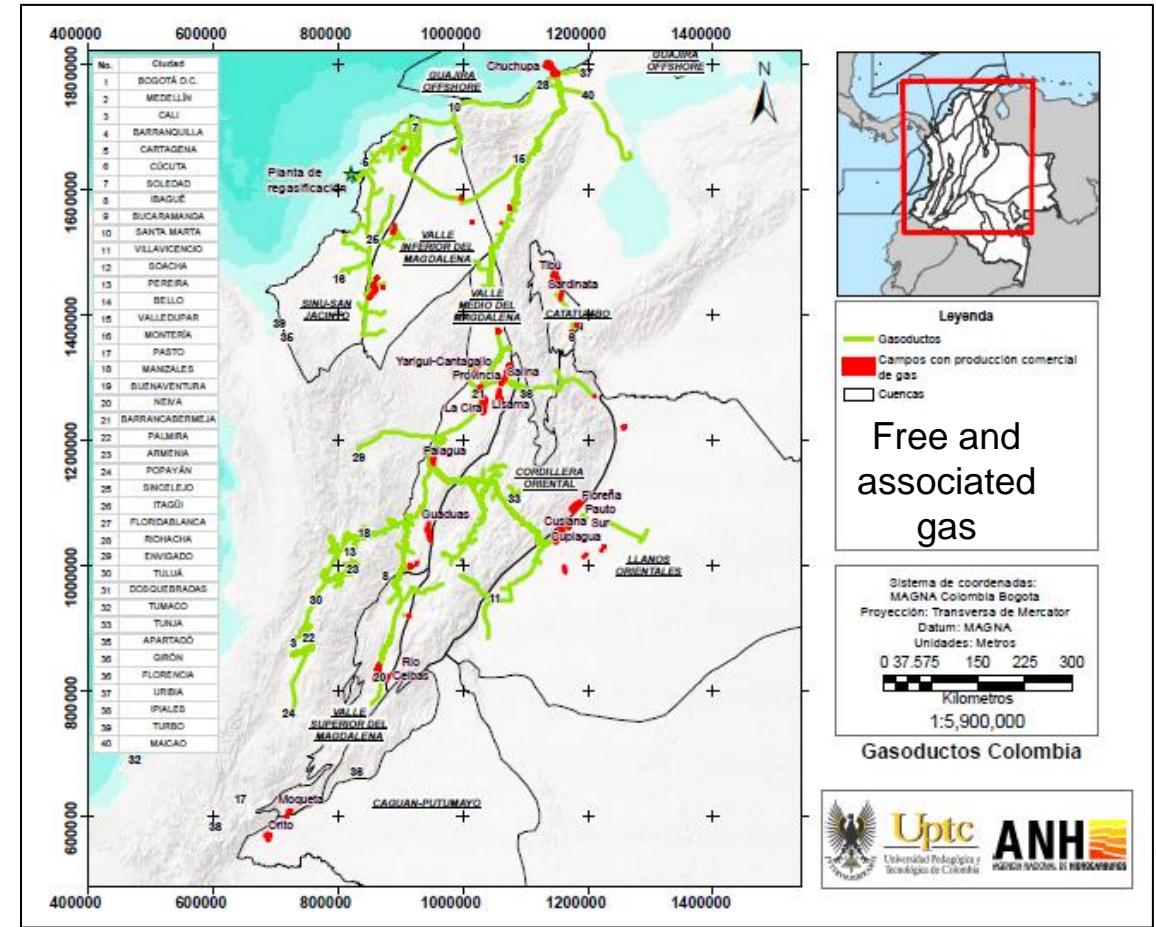




Fields with gas production (~251)

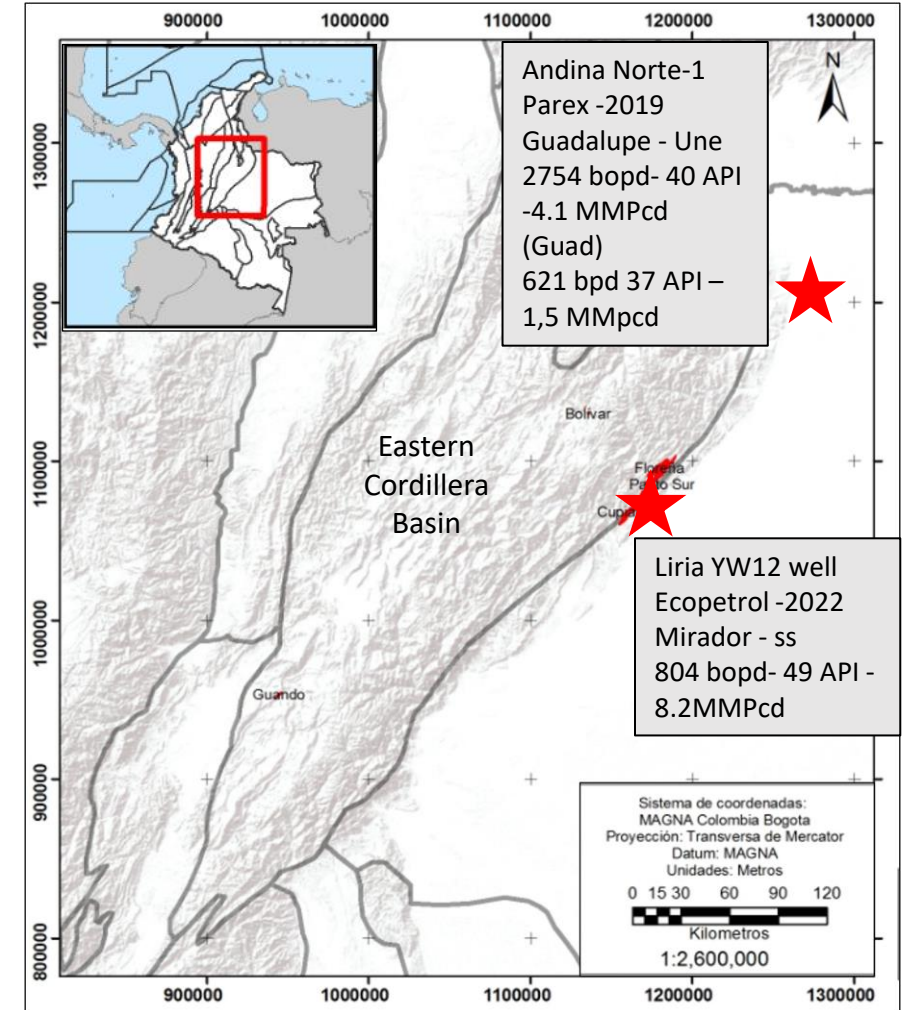
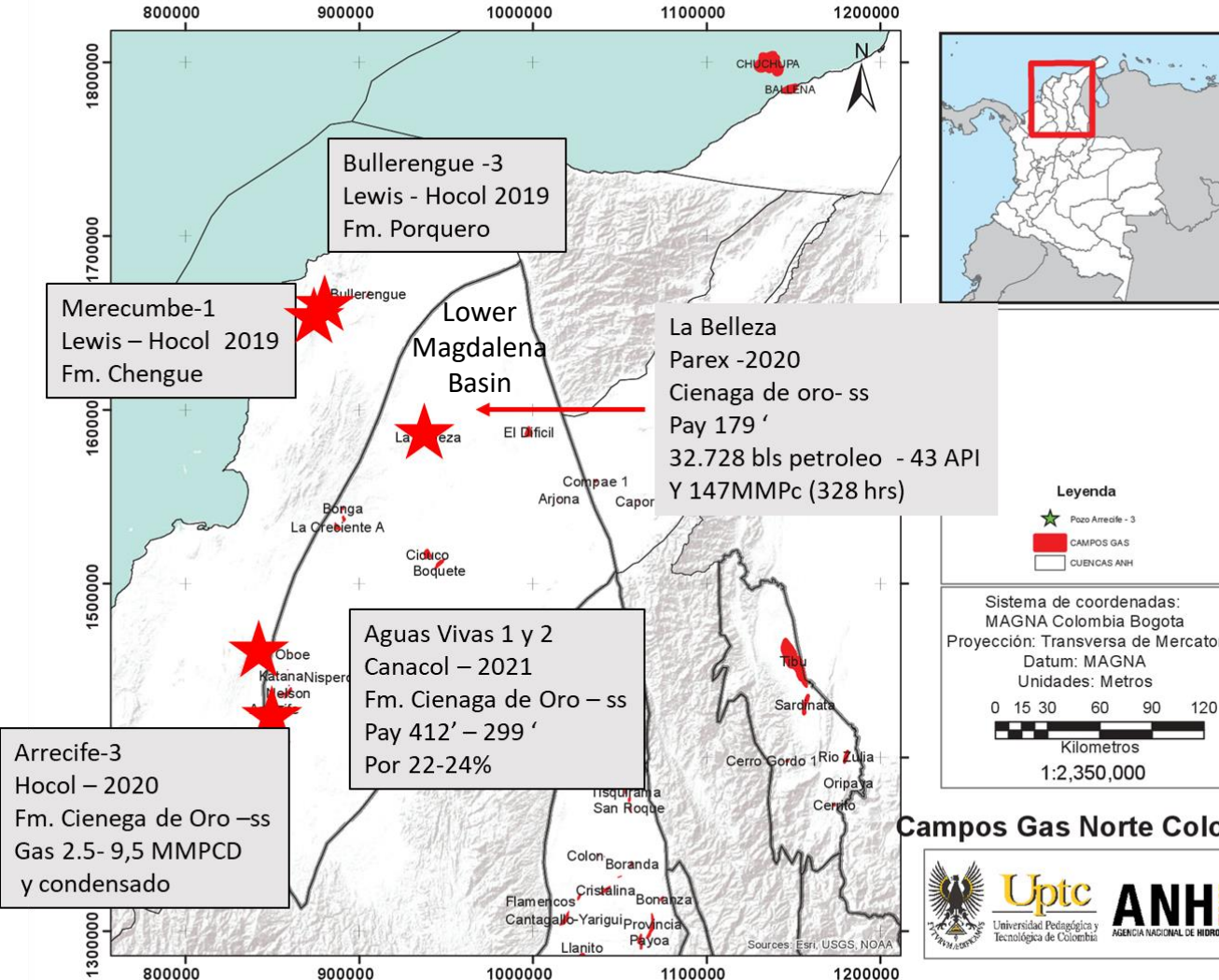


Fields with commercial gas production (~50 field)



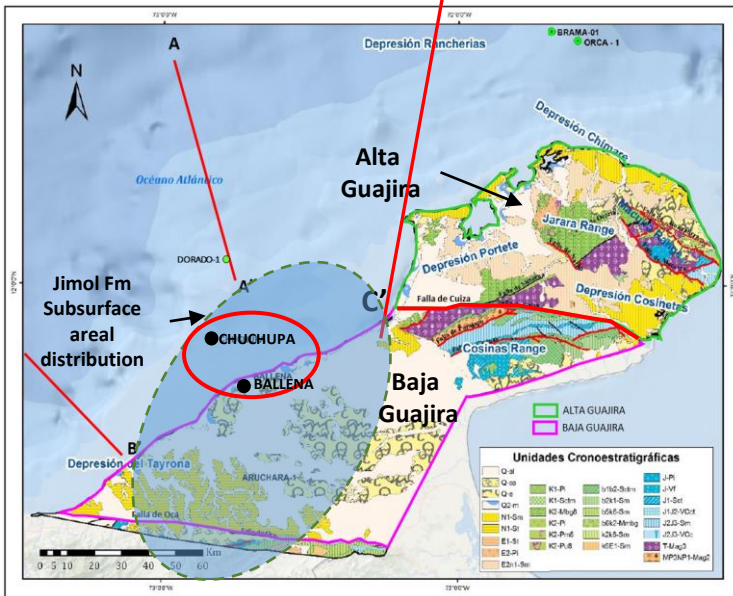
- For year 2021 commercial production was av 746 Mcfd 40% of the total production (av 1830 Mcfd)

# Recent Discoveries

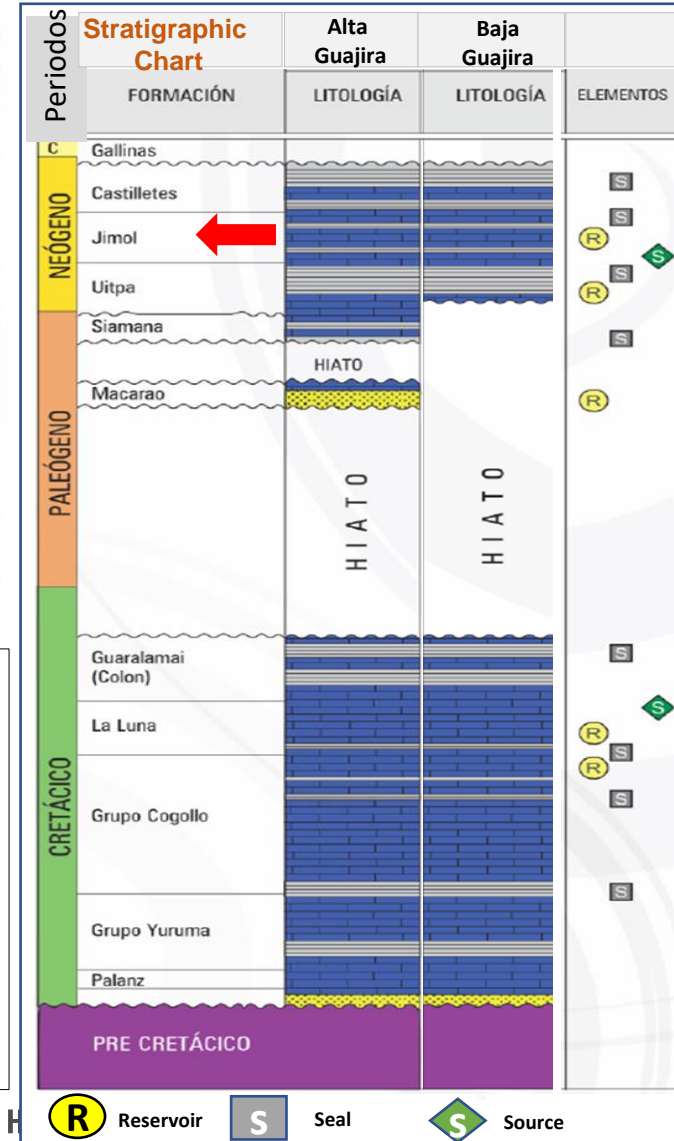




## Surface geological map



Source: Modificado de Mora, C., et al, 2019



Field	Fm.
Ballena	Jimol (limestones) pay = 100 ft Por = 25%
Chuchupa	Jimol (sandstones)

Chuchupa – 1973

OGIP: 4,8 Tcf

Cum. Prod. (june 2021):

4,2 Tcf

Ballena – 1973

OGIP: 1.8 Tcf

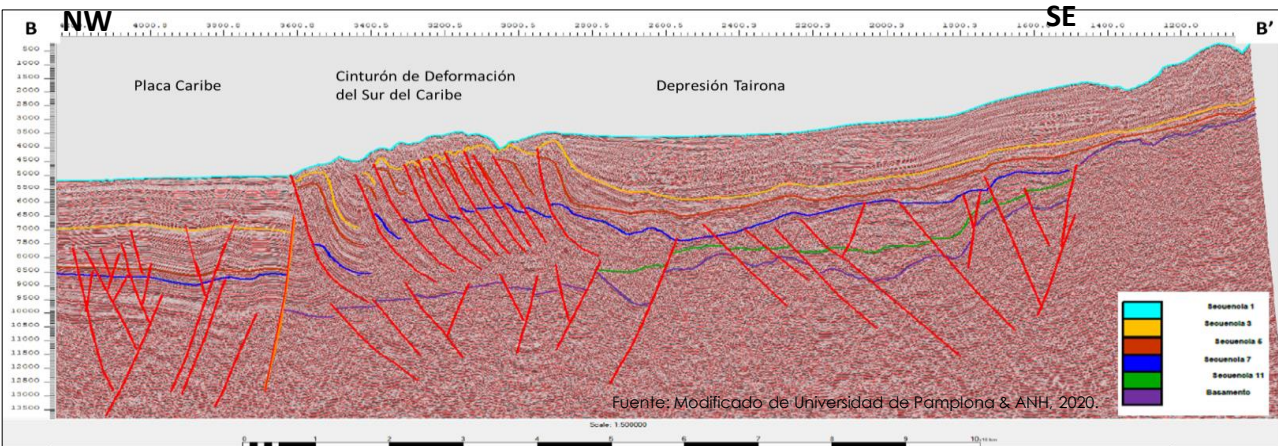
Cum. Prod. (june 2021): 1.3 Tcf

Fluid: dry gas

Guajira offshore produce 6.9% of the total annual gas (2020)

**Commercial production**

**Aug@2021: 119 Mcfd - 11.07%**

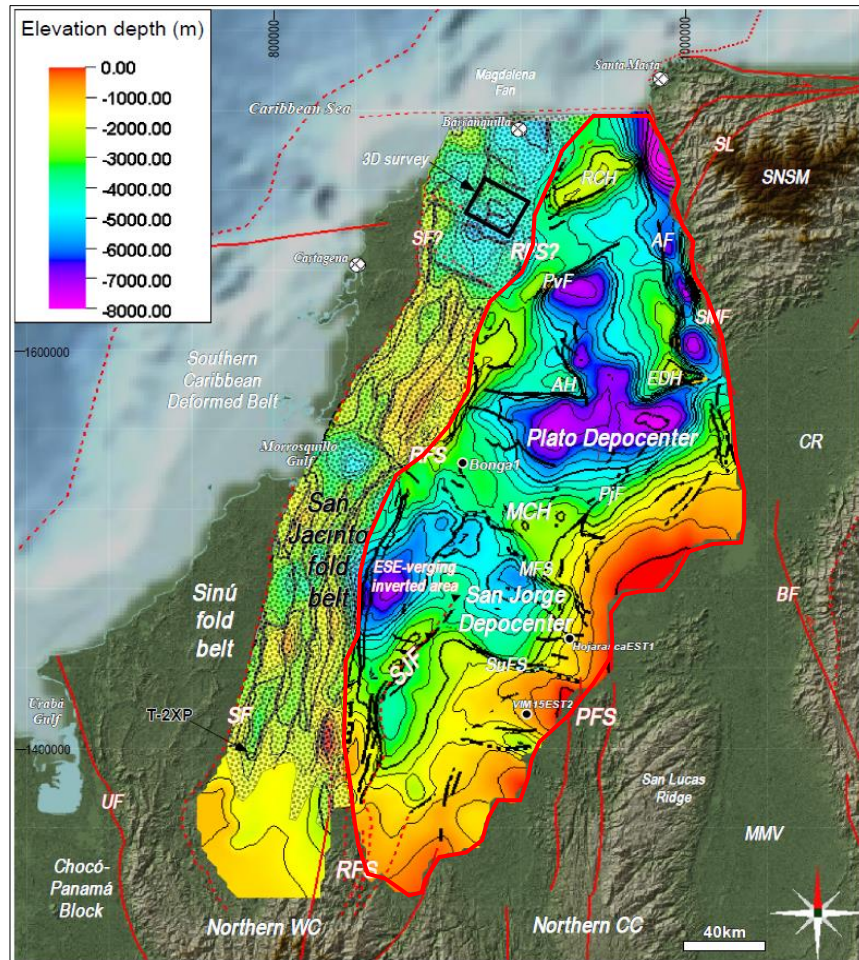


Fuente: Modificado de Universidad de Pamplona & ANH, 2020.

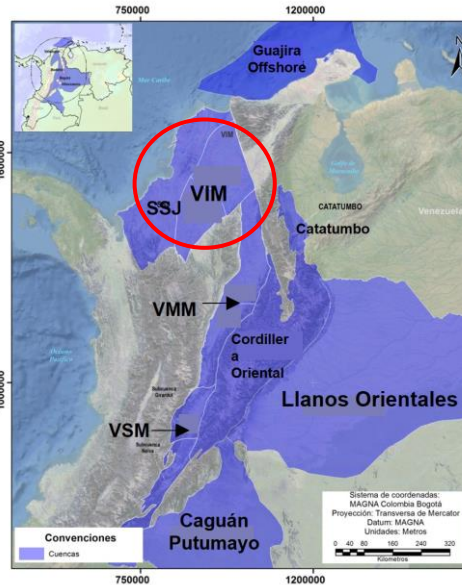
## Baja Guajira: Structural Section B'-B



## Structural map top basement (Depth)

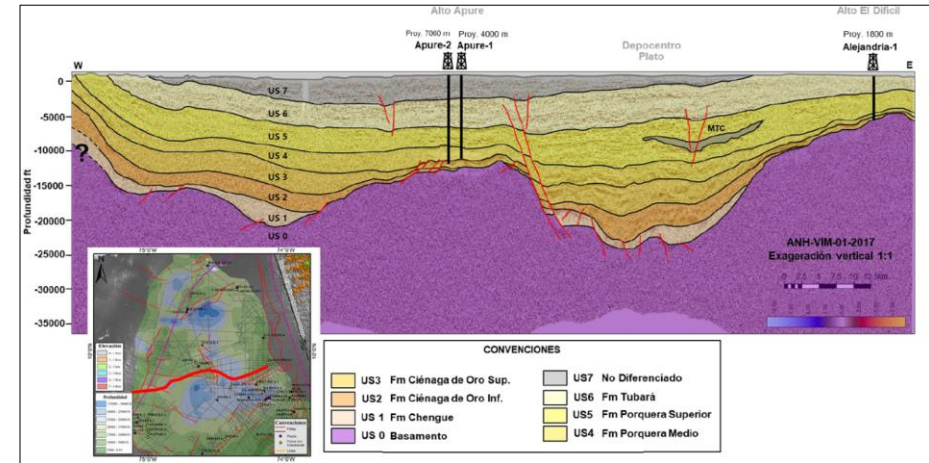


Fuente: Mora, J.A., et al, 2017.



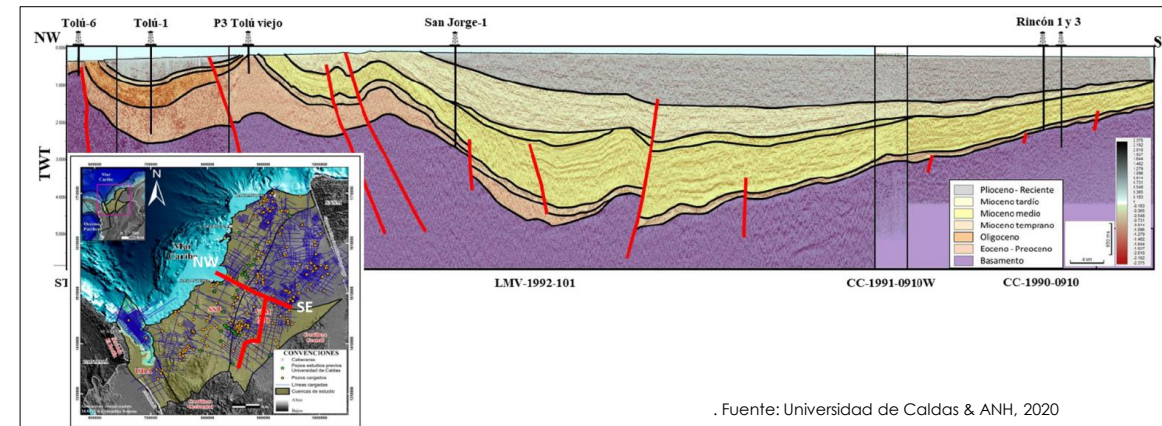
For many years was considered a gas prone basin  
 Divided in two sub basins  
 North: Plato  
 South : San Jorge  
 Gas production has increased during the last years due to successful exploration drilling

## Structural section Plato subbasin



Fuente: Universidad de Caldas & ANH, 2020

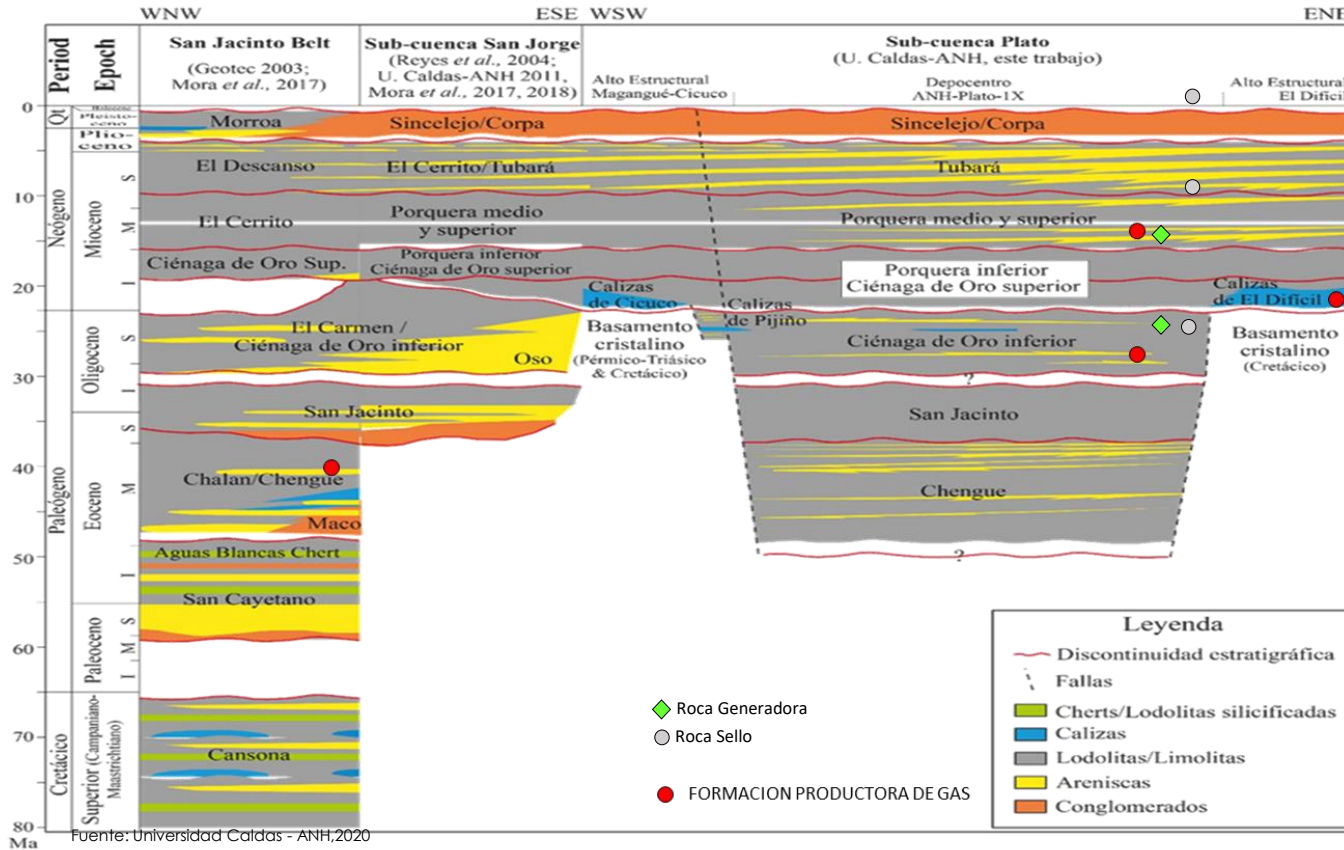
## Structural section San Jorge subbasin



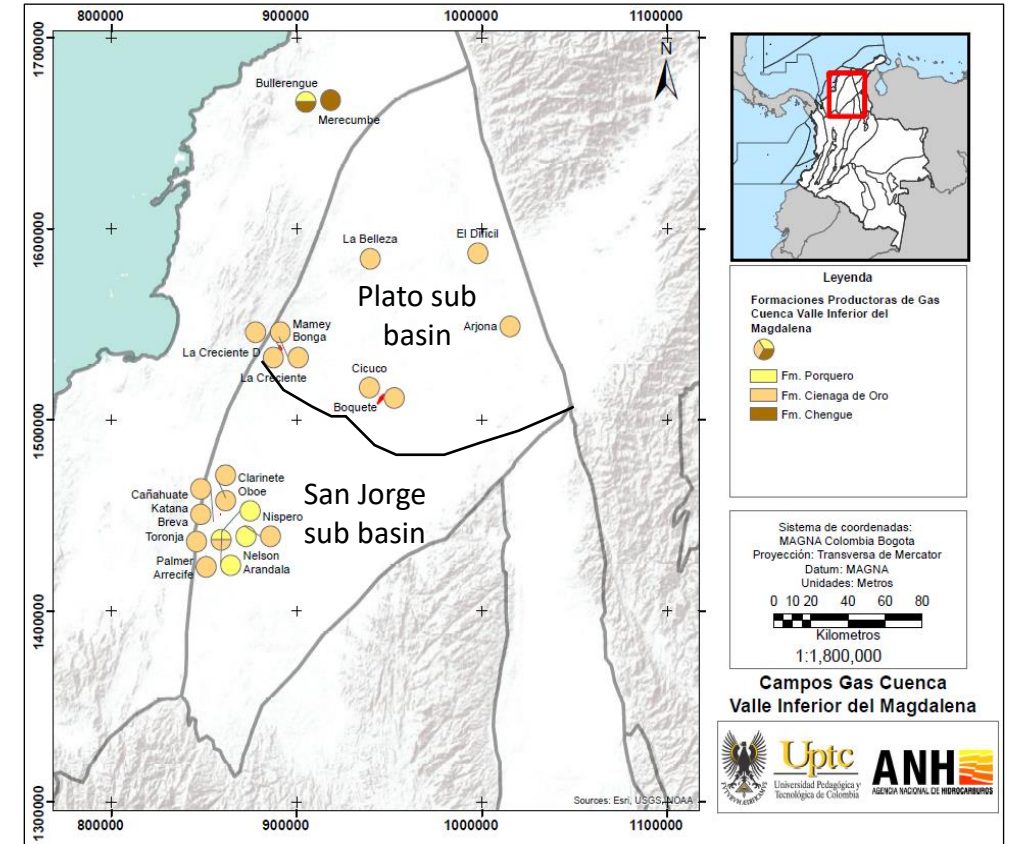
. Fuente: Universidad de Caldas & ANH, 2020



## Stratigraphic Chart



## Areal Distribution of Production Formations



OGIP (basin): 2,5 Tcf (22 fields)

Fluids: free gas (dry and wet) , gas condensates, and black oil (Light oil AP with API 32 – 45)- Production: system Natural flow and gas lift

Total annual gas production (2020): 84.642 Mcf (12% of the total Gas production) – 20 fields

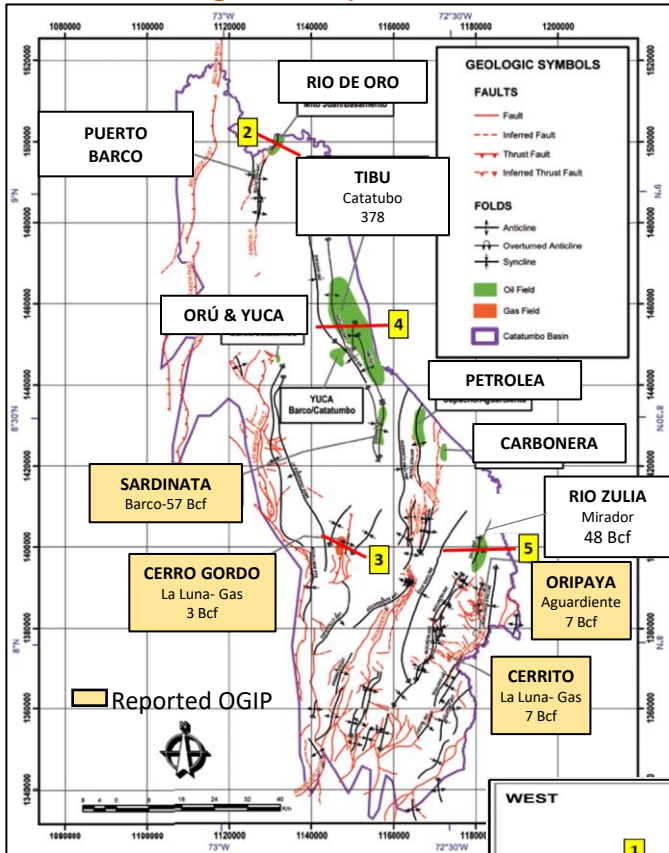
**Commercial production @ august 2021: 236.5 Mcfd suppling 22% of the gas used in country**

Main production comes from: El Difícil, Nelson, Bonga, Mamey , Aguas Vivas, Pandereta and Arrecife fields

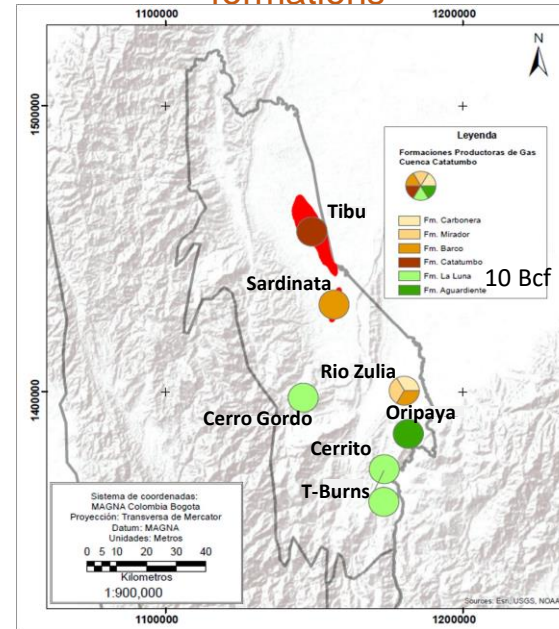
**Cumulative production for El Difícil, Nelson, La Creciente, Cicuco @ june 2021: 894 Bcf**



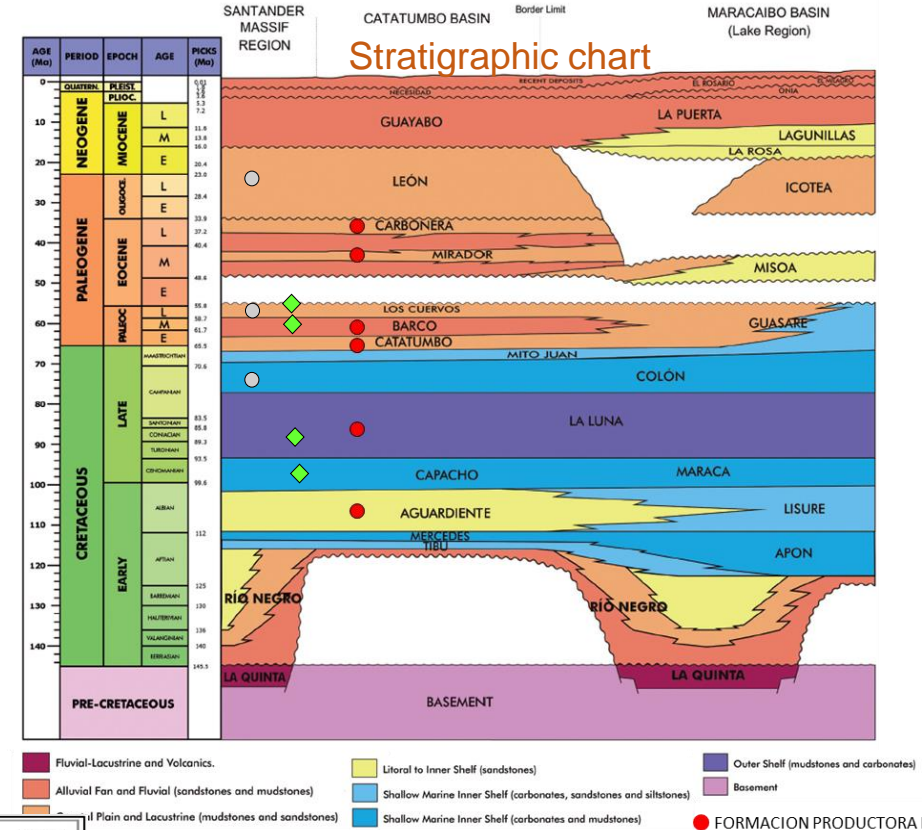
## Geological map & oil fields



## Areal distribution of production formations



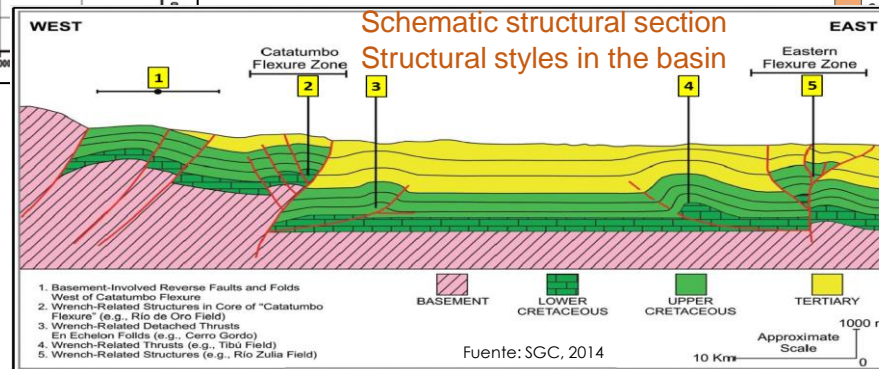
## Stratigraphic chart



Fuente: Modificado de EAFIT-ANH, 2011

Total annual gas production (2020): 1763 Mcf (0,25% of the total Gas production) - 7 fields  
 Cumulative production (7 fields): 500 Bcf  
**Commercial production @ august 2021: 4.34 Mcfd: 0,4 % of the gas consumed in country**  
 Gas production comes mainly from: Oripaya and Tibu

## Schematic structural section



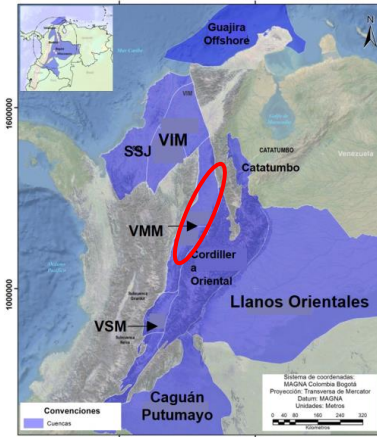
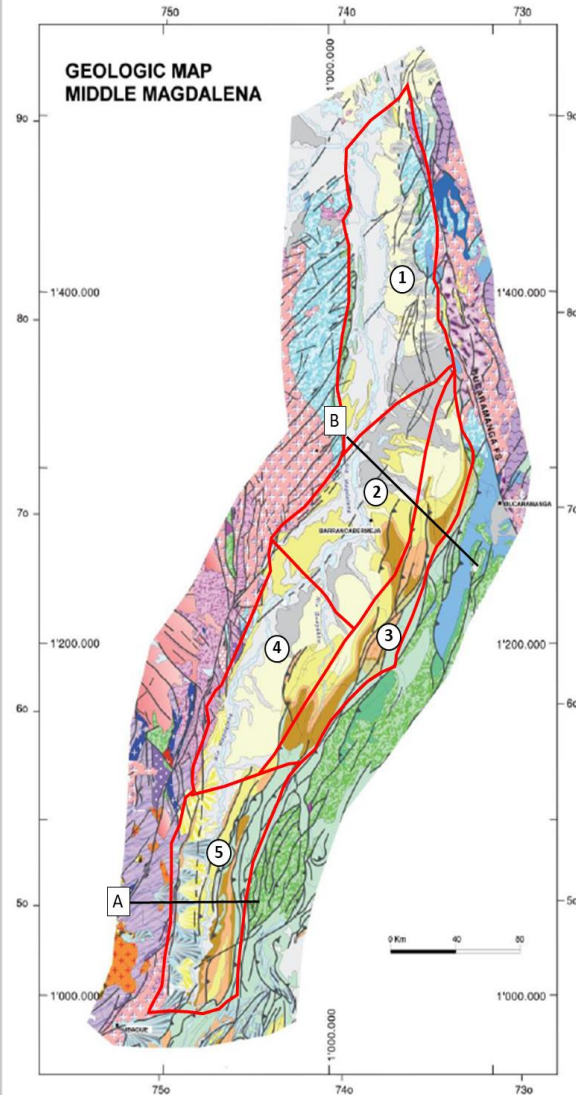
## REMARKS

OGIP (basin): 301 Bcf (4 fields)  
 Exploration targets: La Luna (south), Paleogene Units (north)  
 Fluids: Free gas (dry) and black oil (light oils API 30– 41).

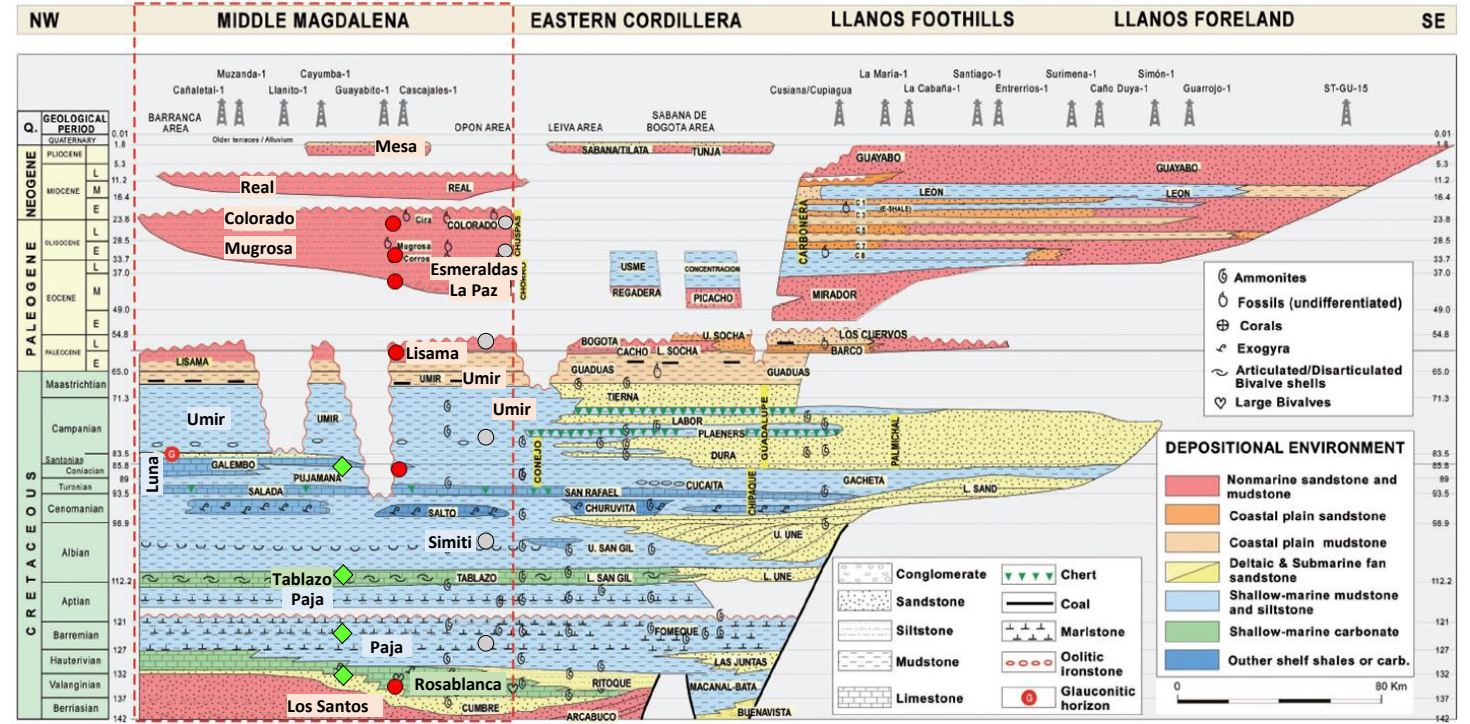


# Middle Magdalena Basin

Fuente: Gómez 2001; En EAFIT&ANH,2011

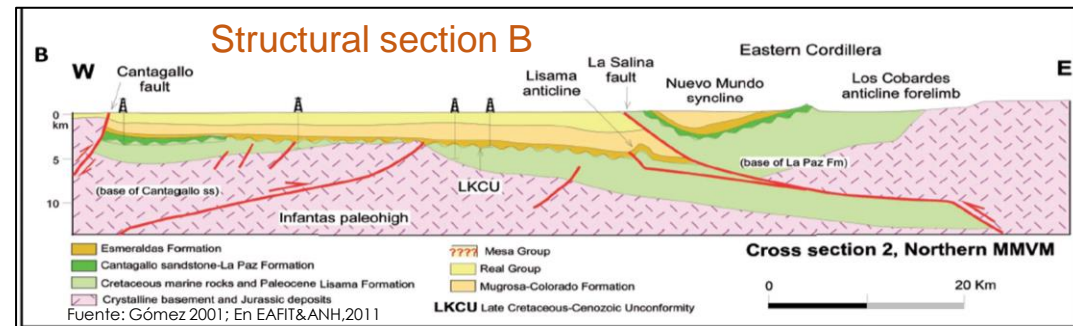


- Structural Provinces**
1. North Province (Buturama- Los Angeles)
  2. Central Province (Cristalina-La Cira)
  3. Eastern Province (Lisama-Opon)
  4. Western Province (Teca-Nare-Torcaz)
  5. South Province (Guaduas-Toqui toqui)



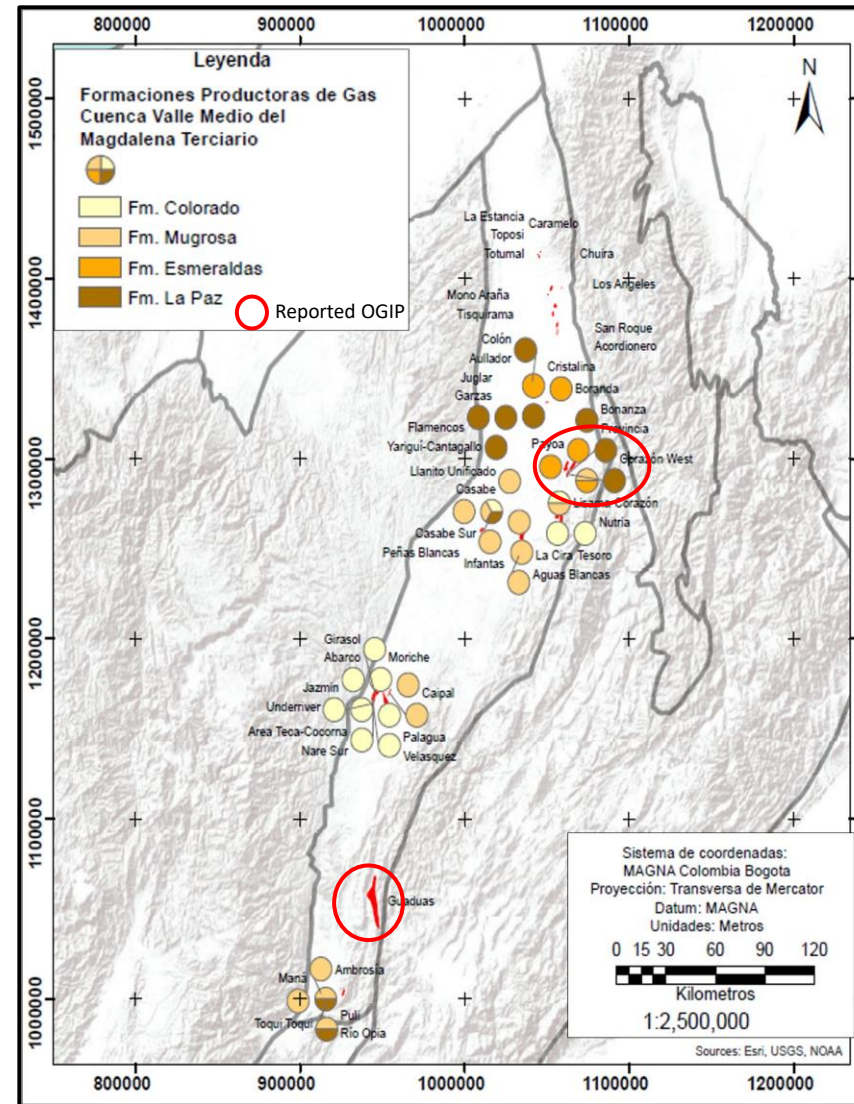
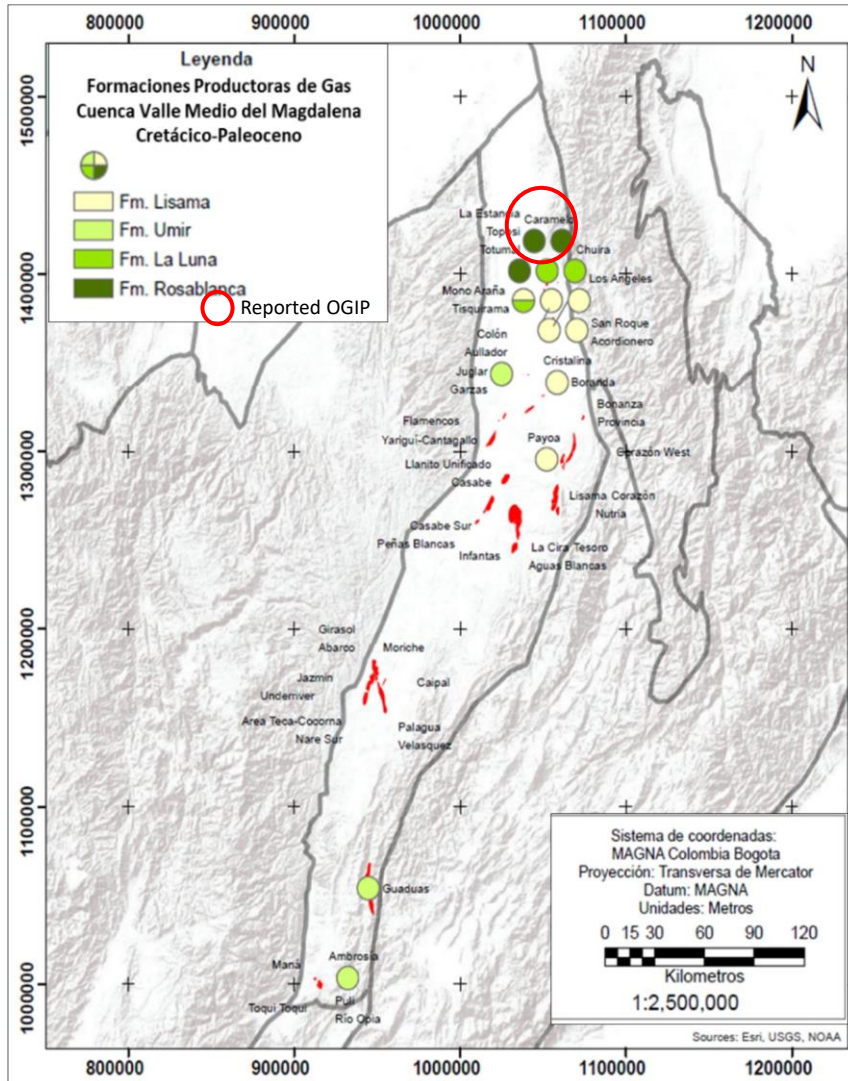
Fuente: EAFIT-ANH, 2011.

◆ Roca Generadora    ○ Roca Sello    ● FORMACION PRODUCTORA DE GAS





## Areal distribution of production formations



**Basin OGIP:** 2.2 Tcf (11 fields)

**Fluids:** Black oil (GOR <1000 scf/stb API < 45) oil with associated gas.

Dry gas: Toposi (Rosablanca)  
La Estancia (Rosablanca)  
Opon (La Paz) – Closed

**Reservoirs:**

Province 1: Lisama – La Paz – La Luna

Province 2 -3 Mugrosa, La Paz, Colorado

Province 4: Colorado

Province 5: Doima, Chicoral

Oils with medium API (Prov 1,2, 3, 5): 20 – 30 API GOR <1000 scf/stb

Province 3: GOR 3000 scf/stb

Province 4: Heavy oils (13 – 16 API)

**Production (mainly associated gas)**

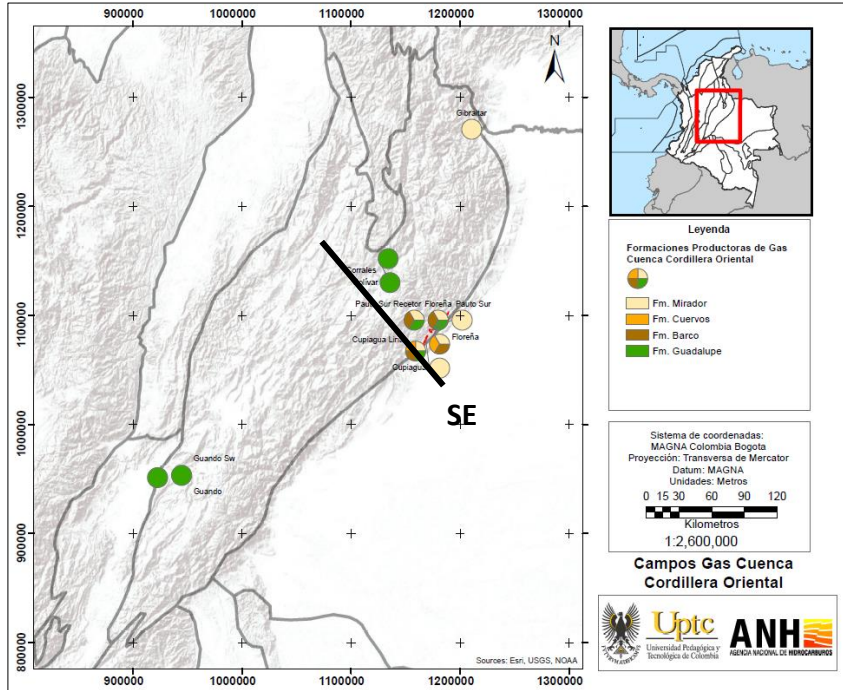
Cumulative Prod (Payoa- Provincia) (June 2021): 1,8 Tcf

Fields with gas production: 50 (2020 annual prod.): 25,815 Mcfd (3.66 %)

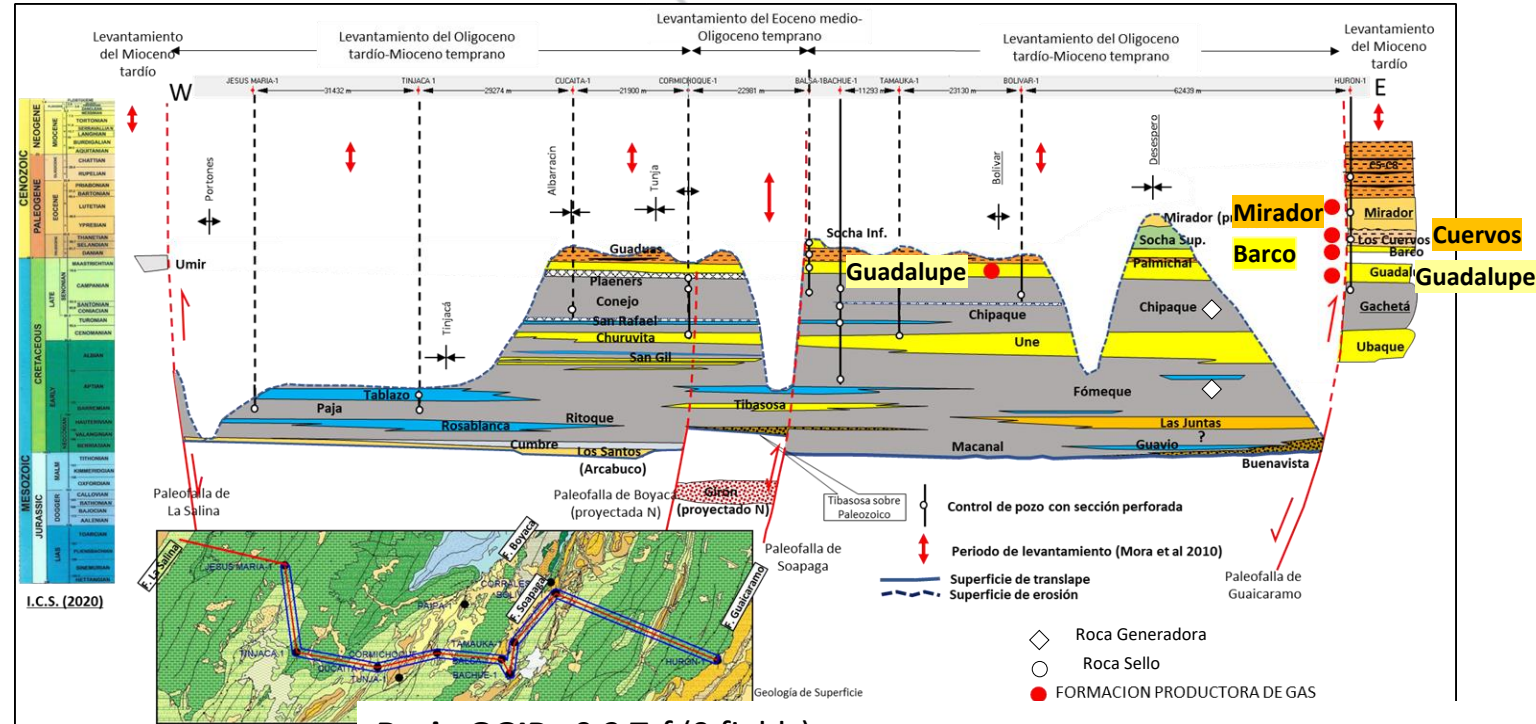
**Commercial production Aug@2021:**  
39.8 Mcfd - 3,71% - Payoa, Provincia, La Cira



## Areal distribution of production formations

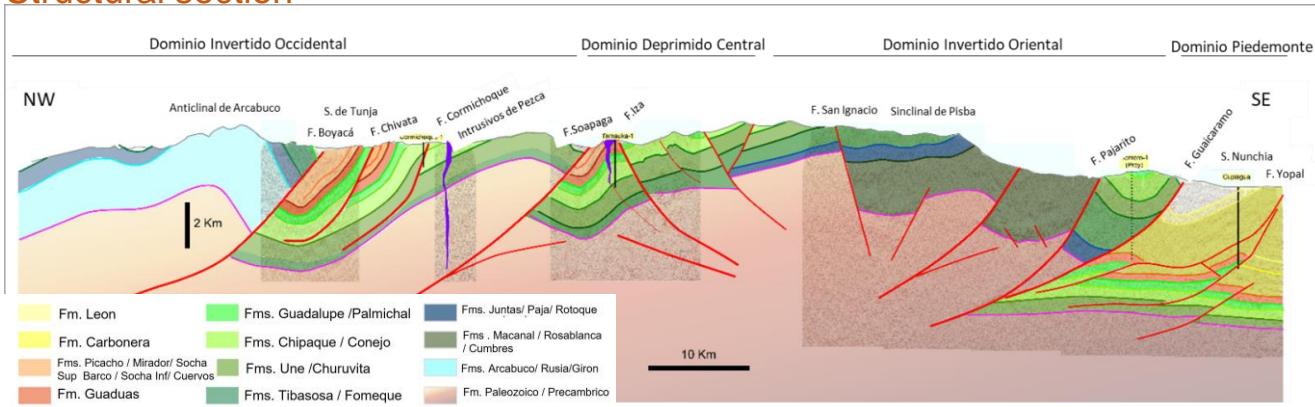


## Stratigraphic chart



**Basin OGIP: 9,3 Tcf (9 fields)**

## Structural section



**Fluids:** (13 fields analyzed) Black oil (Heavy to light oils) volatile oil, gas condensate (API 18 to 57 and GOR < 500 – 170000 scf/stb)

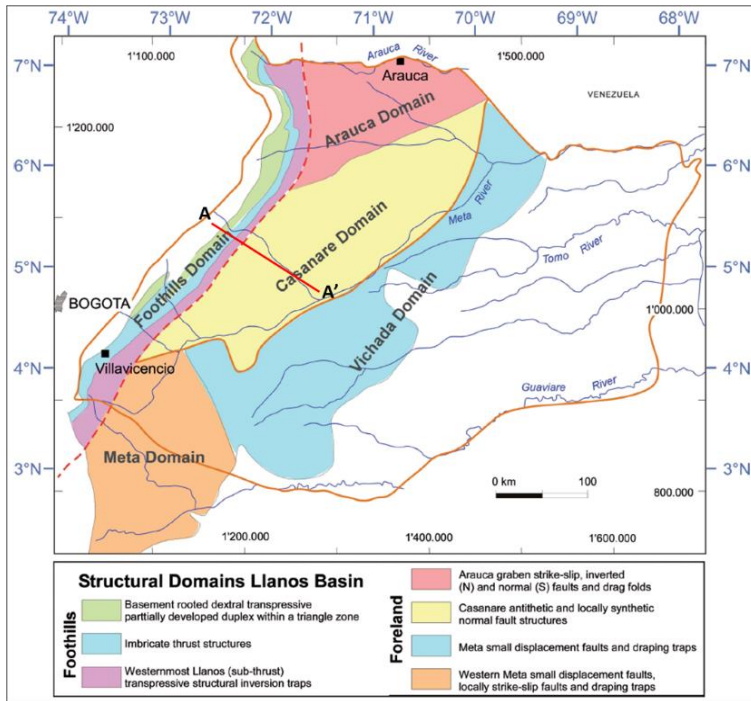
**Reservoirs:**  
Central depression: Guadalupe.  
Piedemonte (Foothills): Mirador, Barco and Guadalupe

**Production**  
Total gas production: (Annual 2020): 373.131 Mcfd (% of the total)  
**Commercial production (Aug@2021): Pauto, Corrales: 200 Mcfd (18.7%)  
Cusiana- Cupiaga-Florena, Capachos: 438 Mcfd (40.8%)**



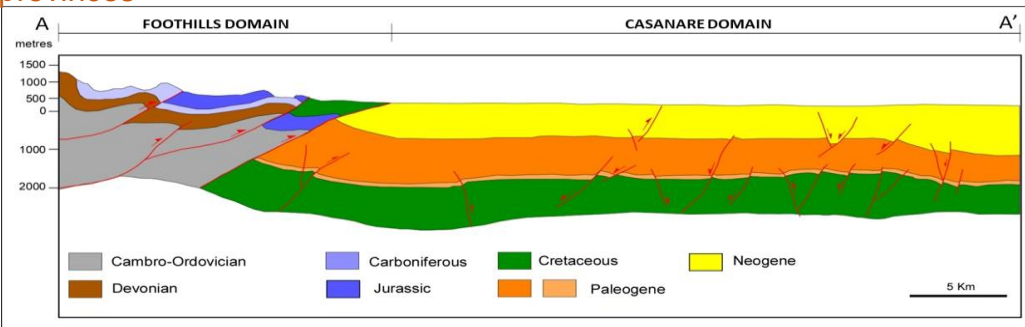
# Llanos Orientales Basin

## Structural provinces

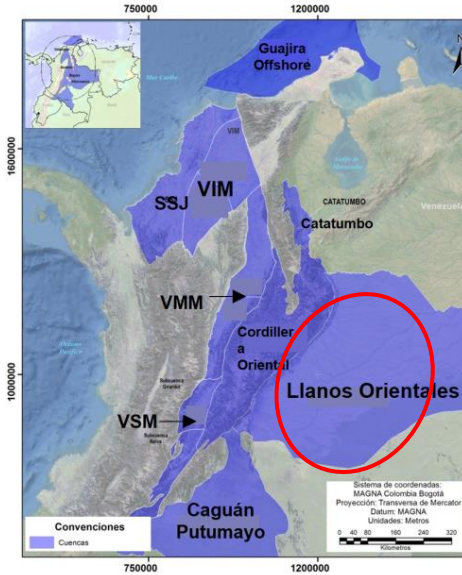


Fuente: Modificado de EAFIT & ANH, 2011

## Schematic structural section - Foothills and Casanare provinces

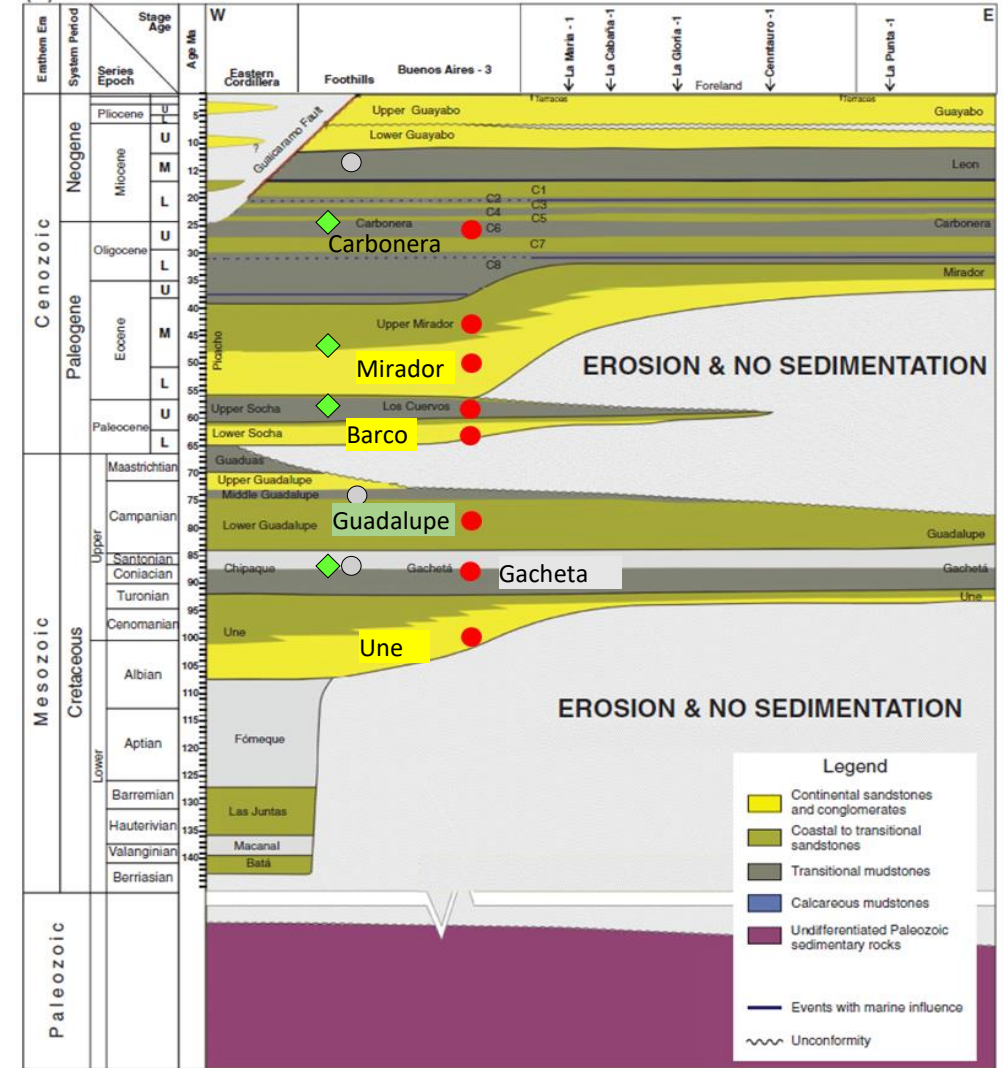


Fuente: Modificado de ANH, 2007.



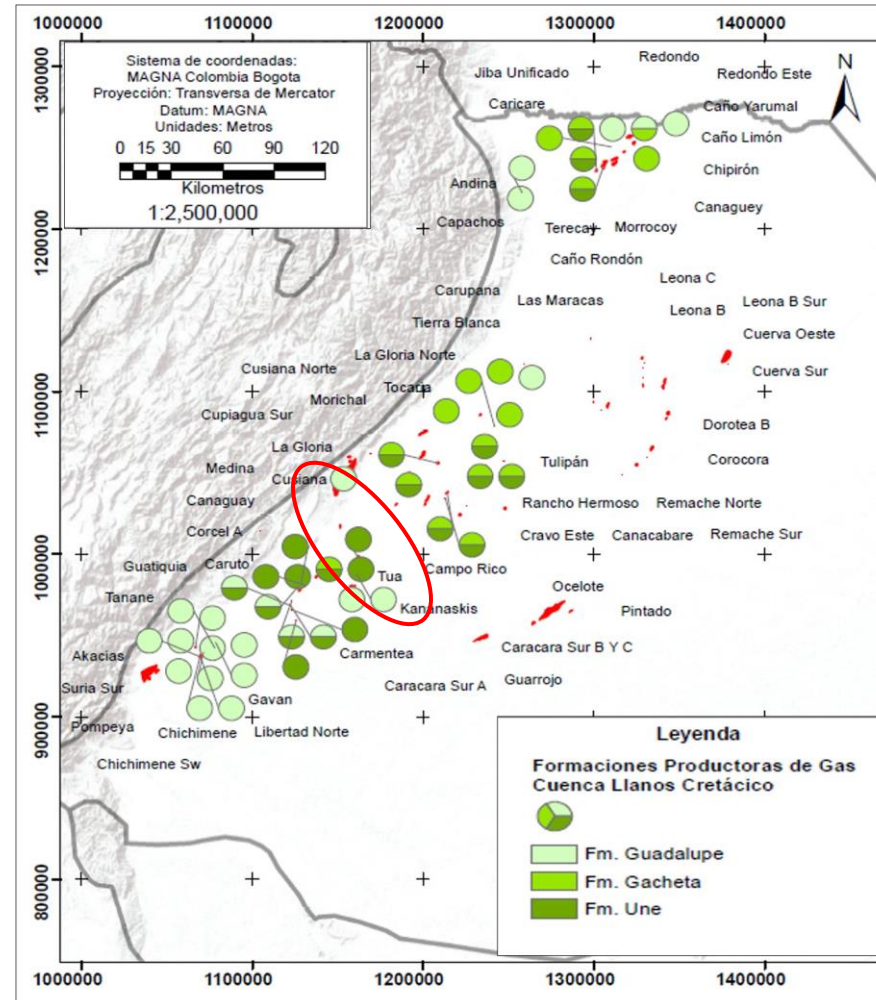
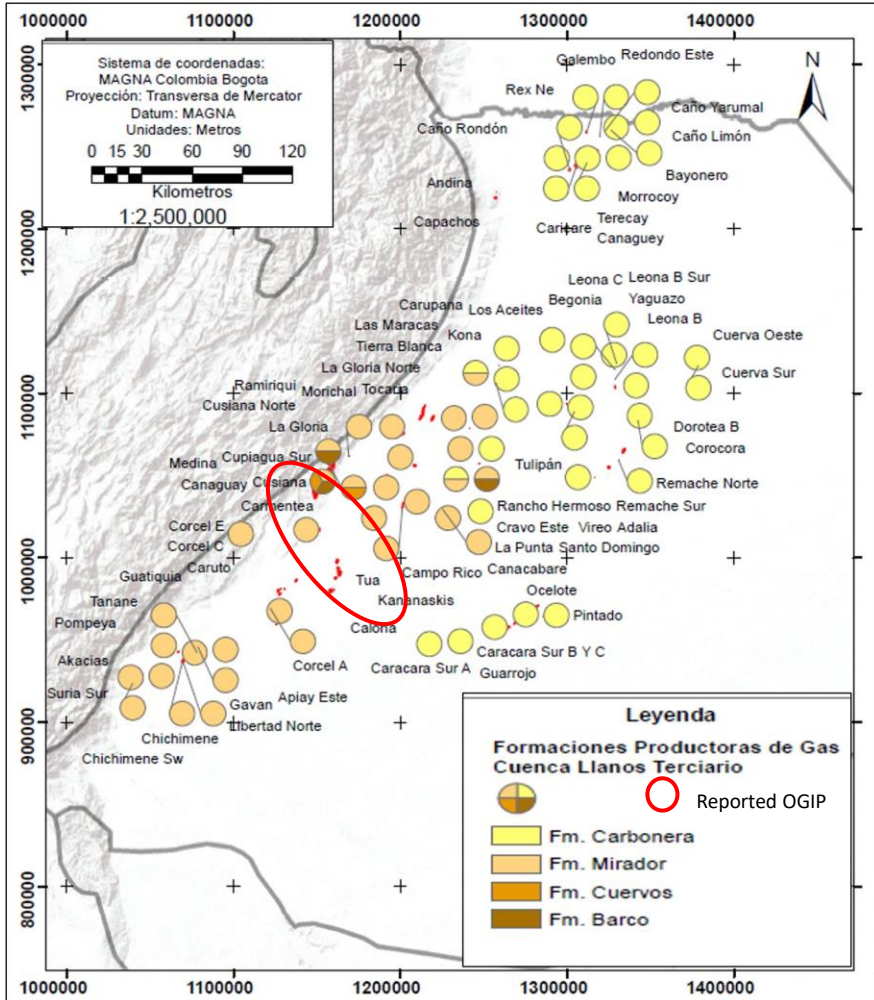
Divided in 5 structural domains  
Reservoirs: Carbonera, **Mirador**, Barco and Guadalupe

## Stratigraphic Chart



Tomado de Reyes-Harker, A., et al. 2015

## Areal distribution of production formations



**Basin OGIP:** 2,7 ( 7 fields)

**Fluids:** (98 fields with gas production)  
Black oil ( GOR <1000 scf/stb API < 45),  
gas associate- extra heavy to light oils, to  
Volatil oil and gas condensate (API up to  
49). GOR up to 230,000 scf/sb

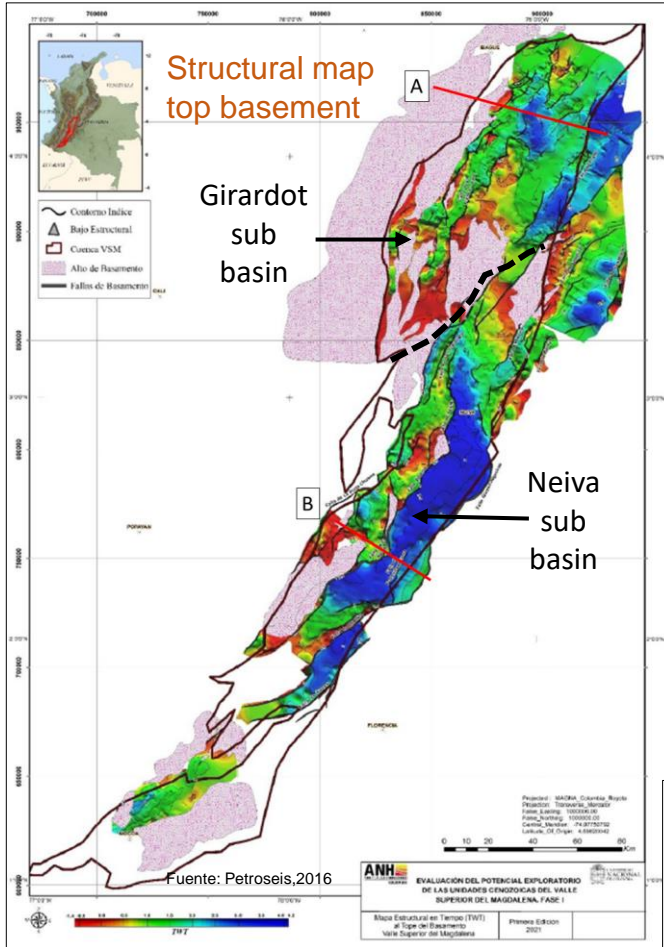
**Reservoirs:**  
Carbonera, Mirador, Cuervos, Barco,  
Guadalupe, Gacheta, Une

**Production (mainly associated gas)**  
Annual 2020 production: 153.767 Mcfd  
(21.8 % of the total)  
**Commercial production Aug@2021:**  
**438,27 Mcfd (40,84%) – Cuasina,  
Cupiagua, Floreña**

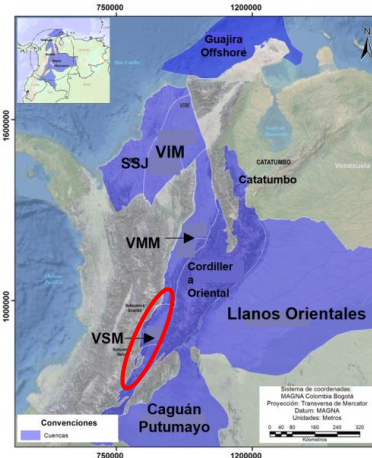
47% of the gas total gas is reinjected



# Upper Magdalena Basin



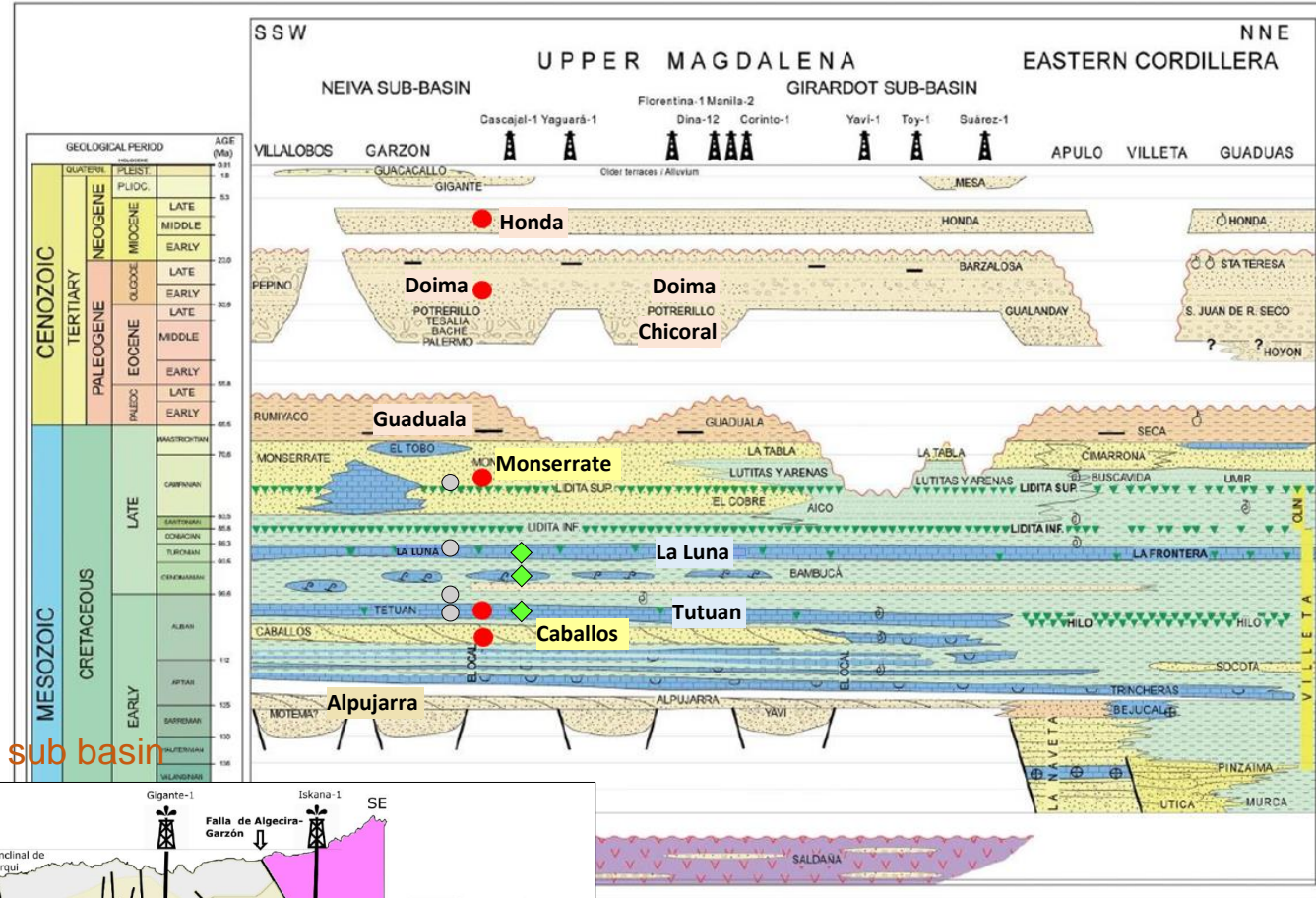
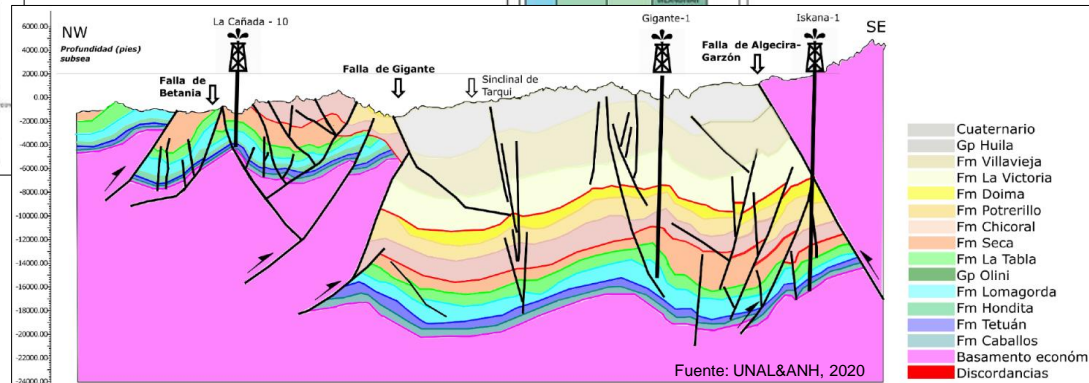
Fuente: UNAL & ANH, 2020



The basin is divided in two sub basins separated by the Natagaima High

- Girardot (North)
- Neiva sub basin

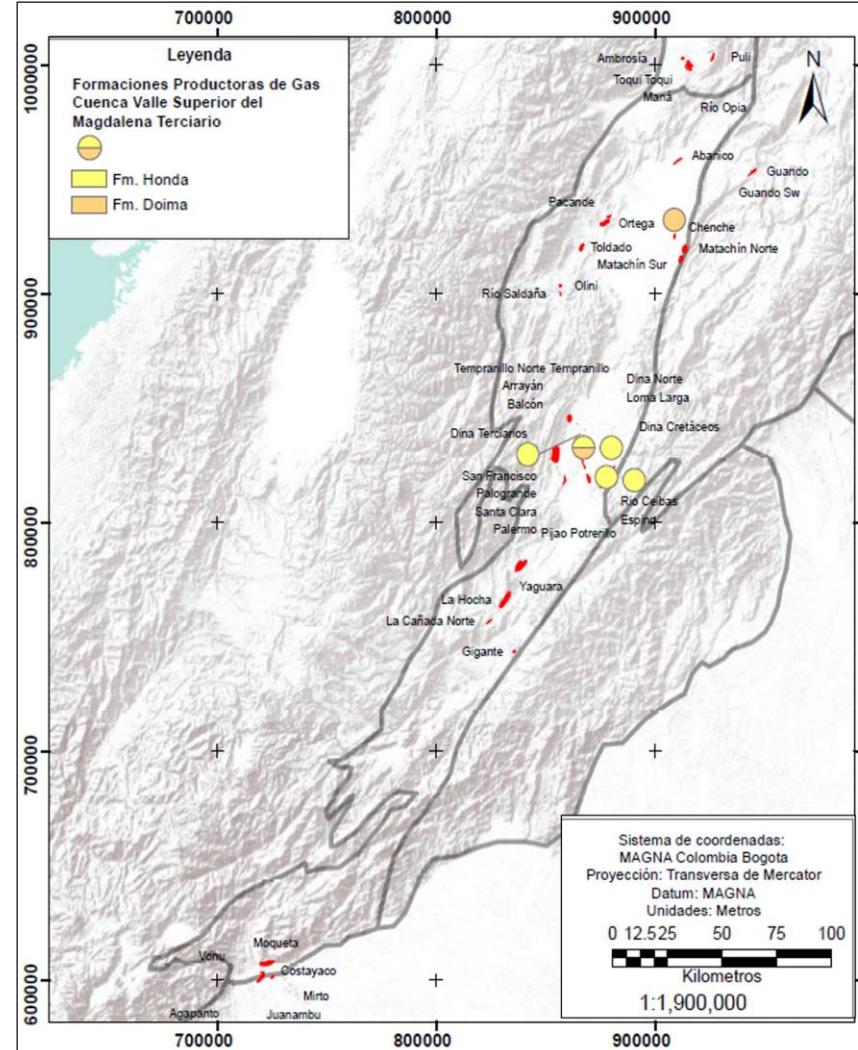
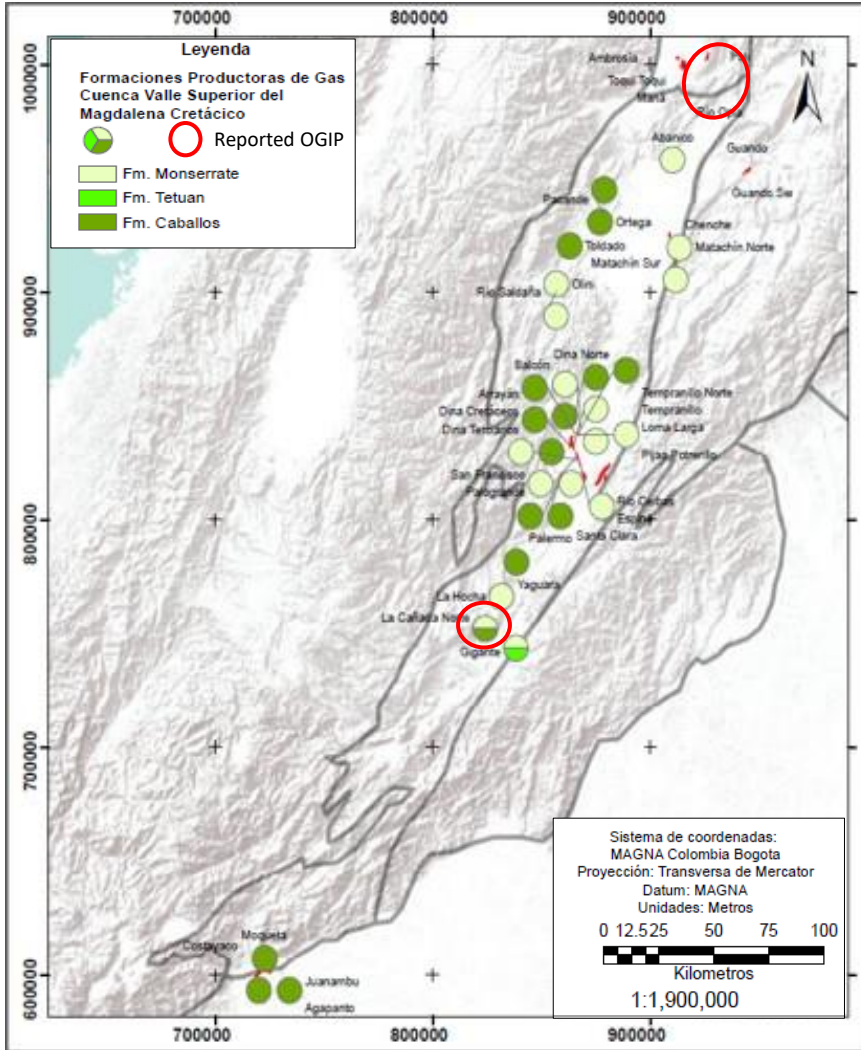
## Structural section B – Neiva sub basin



Fuente: Modificado de EAFIT-ANH, 2011.



## Areal distribution of production formations



**Basin OGIP:** 72 Bcf (2 fields)

**Fluids:** (35 fields analyzed)  
Black oil (GOR < 1000 scf/stb API < 45)-  
associated gas

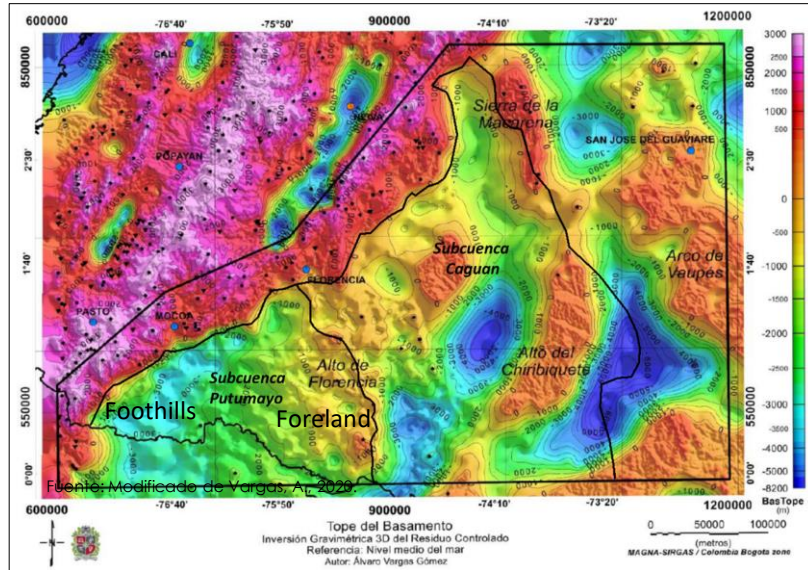
**Reservoirs:**  
Neiva sub basin  
Caballos, Monserrate, Doima and Honda  
Oil API (16 – 35) GOR < 2000 scf/stb  
Girardot sub basin  
Caballos, Monserrate, Doima  
Oil API 20 – 30 GOR < 1000 scf/stb  
Caballos are fracture reservoirs

**Production (associated gas)**  
Fields with gas production: 35 (dec 2020):  
6.066 Mcfd (0.86 % of the total)  
Commercial production Aug@2021:  
0 Mcfd - 0%  
Cum. Production: 6,6 Bcf  
Gas was used for field consumption,  
electric generation, burned



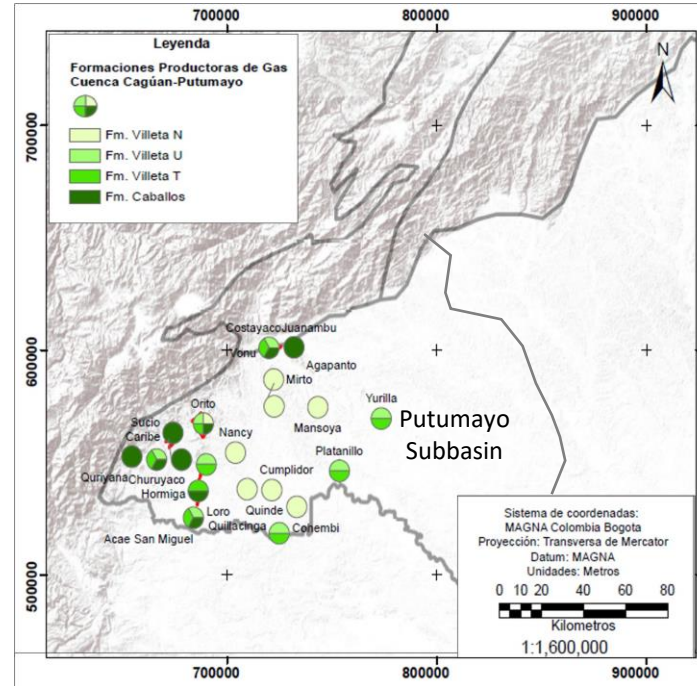
# Cagúan – Putumayo Basin

## Inversion Gravimetric map – Top basement

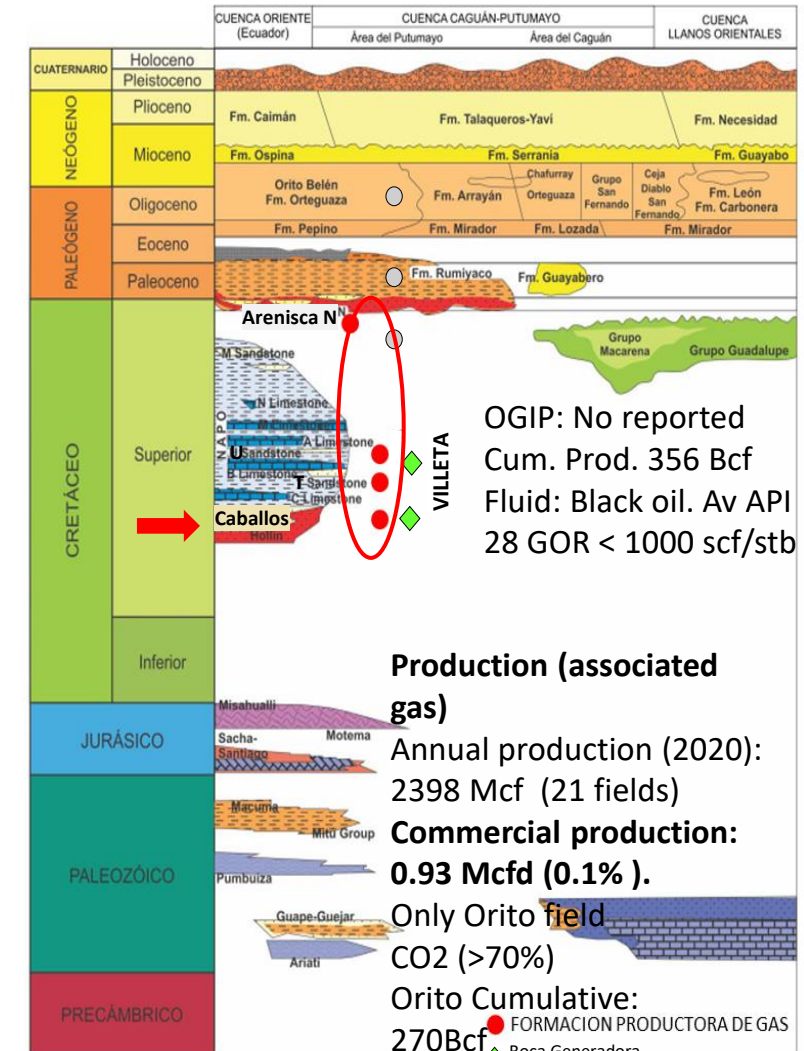


Fuente: Pachon, 2013

## Areal distribution of production formations

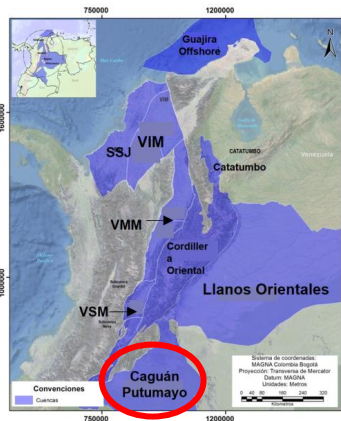
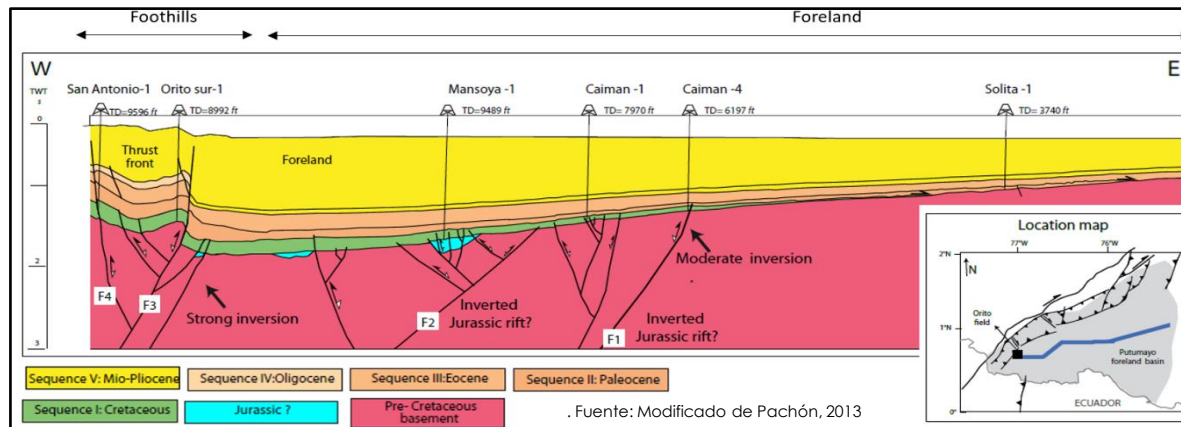


## Stratigraphic chart

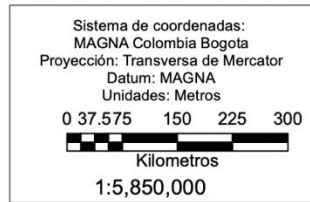
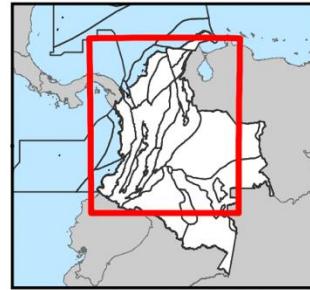
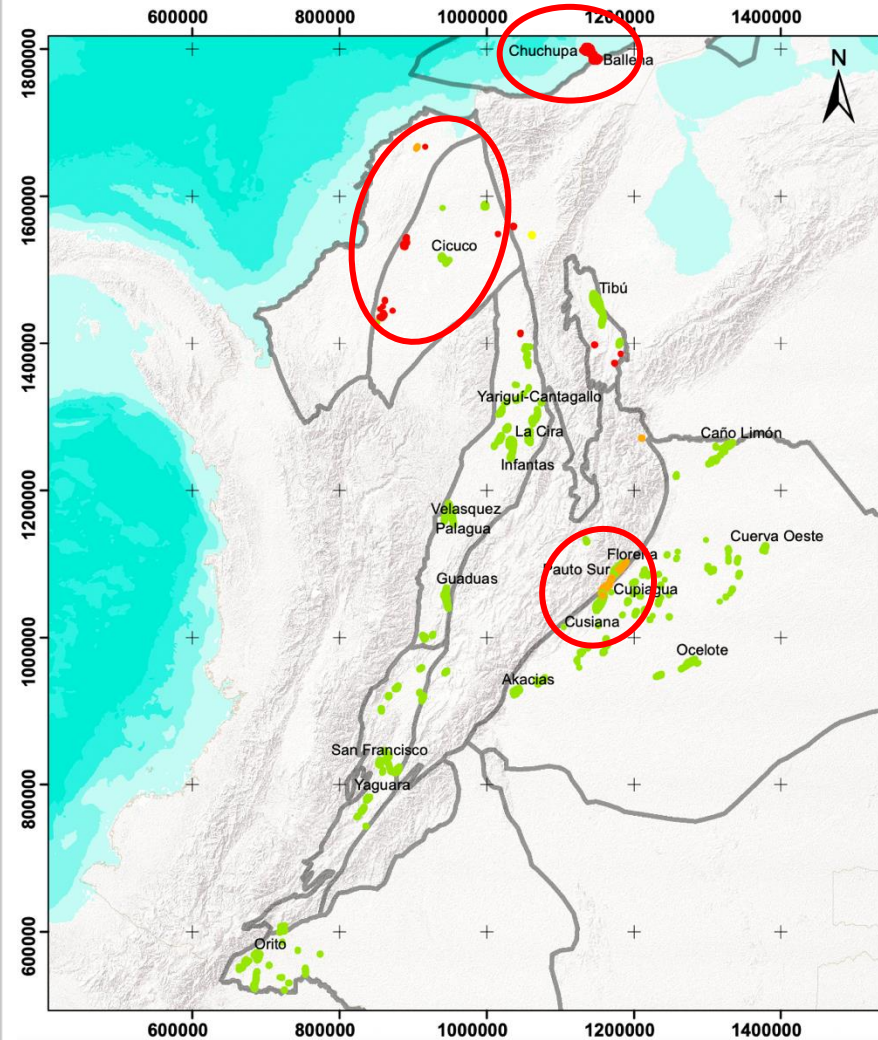


Fuente: Unión Temporal Sistemas Petrolíferos -ANH, 2016.

## Structural section



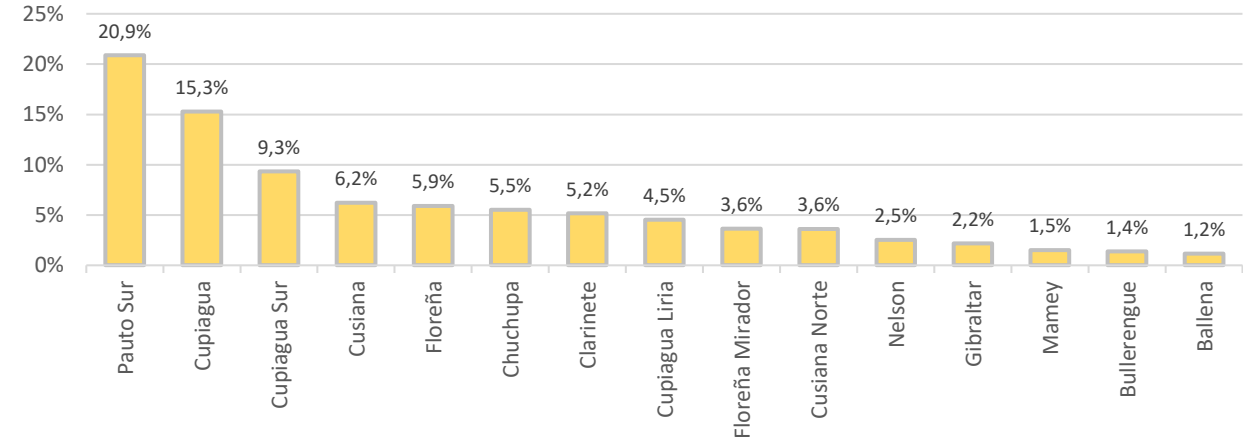




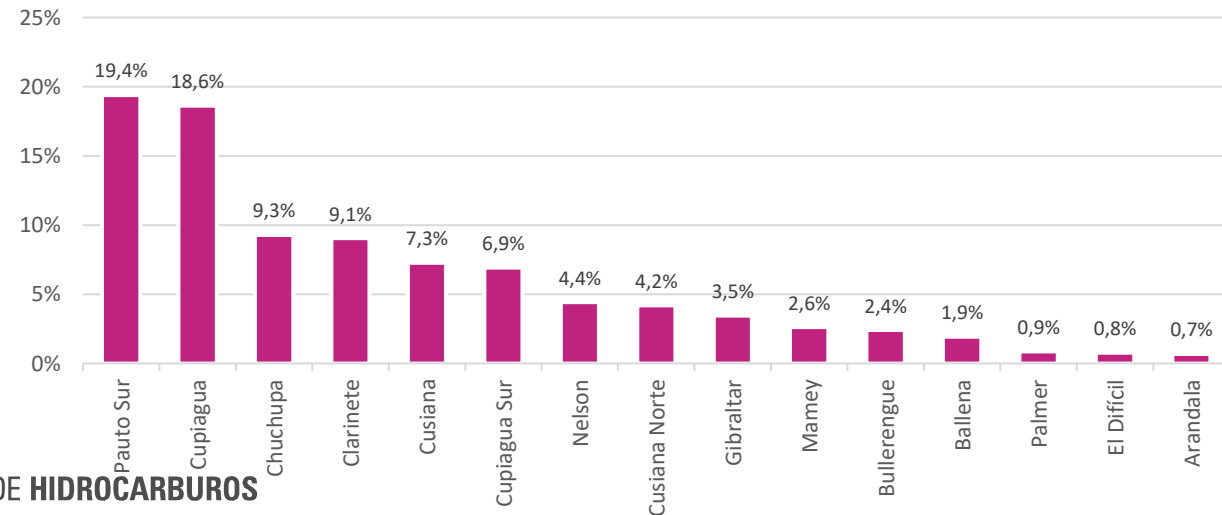
**Campos con Producción de Gas**



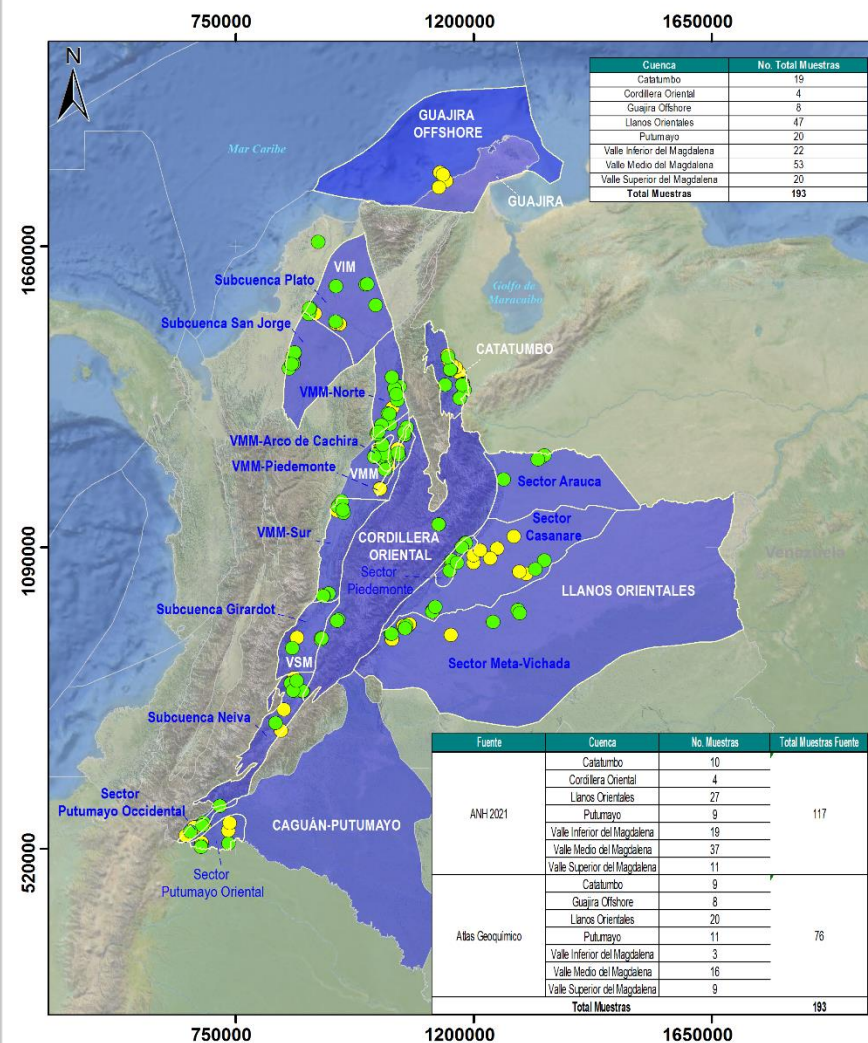
Produccion Gas (%)  
(Marzo 2021)



Gas Comercializado (%)  
(Marzo 2021)



# Gas Geochemistry / Data Base



**Convenciones**

- Limite Provincias
- Cuencas

**Pozos Análisis Geoquímico**

- ANH, 2021
- Atlas Geoquímico, 2006

Sistema de coordenadas:  
MAGNA Colombia Bogotá  
Proyección: Transversa de Mercator  
Datum: MAGNA  
Unidades: Metros

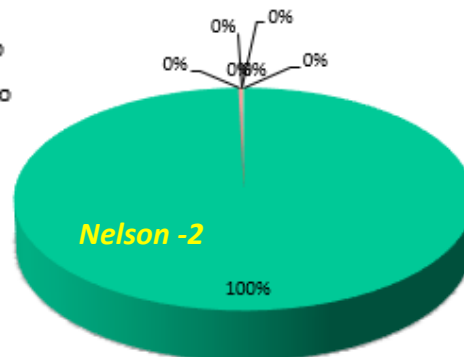
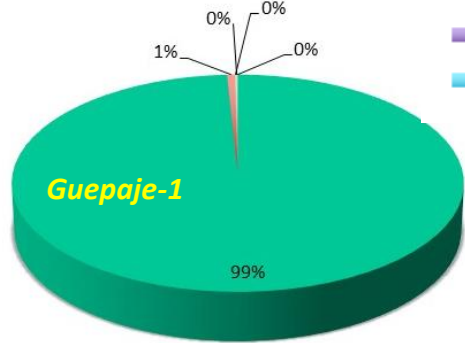
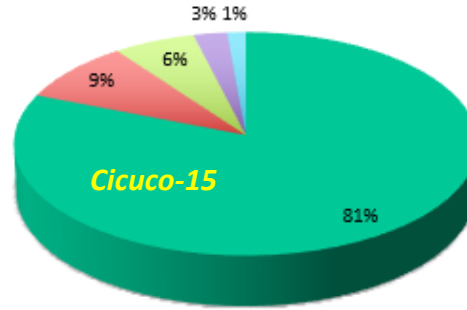
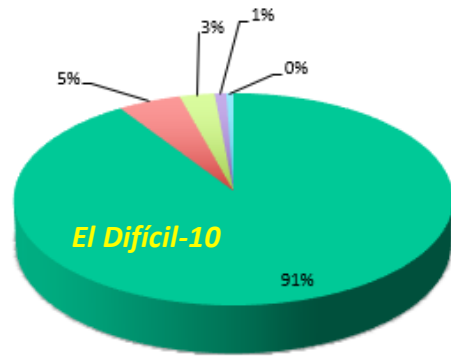
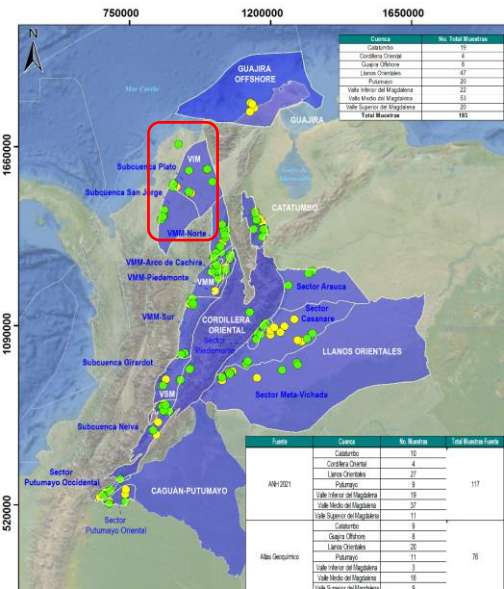
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Kilometros

**Mapa de Localización  
Pozos con Análisis  
Geoquímico  
Cuencas Evaluadas**

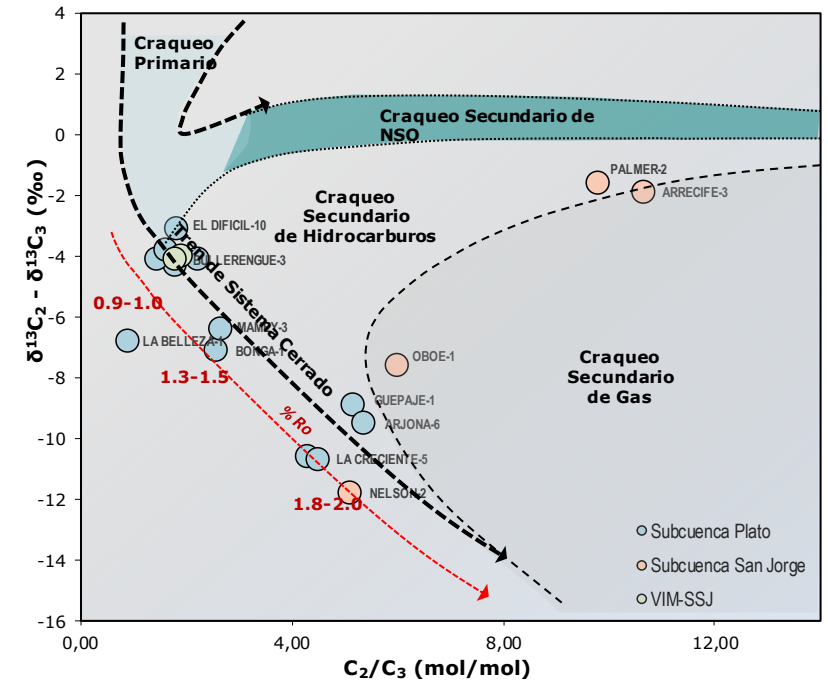
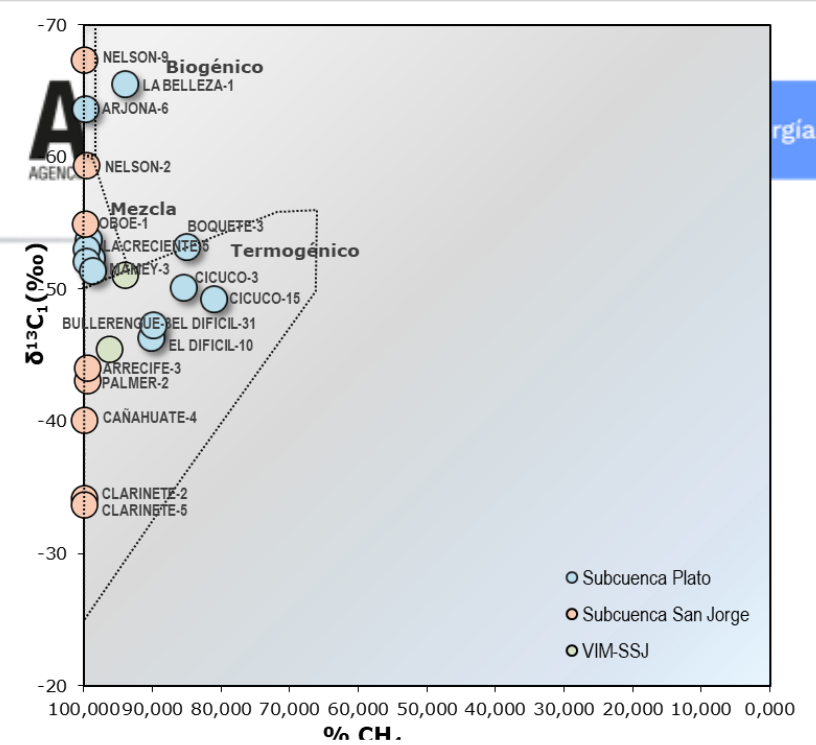
Fuente	Cuenca	Provincia	No. Muestras Provincia	No. Muestras Cuenca	No. Muestras Fuente
ANH 2021	Catatumbo	Catatumbo	10	10	117
	Cordillera Oriental	Cordillera Oriental	4	4	
		Sector Arauca	4		
		Sector Casanare	7		
	Llanos Orientales	Sector Meta Vichada	7	27	
		Sector Piedemonte	9		
	Putumayo	Sector Putumayo Occidental	6		
		Sector Putumayo Oriental	3	9	
		Subcuenca Plato	9		
	Valle Inferior del Magdalena	Subcuenca San Jorge	8	19	
		VIM-SSJ	2		
		VMM-Arco de Cachira	10		
		VMM-Norte	12		
	Valle Medio del Magdalena	VMM-Piedemonte	5	37	
		VMM-Sur	10		
	Valle Superior del Magdalena	Subcuenca Girardot	3	11	
		Subcuenca Neiva	8		
Atlas Geoquímico	Catatumbo	Catatumbo	9	9	76
	Guajira Offshore	Guajira Offshore	8	8	
		Sector Casanare	8		
	Llanos Orientales	Sector Meta Vichada	12	20	
		Sector Putumayo Occidental	7		
	Putumayo	Sector Putumayo Oriental	4	11	
	Valle Inferior del Magdalena	Subcuenca Plato	3	3	
		VMM-Arco de Cachira	6		
		VMM-Norte	3		
	Valle Medio del Magdalena	VMM-Piedemonte	4	16	
		VMM-Sur	3		
	Valle Superior del Magdalena	Subcuenca Girardot	2	9	
	Subcuenca Neiva	7			
<b>Total Muestras</b>					<b>193</b>



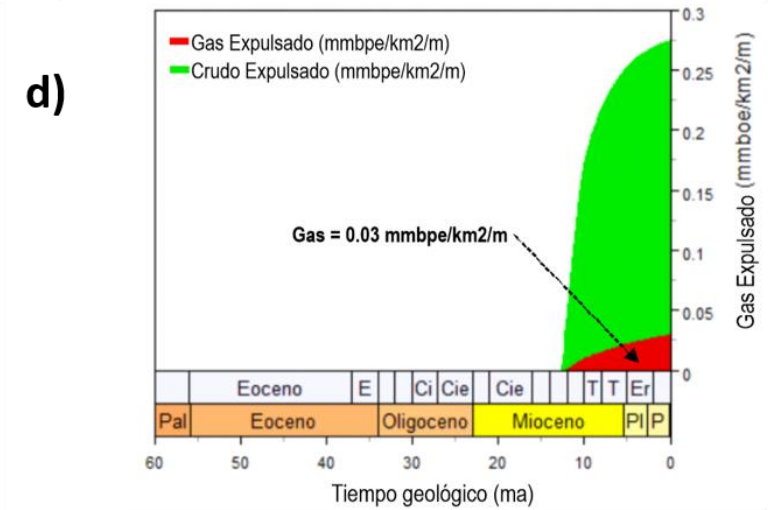
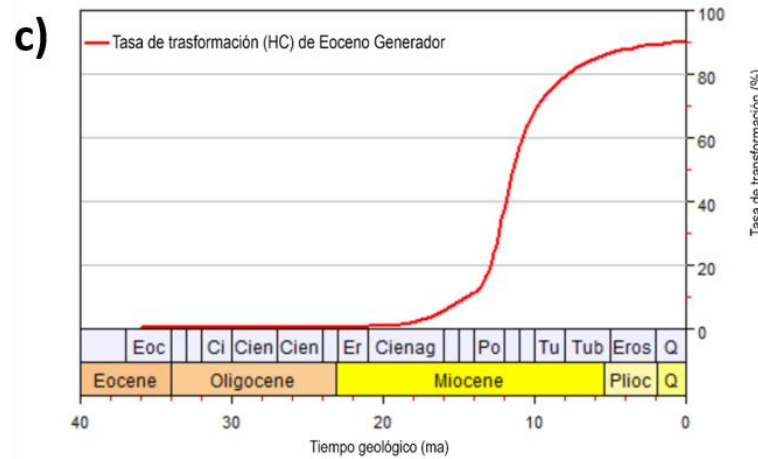
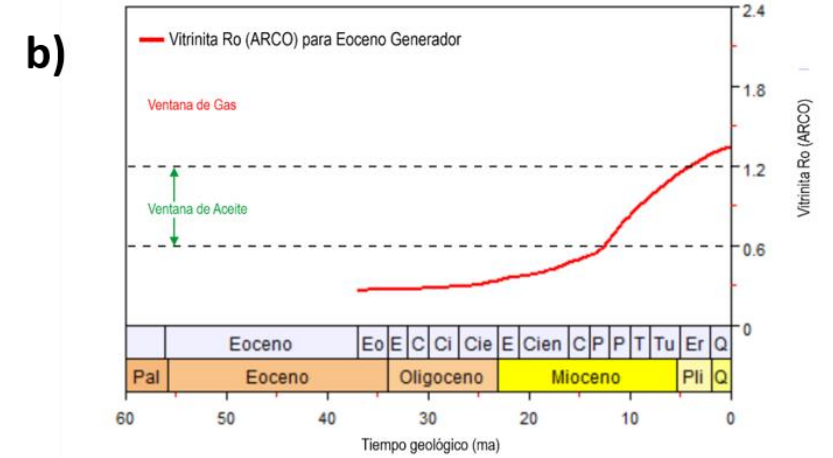
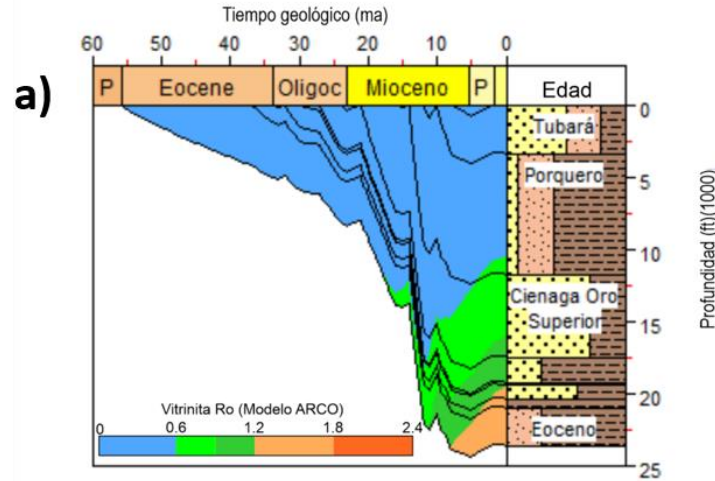
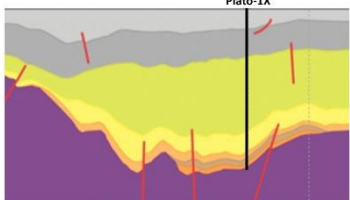
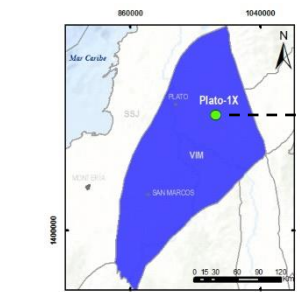
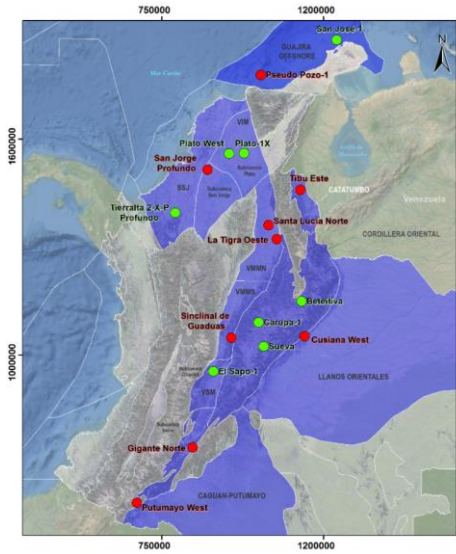
# Gas Geochemistry / LMB



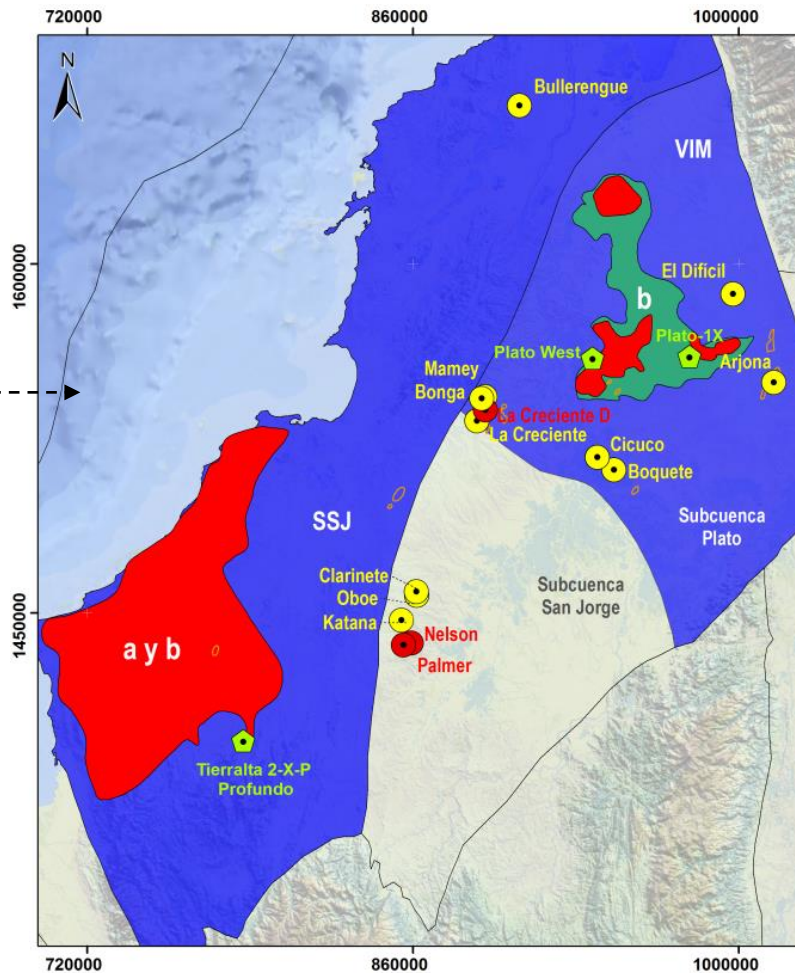
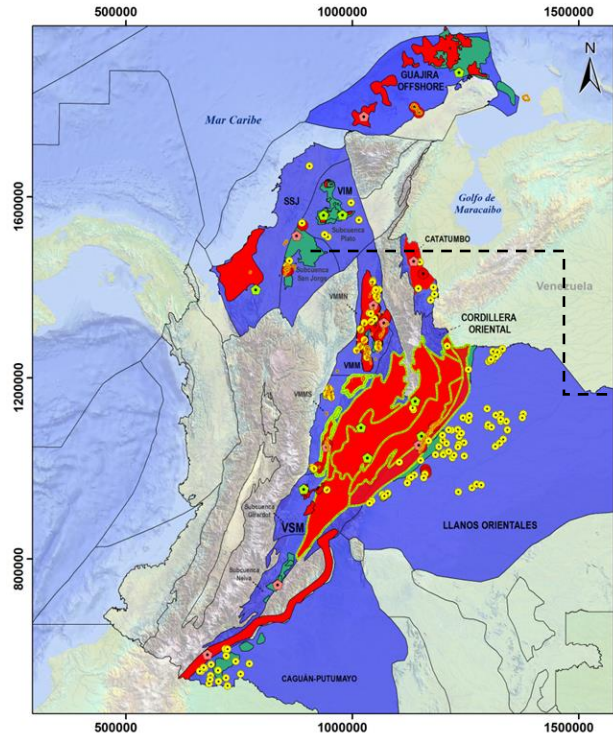
Wet Gas /Primary Cracking  
Dry Gas /Secondary Cracking



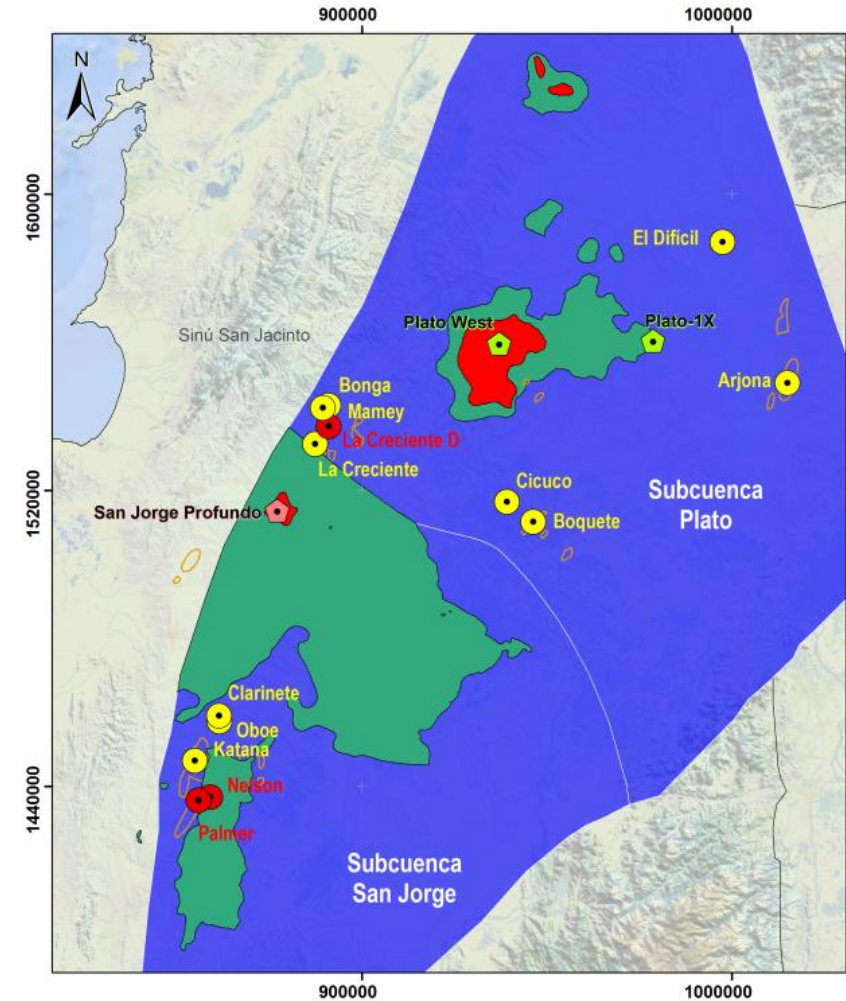
# Petroleum Systems Modeling / LMB





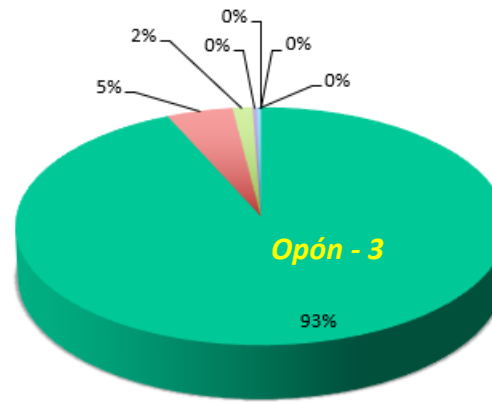
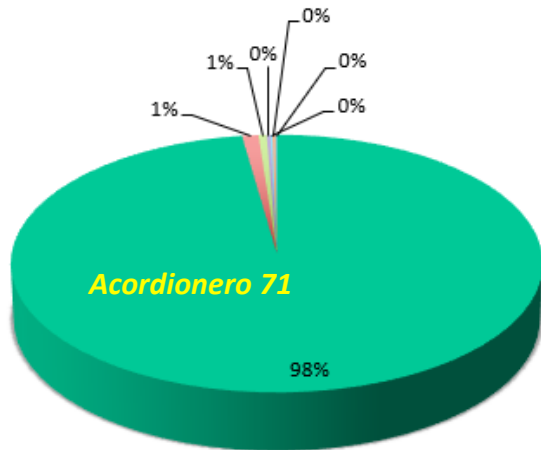
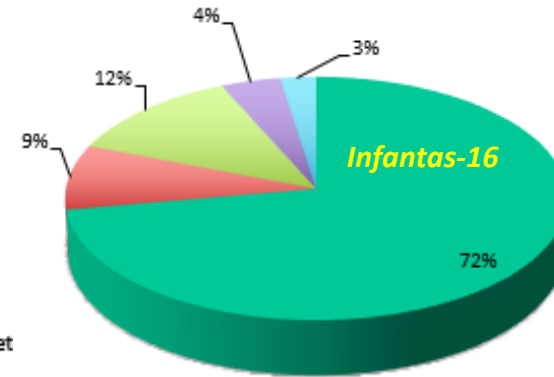
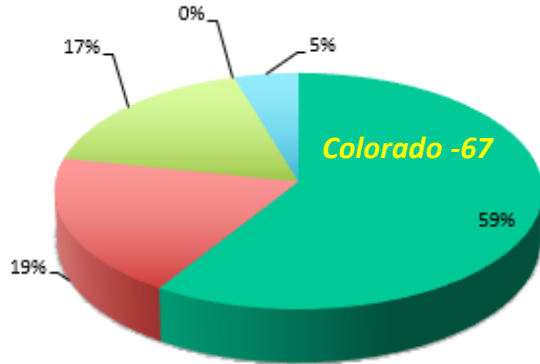
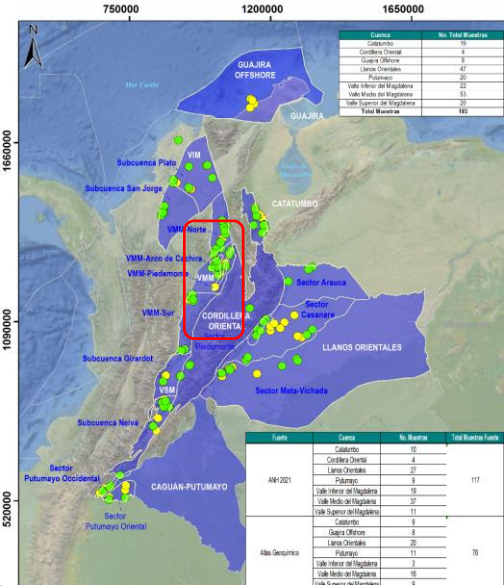


**PASR (Oil and gas Windows)  
Cretacic & Eocene SR**  
AGENCIA NACIONAL DE HIDROCARBUROS

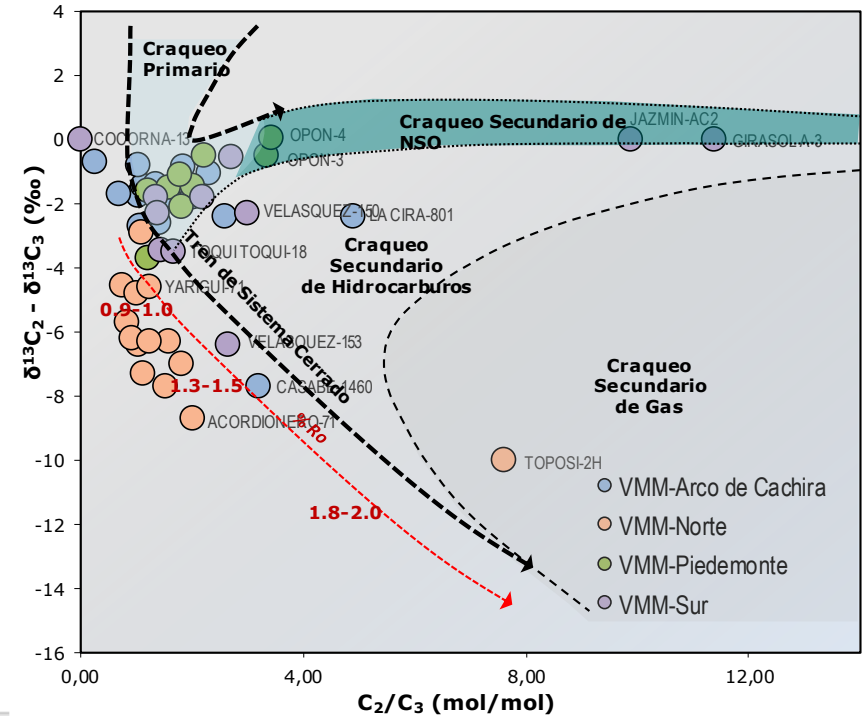
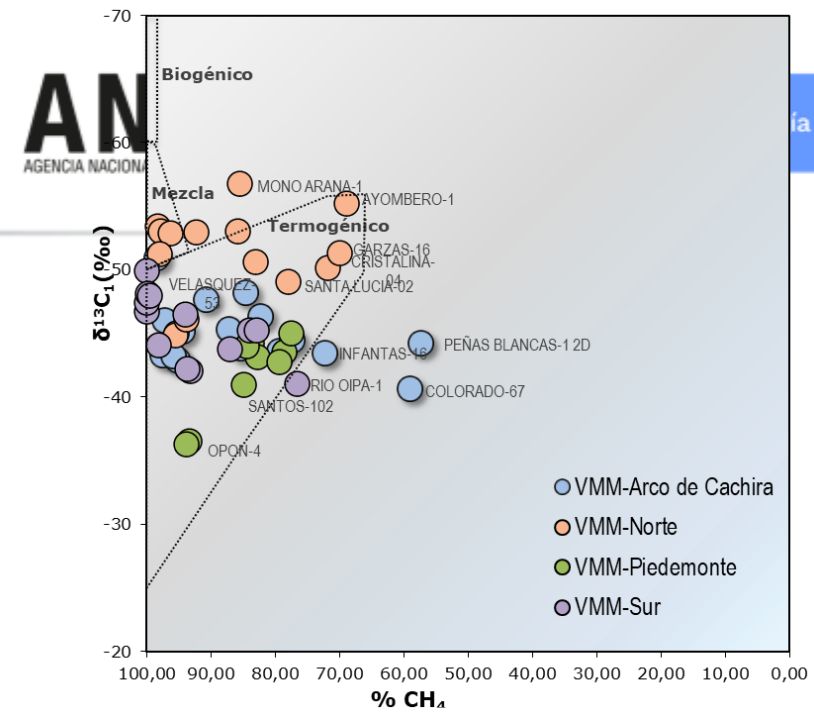


**PASR (Oil and gas Windows)  
Oligocene SR**

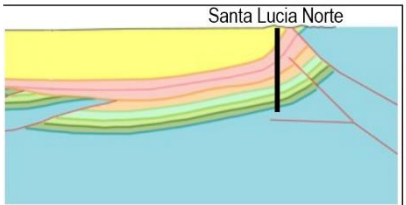
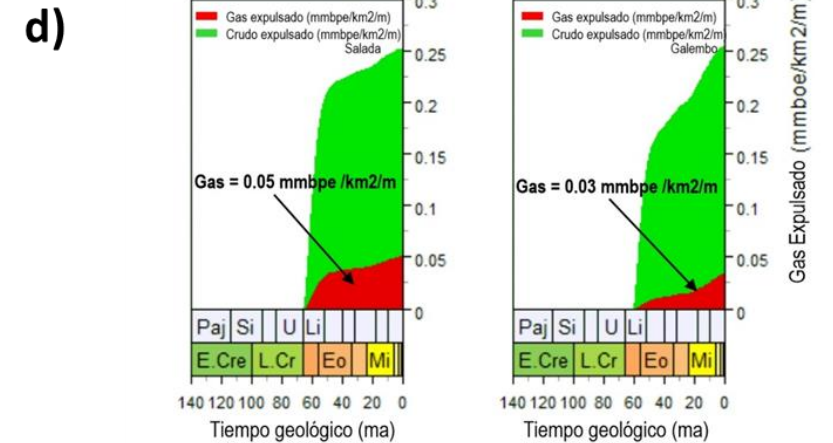
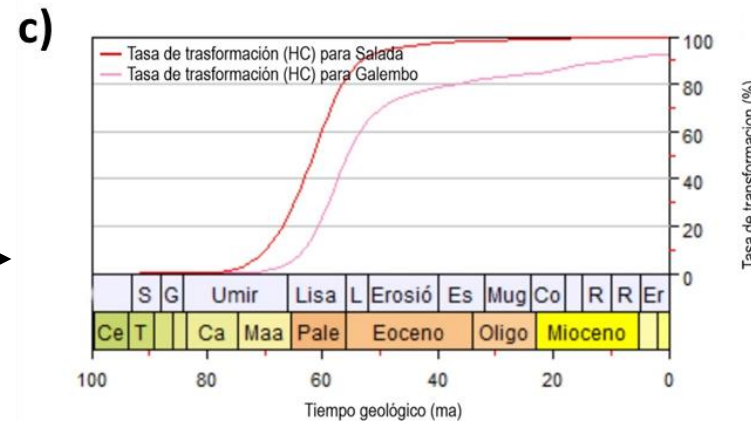
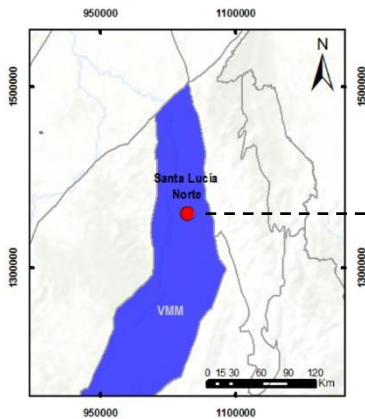
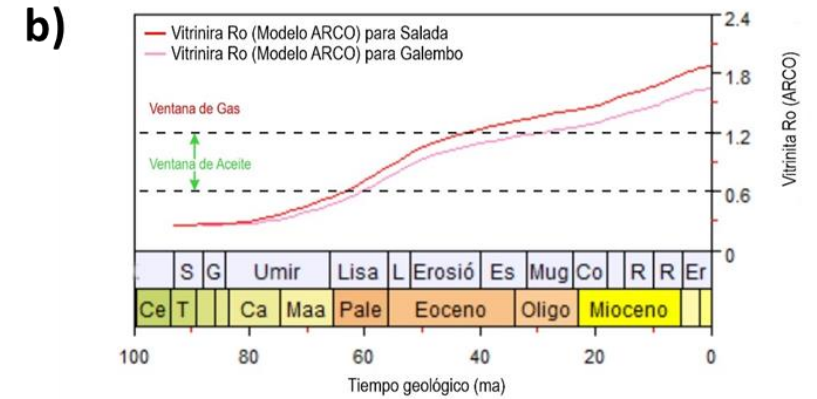
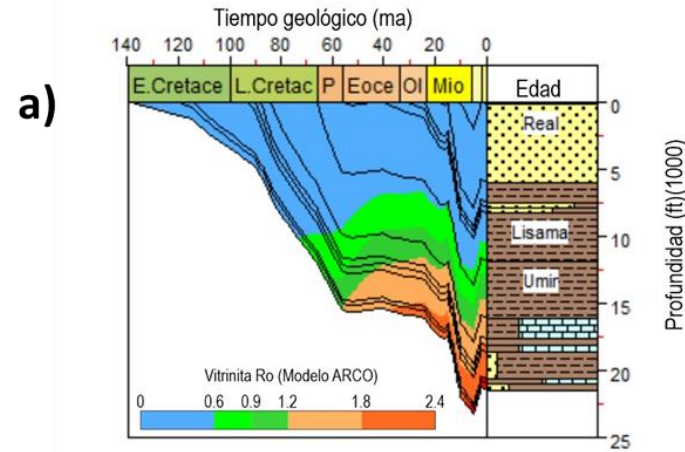
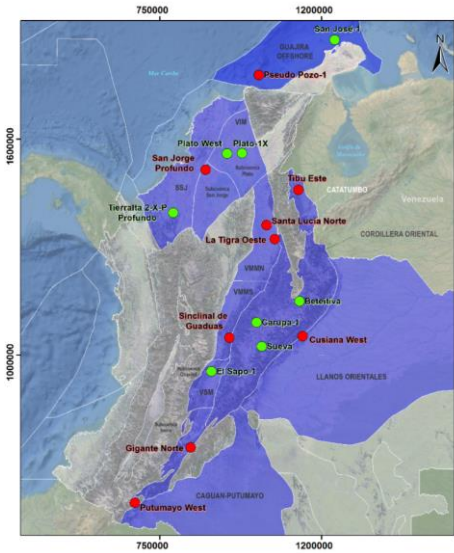
# Gas Geochemistry / MMB



Wet Gas /Primary Cracking  
Dry & Wet Gas /Secondary Cracking

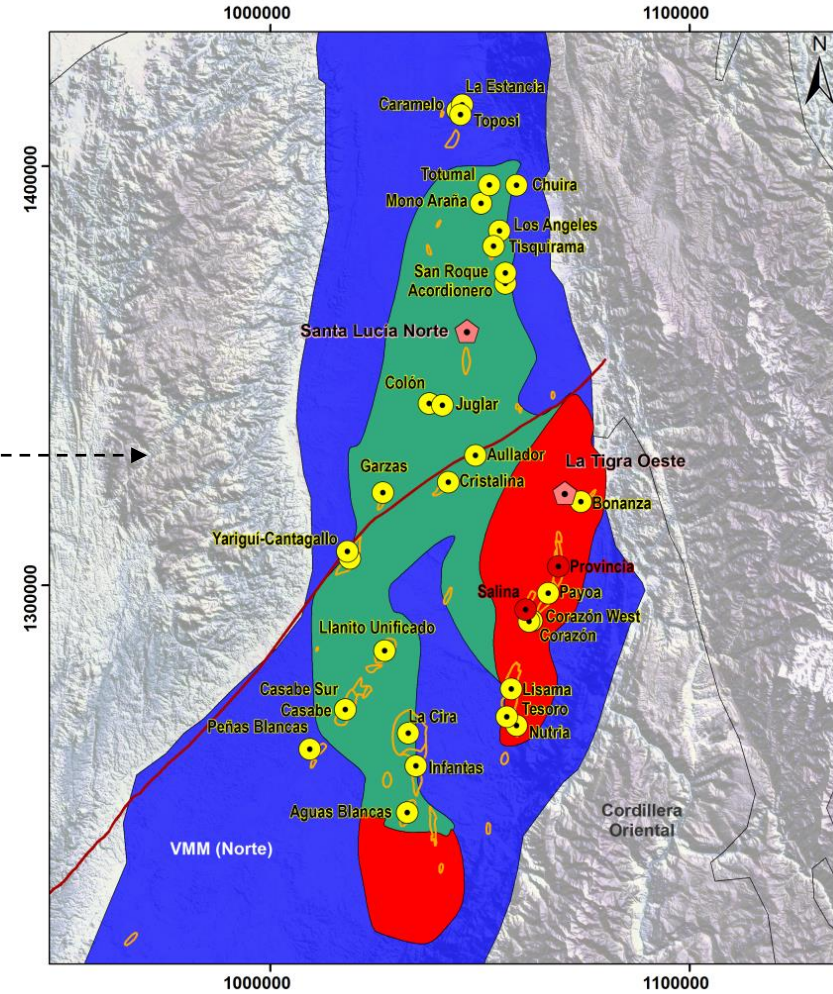
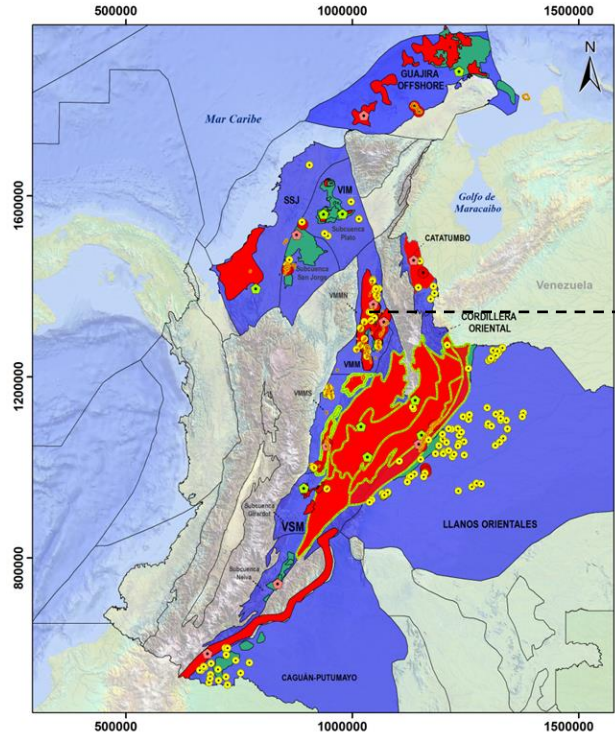




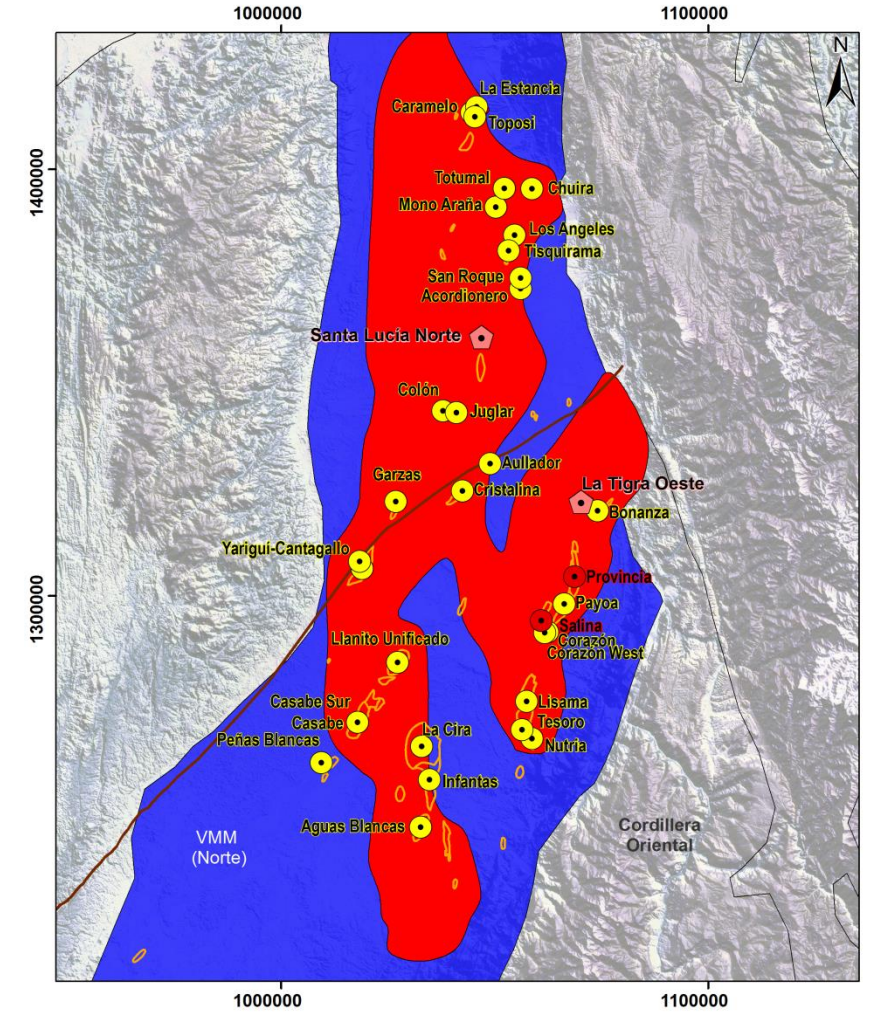




# Petroleum Systems Modeling / MMB

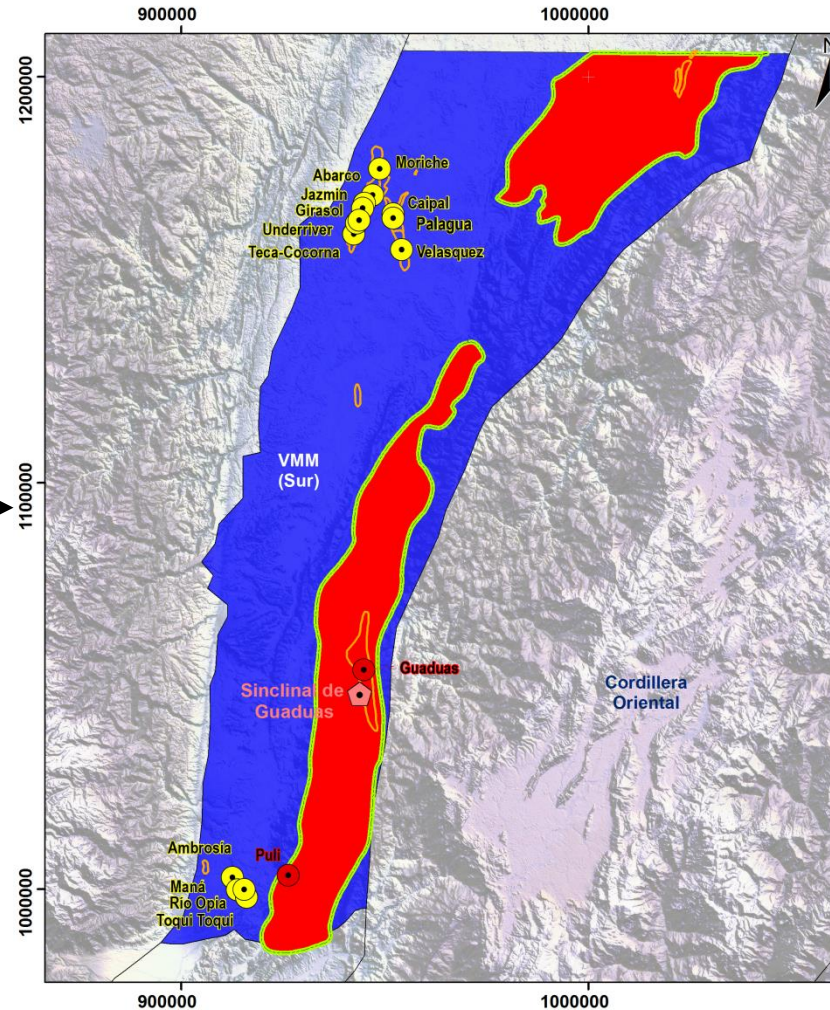
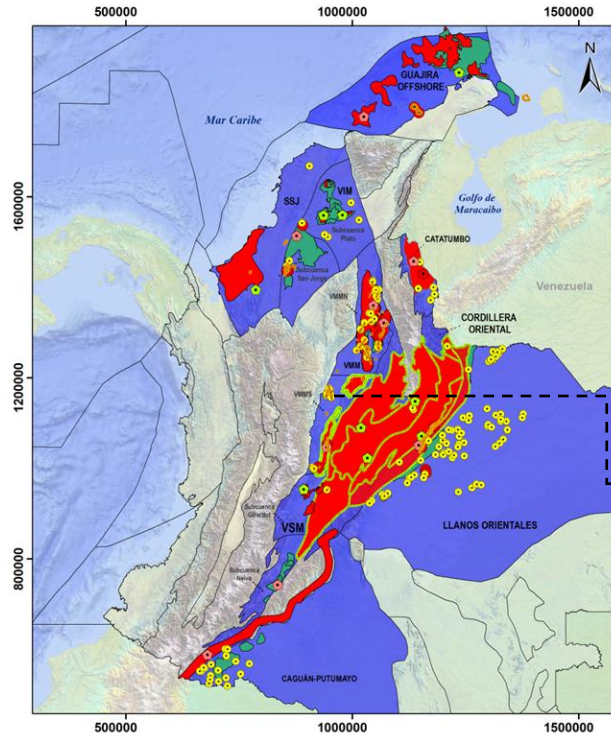


**PASR (Oil and gas Windows)  
La Luna Formation / North MMB**  
AGENCIA NACIONAL DE HIDROCARBUROS



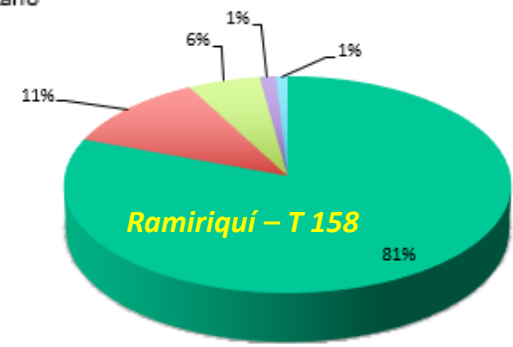
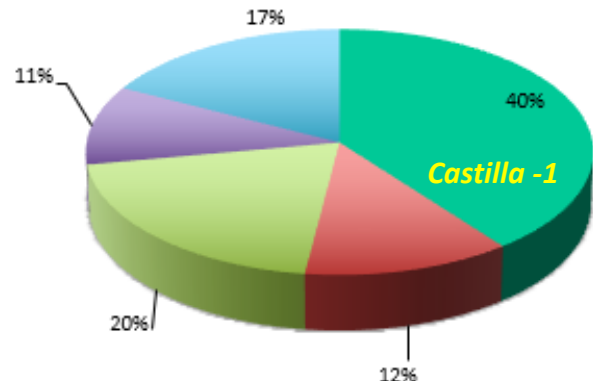
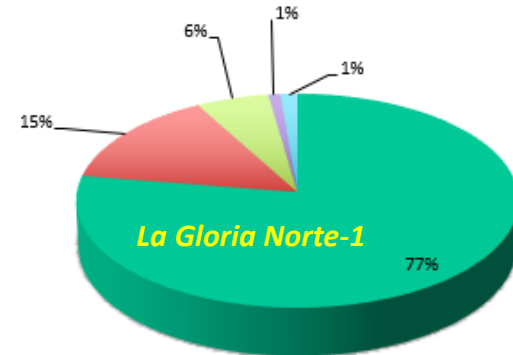
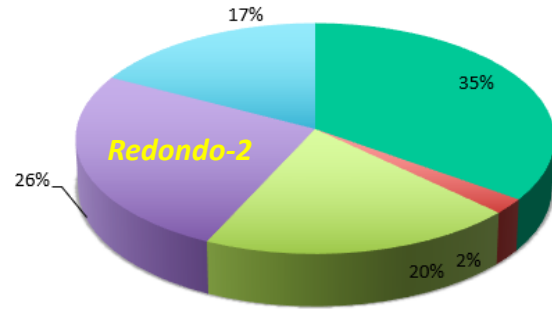
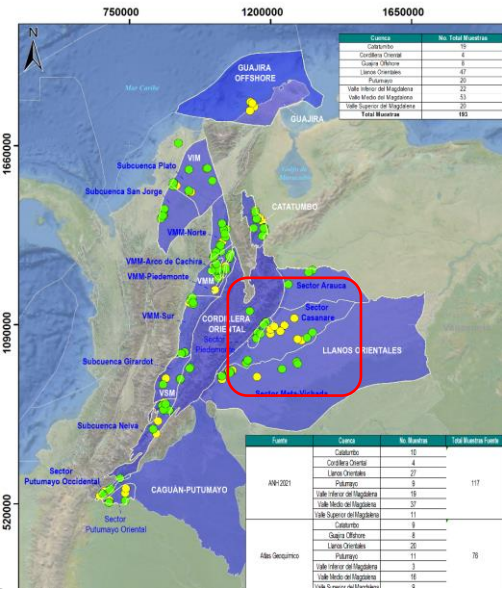
**PASR (Oil and gas Windows)  
Tablazo Formation / North MMB**



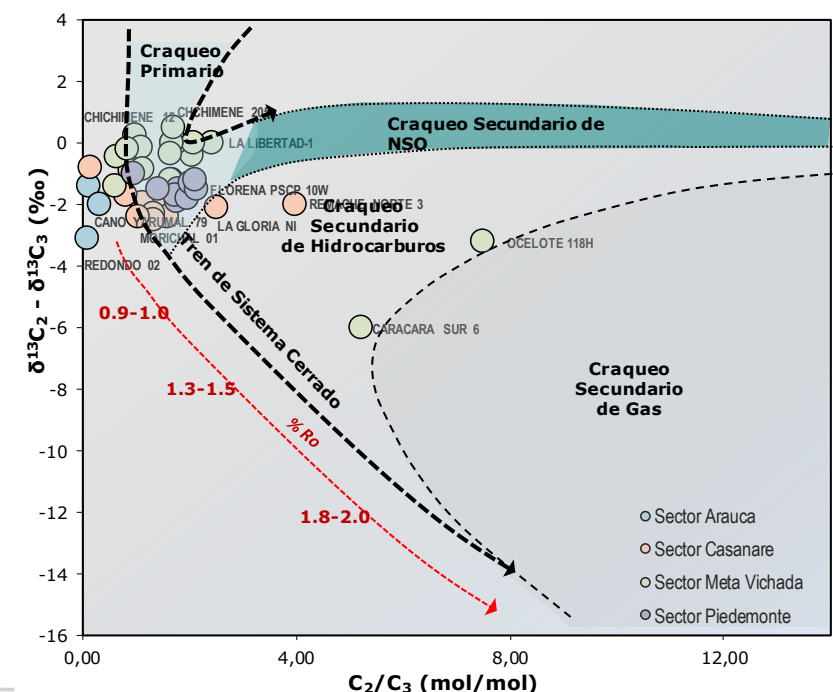
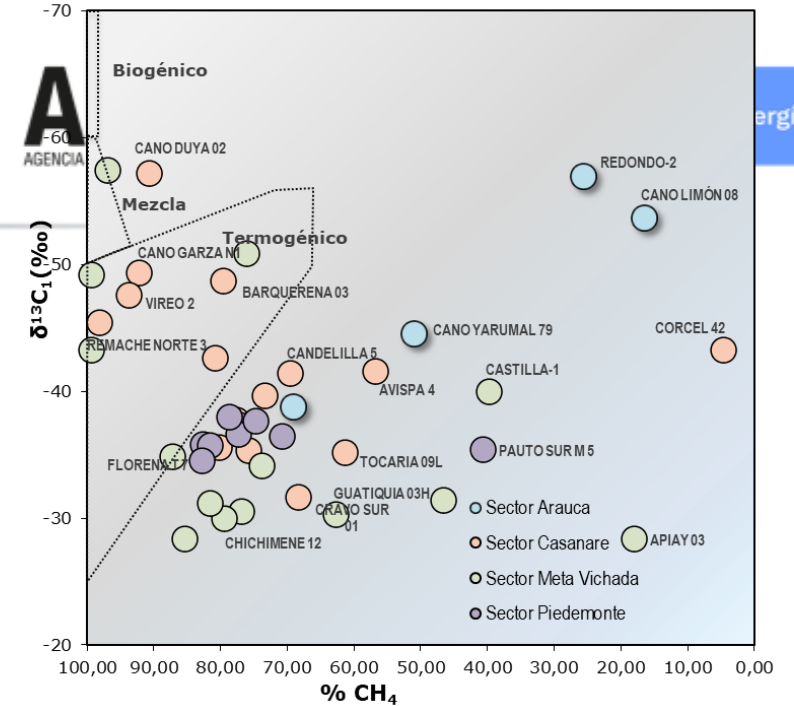


**PASR (Oil and gas Windows)  
Frontera & Socotá Formations  
South MMB**

# Gas Geochemistry / Llanos Oriental

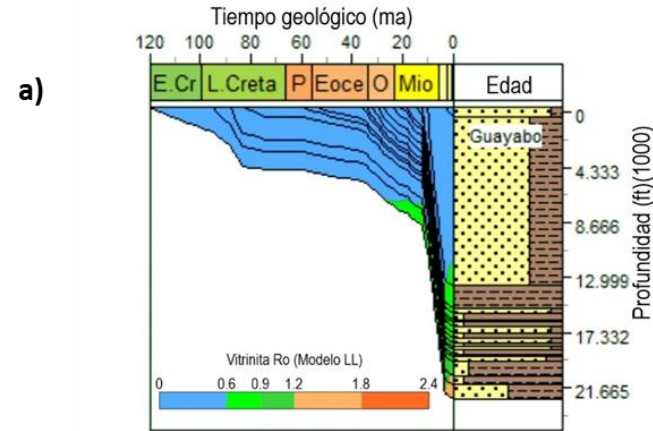
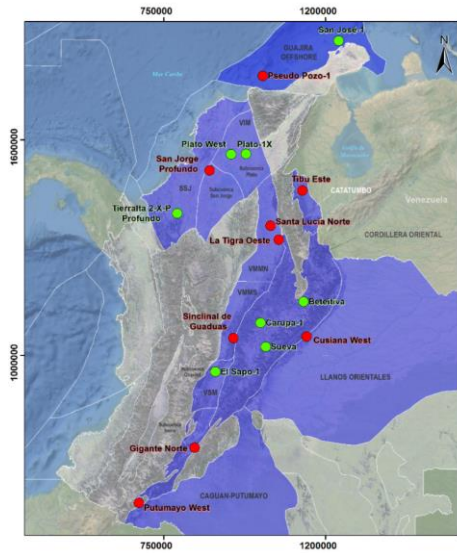


Dry & Wet Gas / Primary Cracking

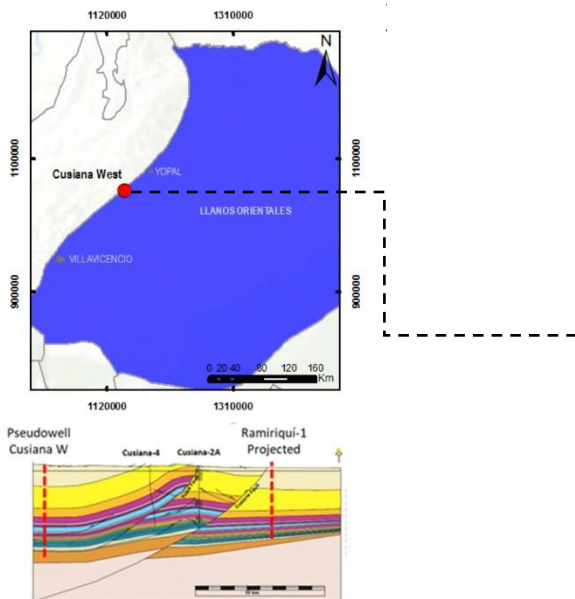
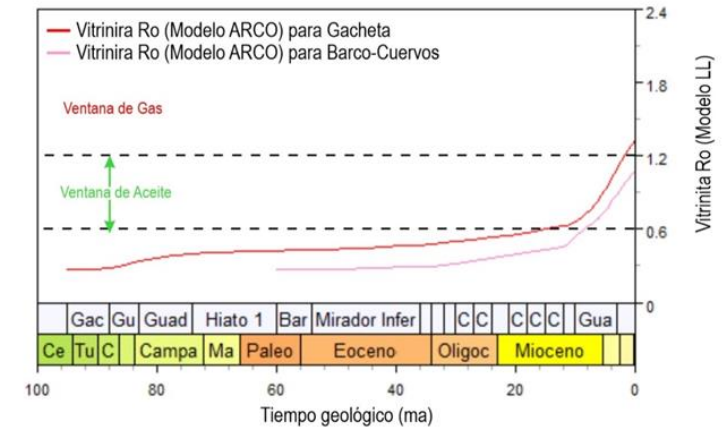




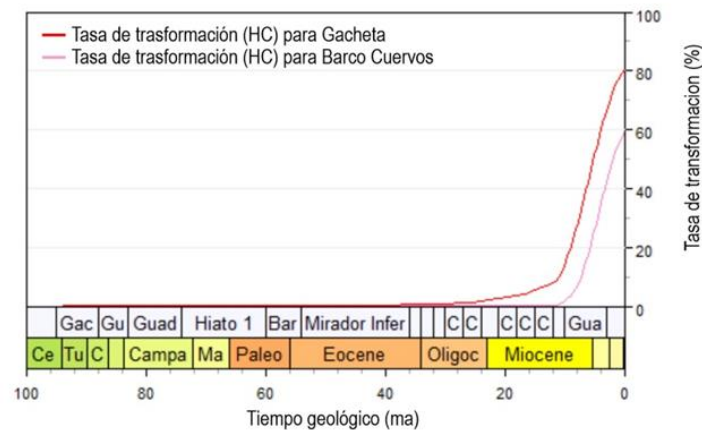
# Petroleum Systems Modeling / Llanos Orientales



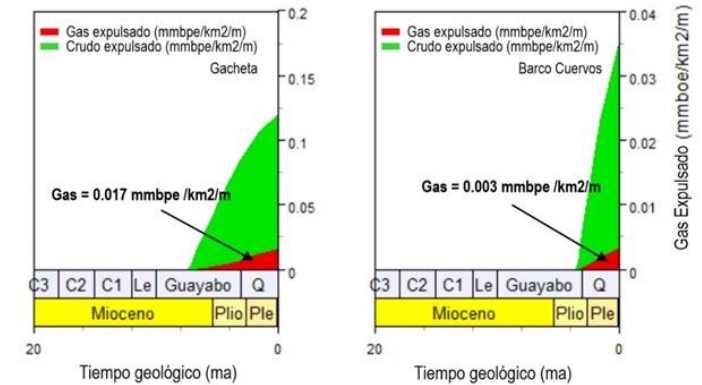
b)



c)

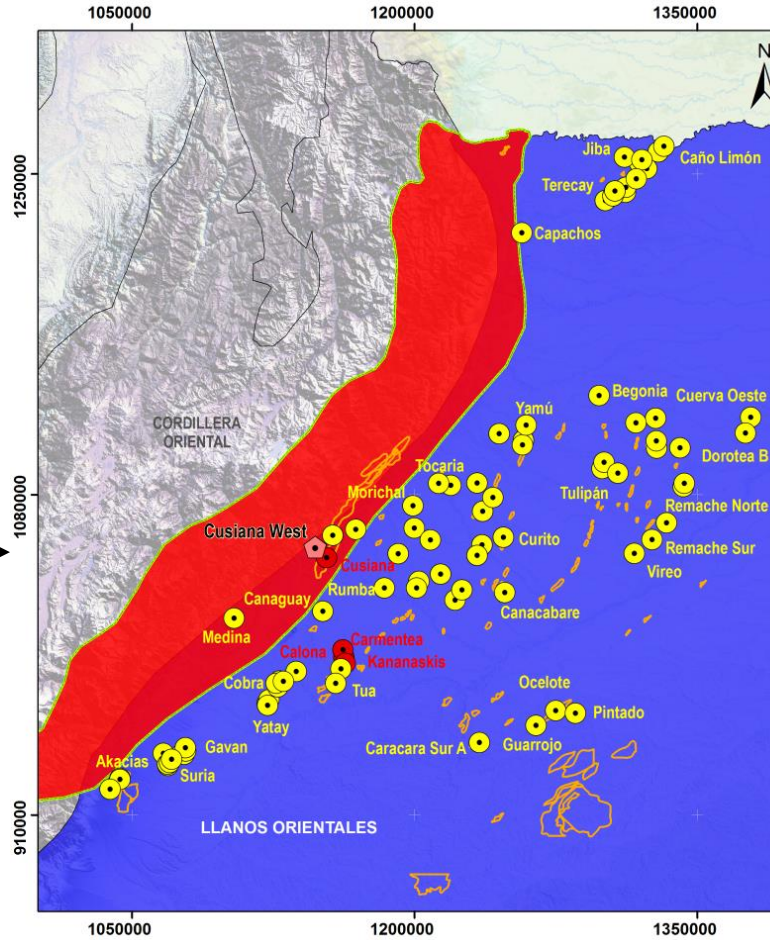
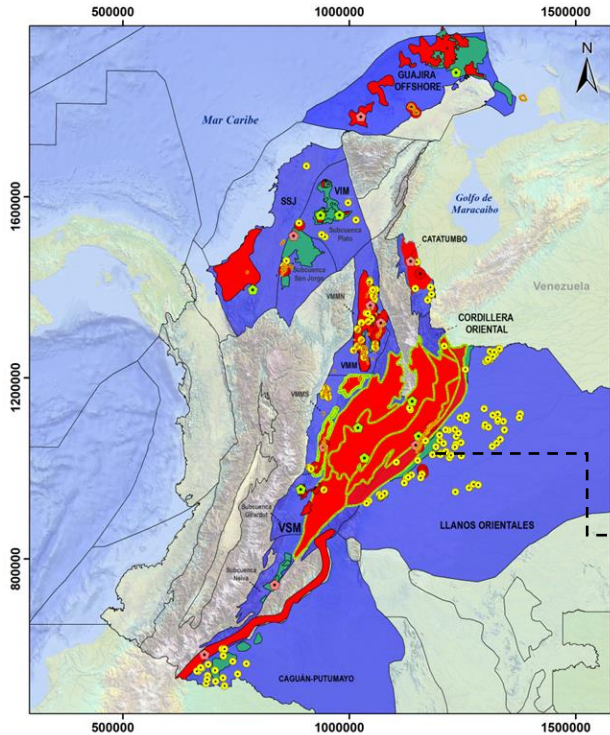


d)

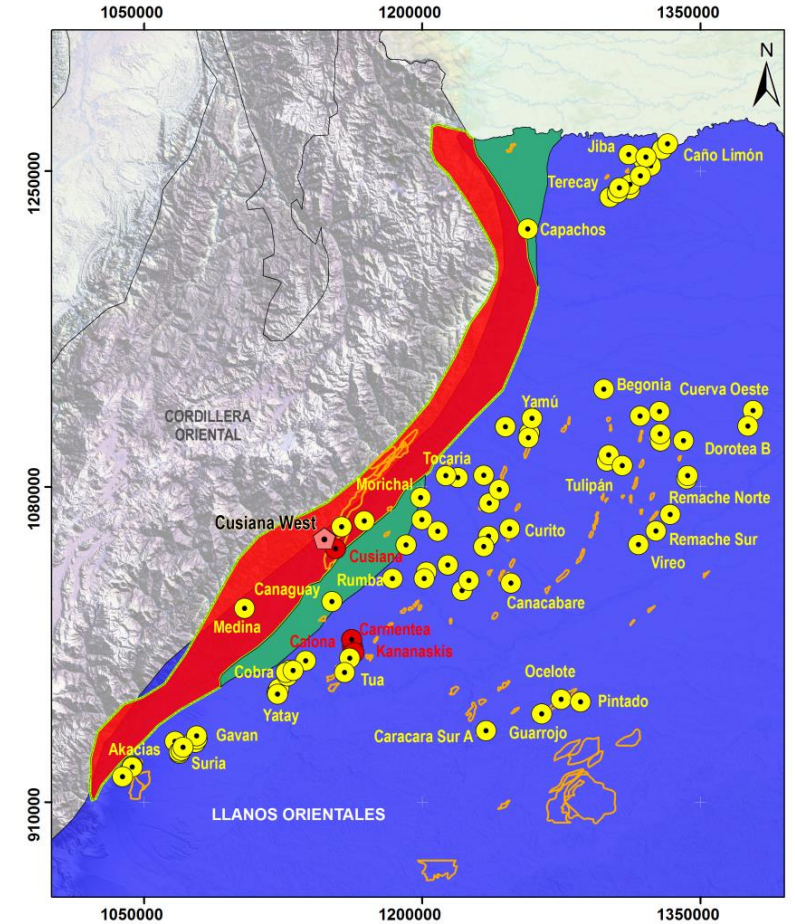




# Petroleum Systems Modeling / Llanos Orientales



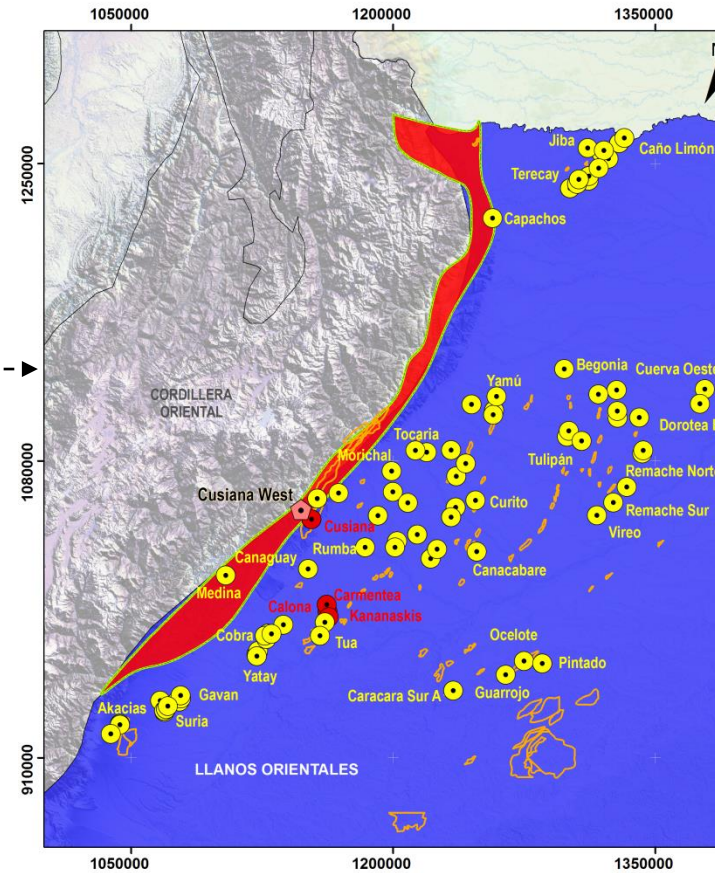
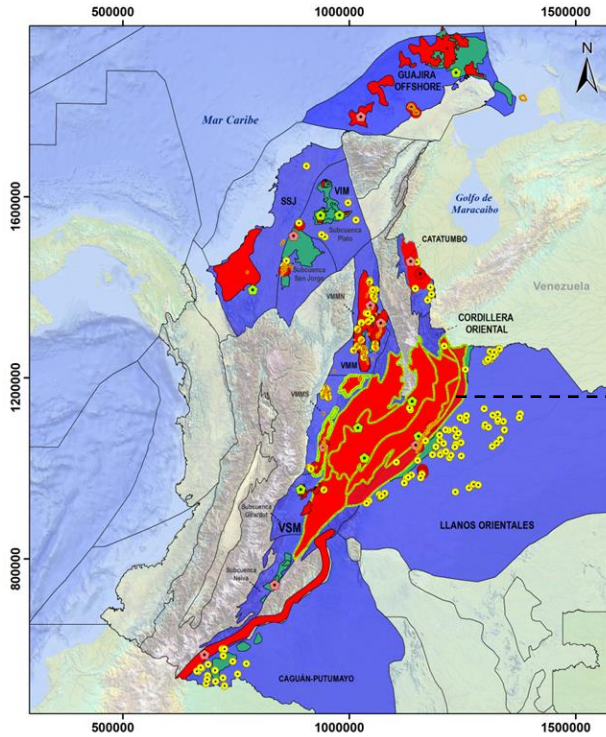
**PASR (Oil and gas Windows)  
Fomeque Formation**



**PASR (Oil and gas Windows)  
Chipaque - Gachetá Formations**

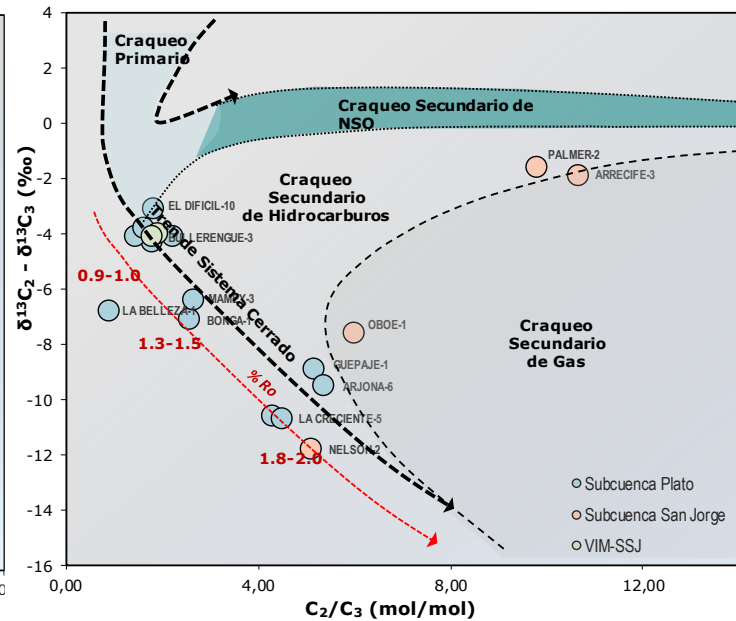
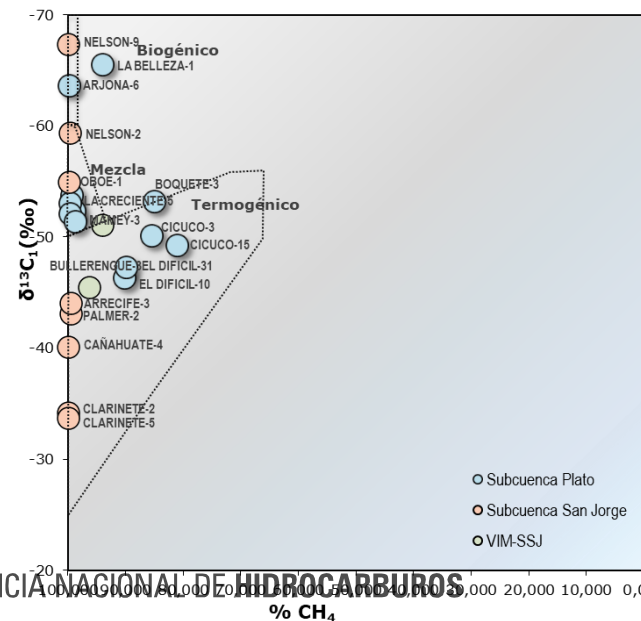
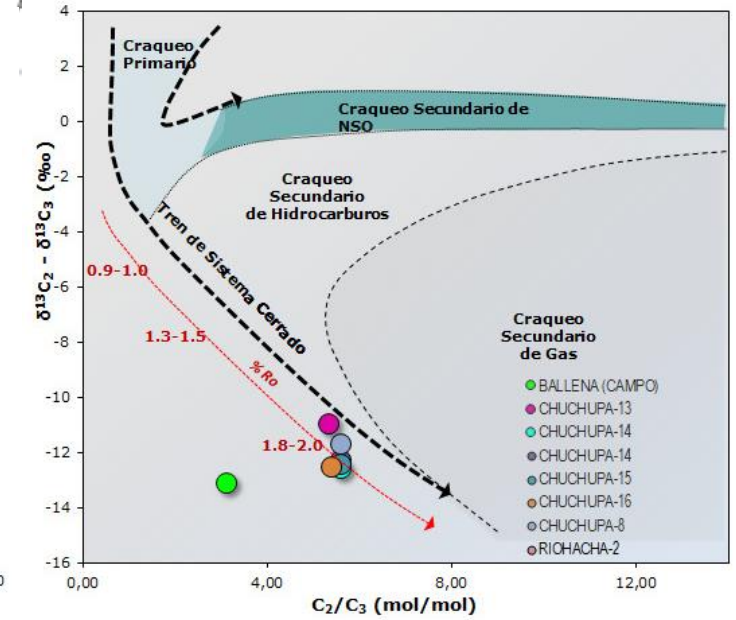
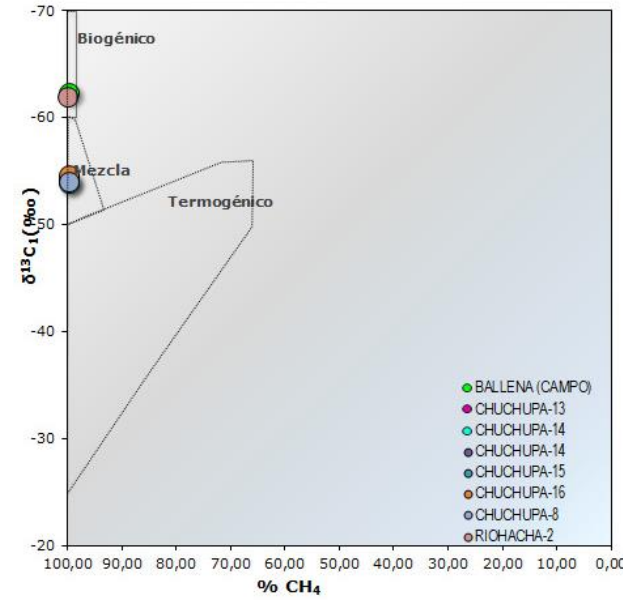
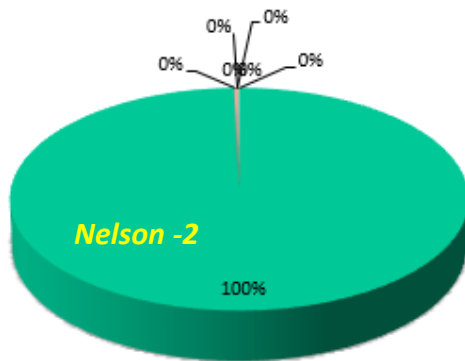
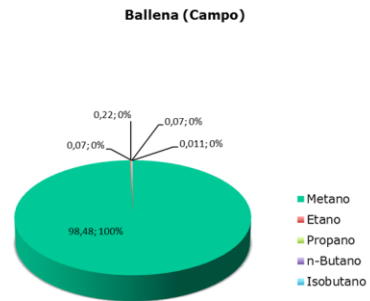
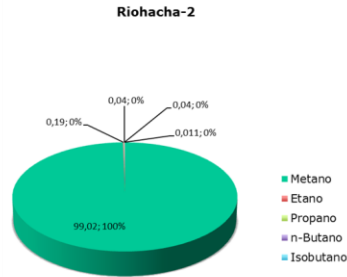
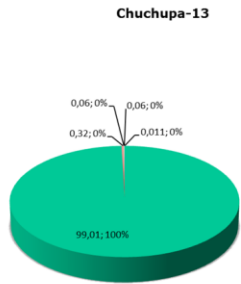
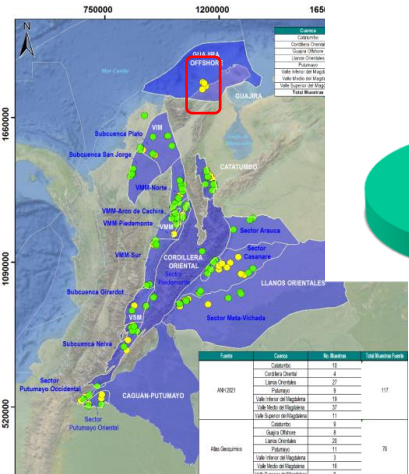


# Petroleum Systems Modeling / Llanos Orientales



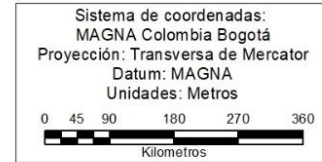
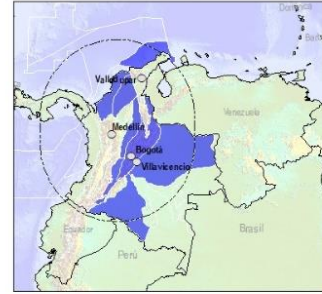
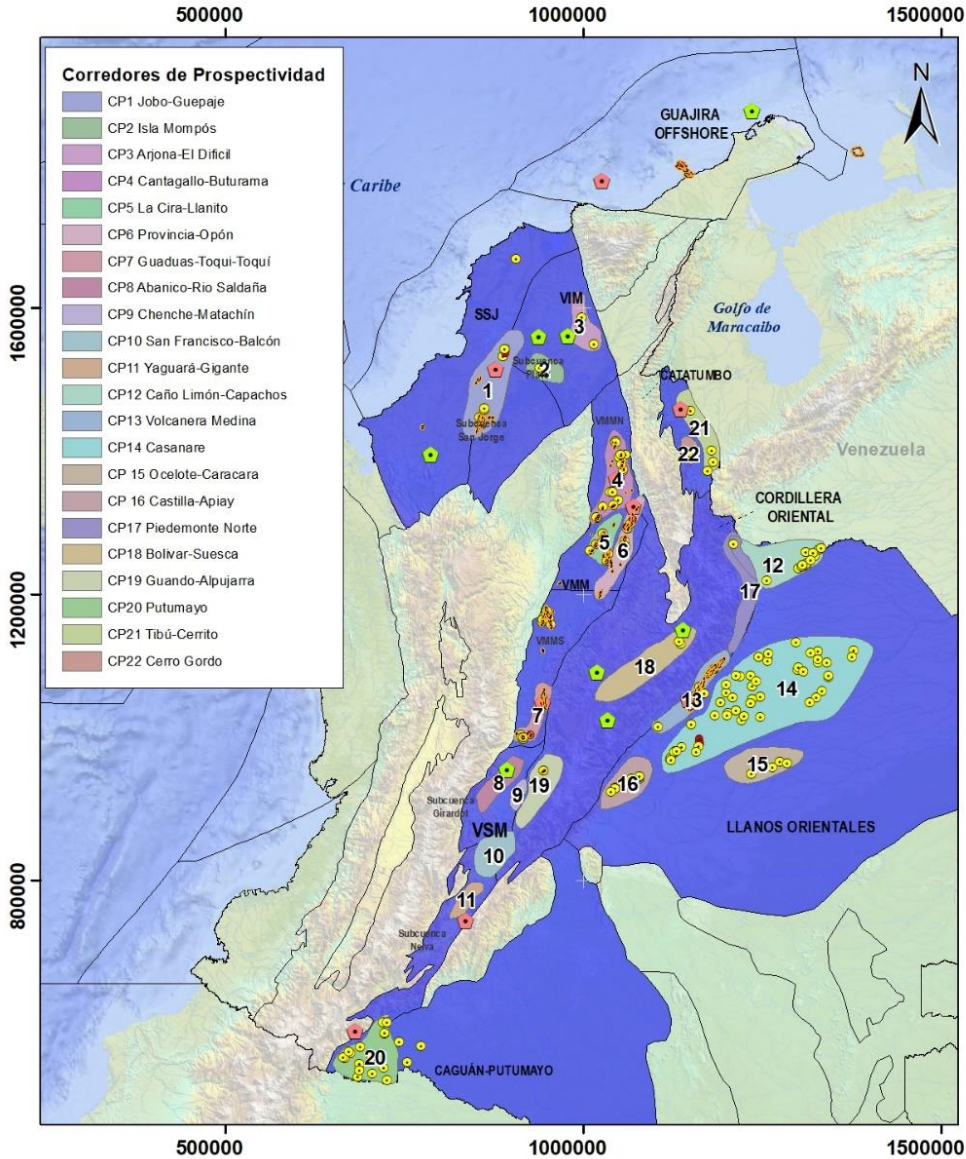
**PASR (Oil and gas Windows)  
Barco - Cuervos Formations**

# Gas Geochemistry / Guajira Offshore





# Play Fairway Analysis



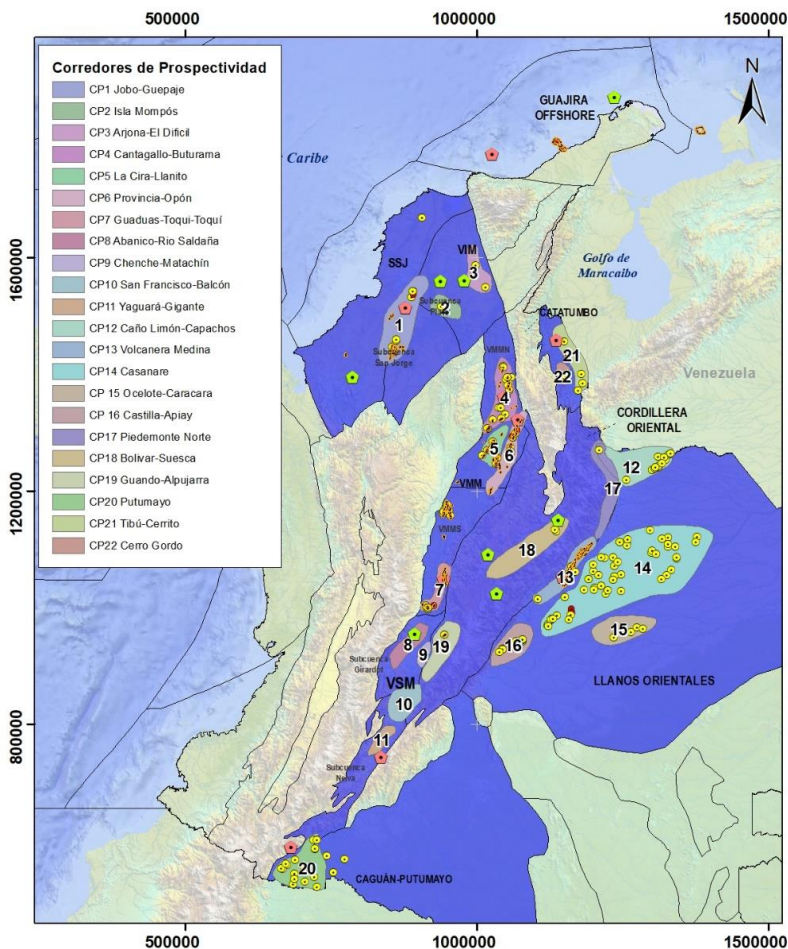
**Mapa de Corredores de Prospectividad Cuencas Evaluadas**



Cuenca	Corredor Prospectivo	Campos incluidos	Reservorios
Valle Inferior del Magdalena	CP1 Jobo-Tablón	La Creciente, Ayombe y Guepajé, Chinú	Formación Ciénaga de Oro
	CP2 Isla Mompós	Cicuco, Boquete, Momposina, Boquilla, Violo y Zenón	Caliza de Cicuco
	CP3 Arjona-El Difícil	Arjona, El Difícil	Caliza de El Difícil, Formación Ciénaga de Oro
Valle Medio del Magdalena	CP4 Cantagallo-Buturama	Buturama, La Estancia, Caramelo, Potosí, Totumal, Chuira, Tisquirama, San Roque, Aullador, Colón, Cristalina, Juglar, Garzas, Yarigui-Cantagallo	Formaciones Lisama, Esmeraldas-La Paz y La Luna
	CP5 La Cira-Llanito	La Cira-Infantas, Lisama, Casabe y Llanito	Formaciones Esmeraldas-La Paz y Mugrosa
	CP6 Provincia-Opón	Bonanza, Payoa, La Salina, Provincia, Tesoro, Nutría, Aguas Blancas y Opón	Formación Esmeraldas-La Paz
	CP7 Guaduas - Toquí-Toquí	Río Opía, Toquí-Toquí, Guaduas	Formación Cimarrona y Arenas basales del terciario
Valle Superior del Magdalena	CP8 Abanico-Río Saldaña	Abanico, Pacandé, Ortega, Toldado, Río Saldaña	Formaciones Monserrate, Tetuán y Caballos
	CP9 Chenche-Matachín	Chenche, Matachín Norte y Matachín Sur	Formación Monserrate
	CP10 San Francisco-Balcón	Arrayán, Balcón, Brisas, Tenay, Palogrande, Cebú, Palermo, San Francisco	Formaciones Tetuán, Caballos, Monserrate y Honda
Llanos	CP11 Yaguará-Gigante	Yaguará, La Hocha, La Cañada Norte, Gigante Norte	Formaciones Monserrate y Caballos
	CP12 Caño Limón-Capachos	Caño Limón, Arauca, Cosecha, Caicare, Jiba	Formaciones Guadalupe, Mirador y Carbonera
	CP13 Volcanera-Medina	Volcanera, Medina, Cusiana, Cupiagua, Pauto, Floreña, Liria	Formaciones Guadalupe, Barco y Mirador
	CP14 Casanare	La Gloria, Santiago, Centauros, Zopilote, Carrizales, Remache, Dorotea y Cuerva	Formaciones Mirador y Carbonera
	CP15 Ocelote-Caracara	Ocelote, Caracara, Guarrojo, Sabanero, Jaguar	Formación Carbonera
Cordillera	CP16 Castilla-Apiay	Castilla, Chichimene, Apiay, Suria	Formaciones Une, Guadalupe y Mirador
	CP17 Piedemonte Norte	Gibraltar	Formación Mirador
	CP18 Bolívar-Suesca	Corrales, Bolívar	Formaciones Guadalupe y Picacho
Putumayo	CP19 Guando-Alpujarra	Guando	Formación Guadalupe
	CP20 Putumayo	Orito, Loro, Horniga, Quinde-Cohembí, Mirta-Agapanto	Formaciones Caballos y Villeta
Catatumbo	CP21 Tibú-Cerrito	Tibú, Sardinata, Río Zulía, Oripayá, Cerito	Formaciones La Luna, Barco y Carbonera
	CP22 Cerro Gordo	Cerro Gordo	Formaciones La Luna, Barco y Carbonera



# Prospectivity Ranking

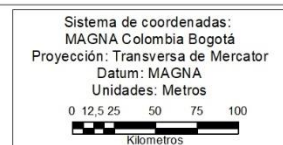
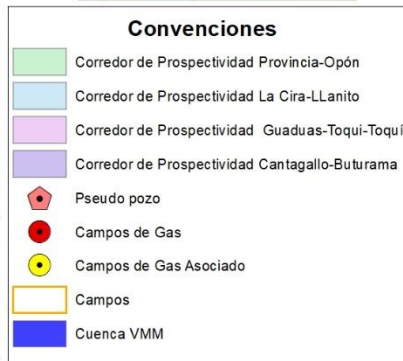
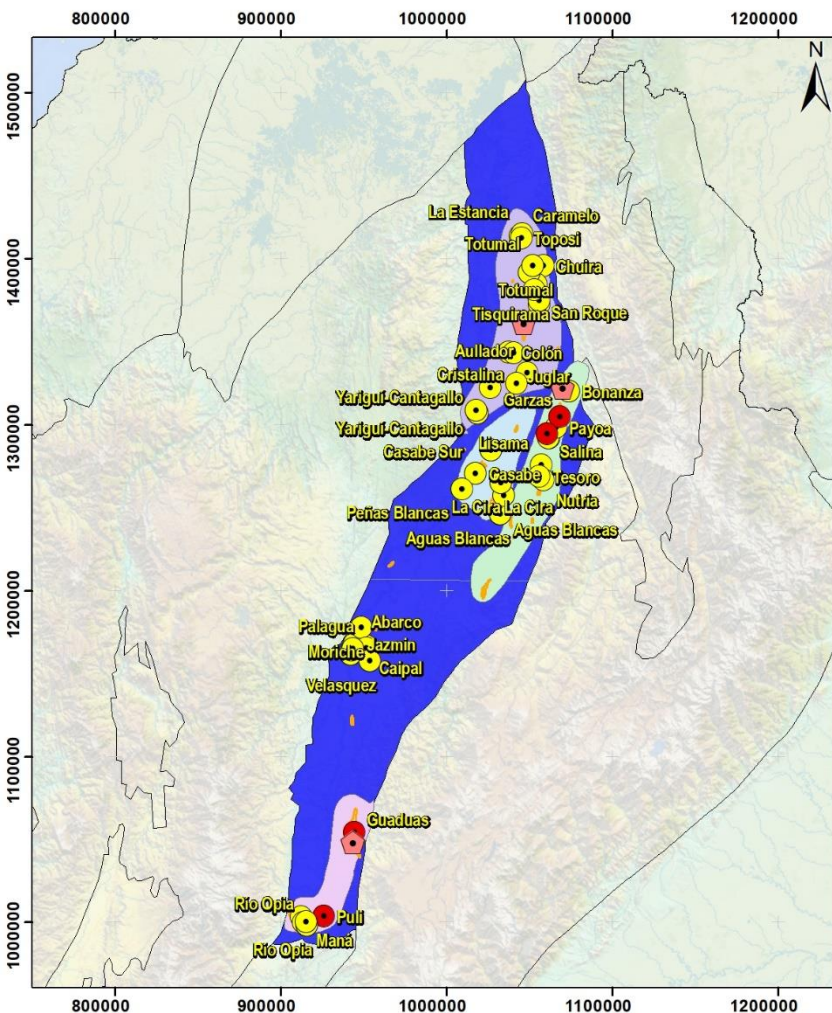


Ranqueo	Cuenca	Producción de gas fiscalizada 2020 (Mmpcg)
1	Piedemonte-Cordillera	511229,65
2	Valle Inferior del Magdalena	100368,53
3	Valle Medio del Magdalena	25879,00
4	Llanos Orientales	14222,13
5	Valle Superior del Magdalena	5978,00
6	Caguán-Putumayo	4530,00
7	Cordillera	1965,80
8	Catatumbo	1774,00

Ranqueo	Cuenca	GOES (Tpc)
1	Piedemonte-Cordillera	12,63
2	Valle Inferior del Magdalena	3,57
3	Valle Medio del Magdalena	2,90
4	Catatumbo	0,30
5	Llanos Orientales	0,27
6	Cordillera	0,07
7	Valle Superior del Magdalena	0,07
8	Caguán-Putumayo	0

Ranqueo	Cuenca	Recursos prospectivos de gas por descubrir (Tpc)
1	Valle Medio del Magdalena	9,3
2	Cordillera	6,2
3	Piedemonte-Cordillera-Llanos Orientales	4,1
4	Catatumbo	2,7
5	Valle Inferior del Magdalena	2,4
6	Caguán-Putumayo	2,3
7	Valle Superior del Magdalena	1,8

# Play Fairway Ranking



Mapa de  
Corredores de Prospectividad  
Valle Medio del Magdalena

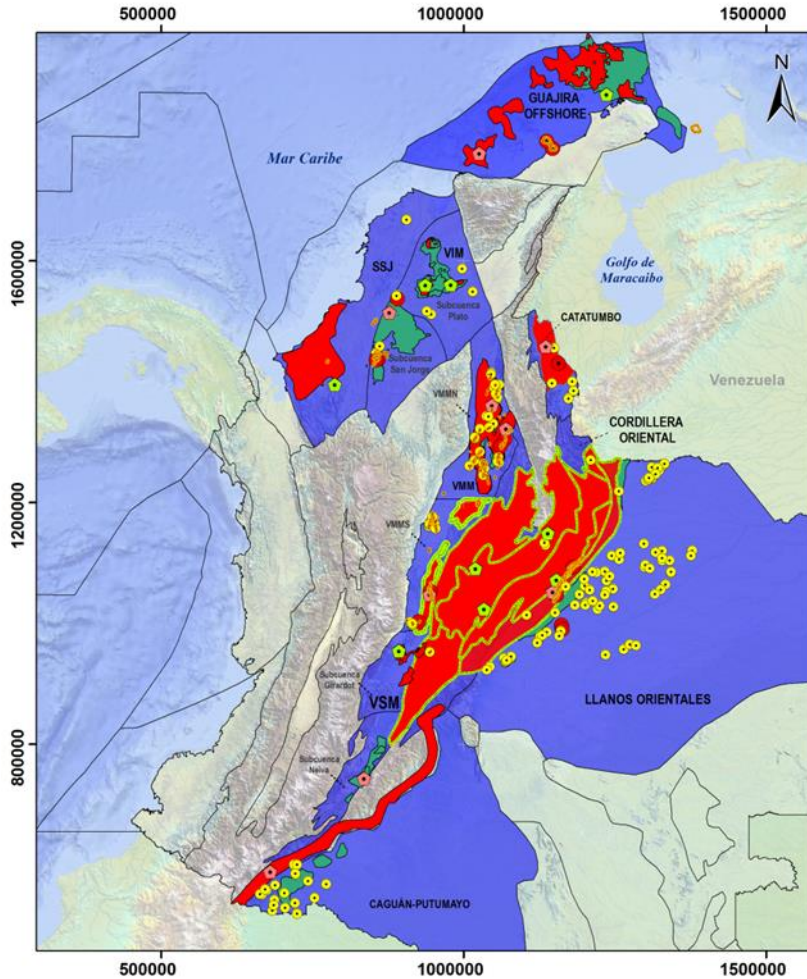


Ranqueo	Cuenca	Recursos prospectivos de gas por descubrir (Tpc)
1	Valle Medio del Magdalena	9,3
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5	Valle Inferior del Magdalena	2,4
6	Caguán-Putumayo	2,3
7	Valle Superior del Magdalena	1,8

Cuenca	Ranqueo	Corredor prospectivo	Descripción	Campos incluidos
Valle Medio del Magdalena	1	Provincia-Opón	Corresponde al sector de la cuenca donde se ha descubierto la mayor cantidad de gas en el sitio (GOES), asimismo es el de mayor producción fiscalizada. Los campos importantes en el escenario de gas son	Bonanza, Payoa, La Salina, Provincia, Tesoro, Nutria, Aguas Blancas y Opón
	2	Cantagallo-Buturama	En este corredor se encuentran los descubrimientos más recientes de campos de gas y se presenta gran prospectividad en rocas cretácicas calcáreas para desarrollar yacimientos naturalmente fracturados que podrían contener grandes volúmenes de gas de acuerdo a la madurez de las rocas generadoras.	Buturama, La Estancia, Caramelo, Potosí, Totumal, Chuirá, Tisquirama, San Roque, Aullador, Colón, Cristalina, Juglar, Garzas, Yariquí-Cantagallo
	3	La Cira-LLanito	En este sector se encuentran campos productores de hidrocarburos con una producción muy importante de gas asociado como son La Cira-Infantas y Lisama. Igualmente, podría ser de prospectividad por las rocas cretácicas generadoras con desarrollo de yacimientos fracturados.	La Cira-Infantas, Lisama, Casabe y Llanito
	4	Guaduas - Toqui-Toqui	Este corredor tiene campos con producción de gas tanto asociada a la de hidrocarburos como acumulaciones de gas en el sitio como en los campos Guaduas y Pulí. Muchos de estos gases tienen buena cantidad de gases livianos.	Río Opía, Toqui-Toqui, Guaduas



# Yet to Find

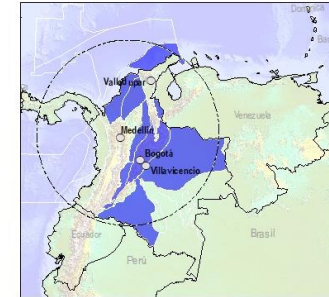
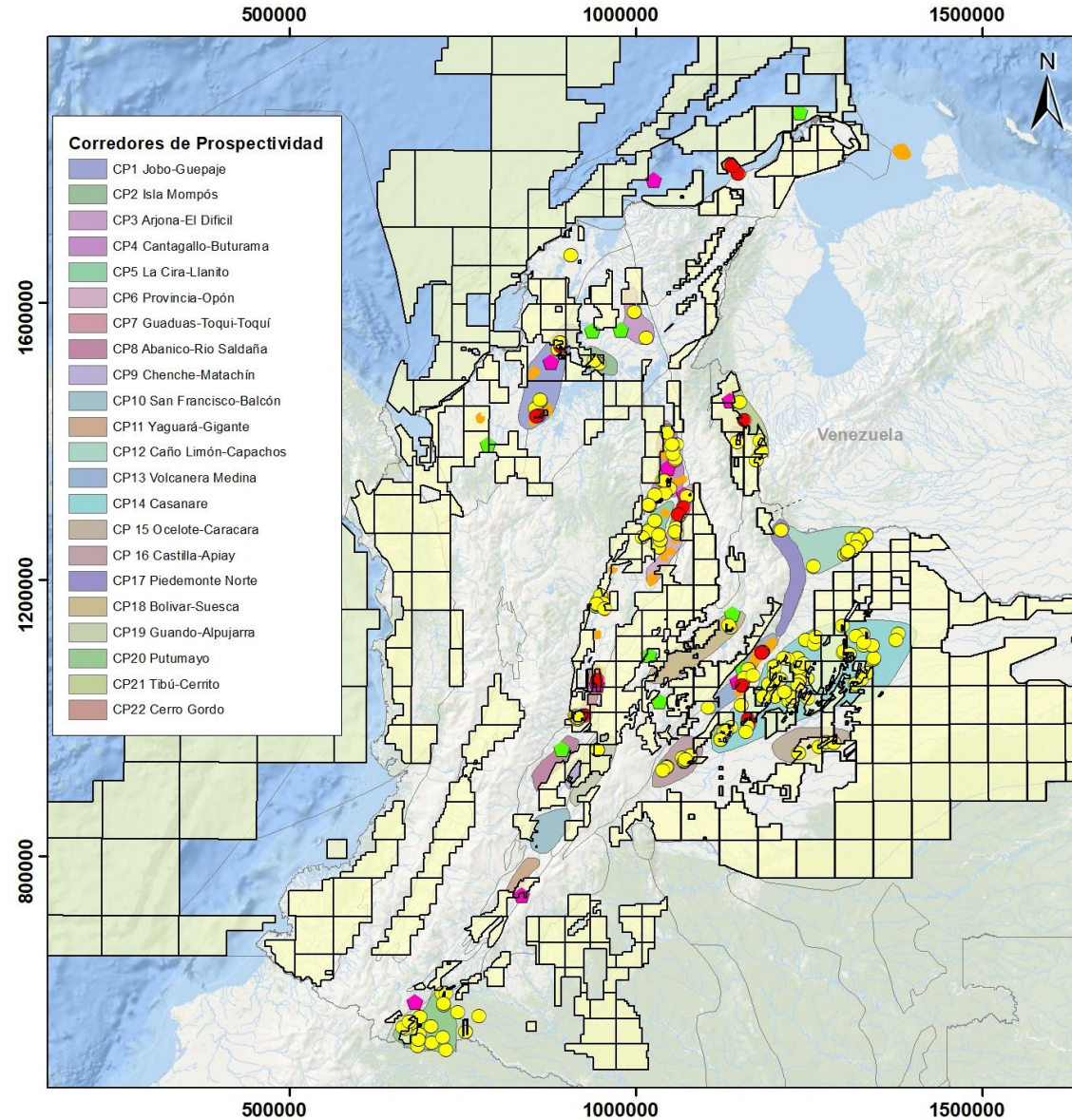


Cuenca	Gas disponible (GOES-GOR) Tpc	Probabilidad de hallazgo	Recursos prospectivos gas (GOES-GOR) Tpc	Gas descubierto Cálculo GOES 2020 Tpc	Recursos prospectivos gas por descubrir (GOES-GOR) Tpc
Caguán-Putumayo	17,58	13%	2,29	0,00	2,29
Llanos-Piedemonte-Cordillera	128,05	13%	16,65	12,60	4,05
Cordillera	48,08	13%	6,25	0,07	6,18
Catatumbo	23,37	13%	3,04	0,30	2,74
VSM	14,60	13%	1,90	0,07	1,83
VMM	81,10	15%	12,16	2,90	9,26
VIM	39,91	15%	5,99	3,57	2,42
<b>Totales</b>	<b>352,683</b>		<b>48,27</b>	<b>19,51</b>	<b>28,76</b>

**19.5 TCF**  
 Gas Discovered (OGIP)

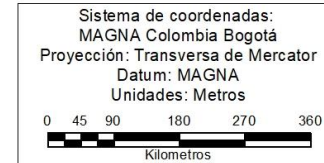
**28.7 TCF**  
**Gas Prospective Resources**

# Fairway paths



### Convenciones

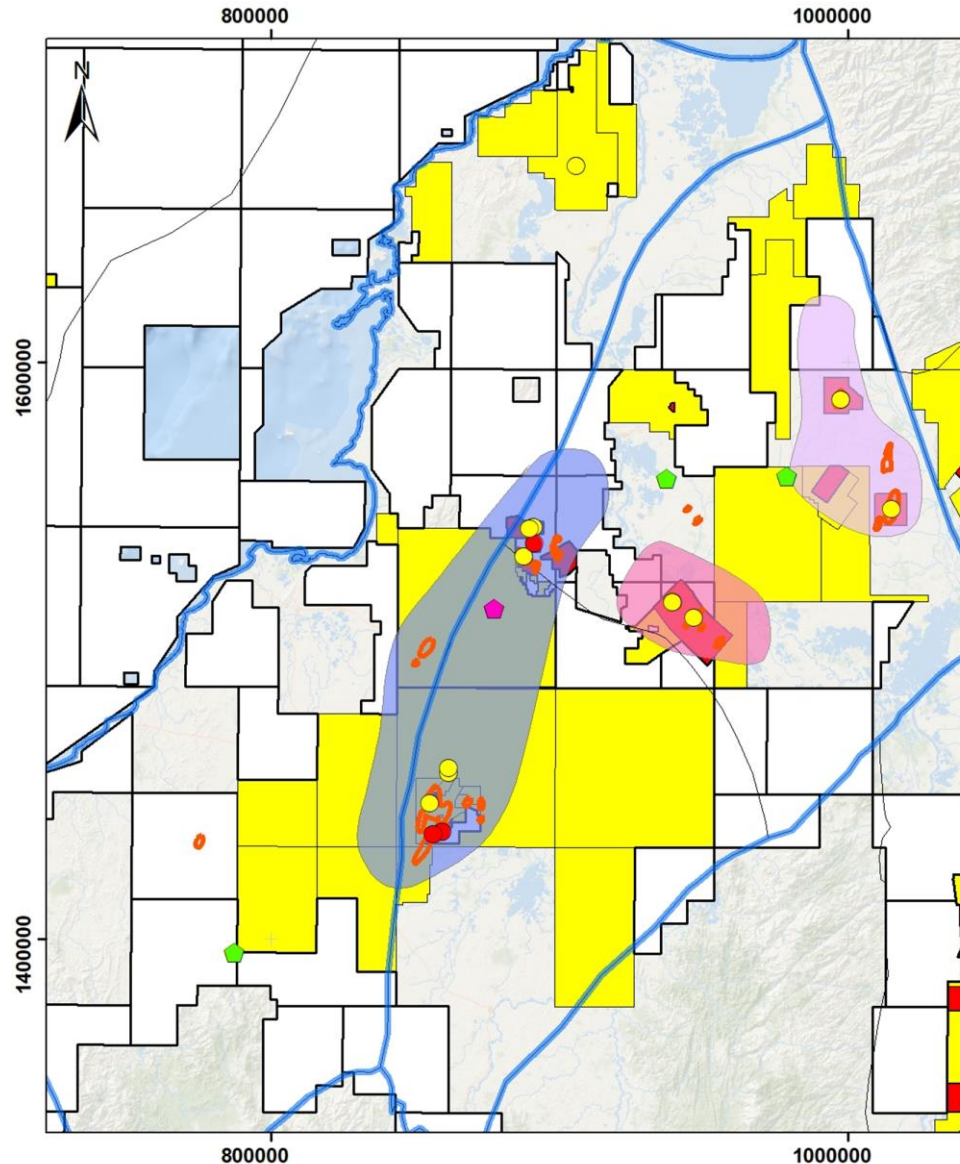
- Campos de Gas
- Campos de Gas Asociado
- ◆ Pozo
- ◆ Pseudo pozo
- Campos
- Mapa Tierras\_261121
- Área Disponible



**Mapa de  
Corredores de Prospectividad  
Cuencas Evaluadas**

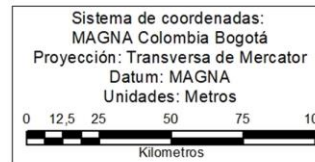


# Lower Magdalena Basin - Fairway paths



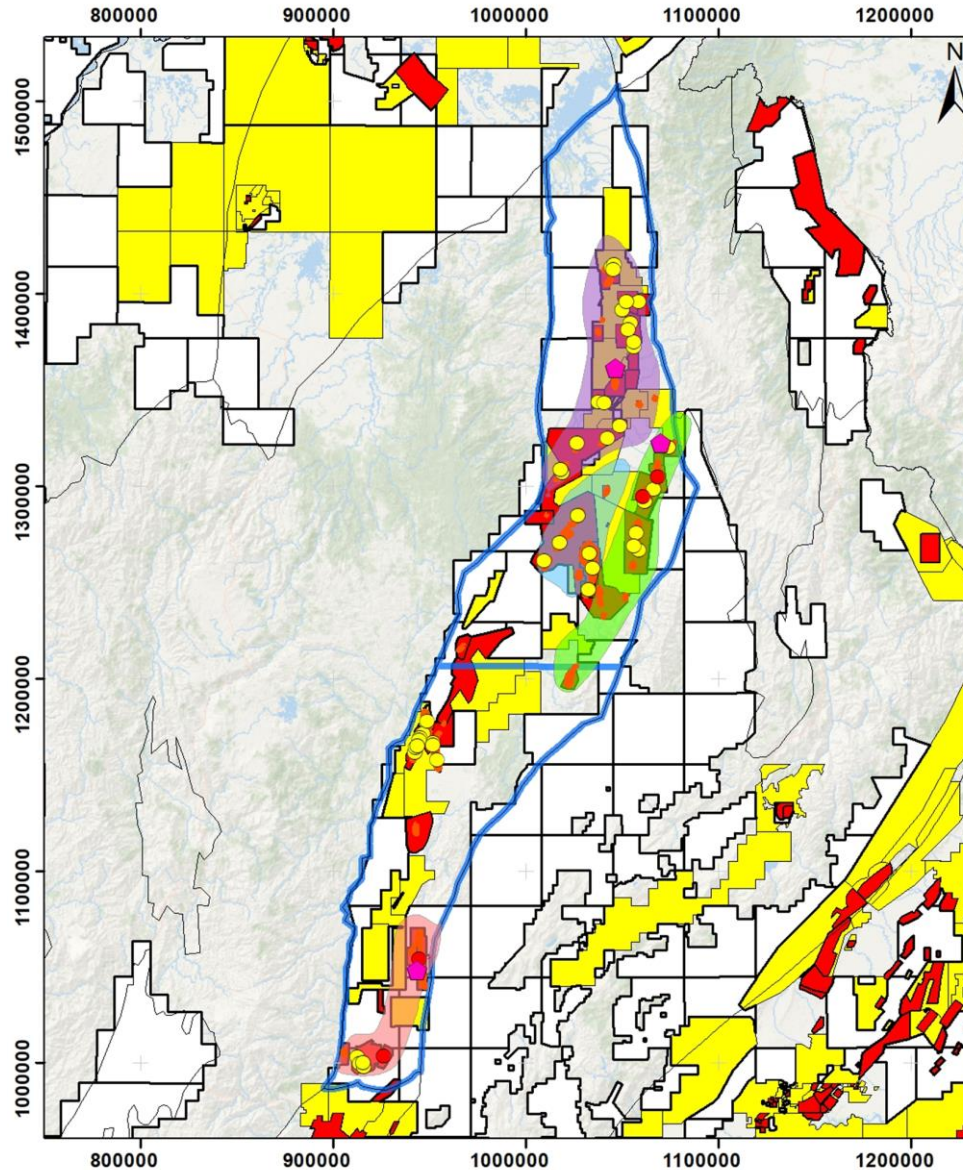
### Convenciones

- Cuencas
- Campos de Gas
- Campos de Gas Asociado
- Pozo
- Pseudo pozo
- Campos
- Corredor Prospectividad Isla Mompós
- Corredor Prospectividad Arjona-El Dificil
- Corredor Prospectividad Jobo-Guepaje
- Área En Exploración
- Área En Producción
- Área Disponible



**Mapa de Corredores de Prospectividad  
Valle Inferior del Magdalena  
y Sinú San Jacinto**

# Middle Magdalena Basin - Fairway paths



### Convenciones

- Pseudo pozo
- Campos de Gas
- Campos de Gas Asociado
- Campos
- Corredor de Prospectividad Provincia-Opón
- Corredor de Prospectividad La Cira-LLanito
- Corredor de Prospectividad Guaduas-Toquí-Toquí
- Corredor de Prospectividad Cantagallo-Buturama
- Cuenca VMM
- Área En Exploración
- Área En Producción
- Área Disponible

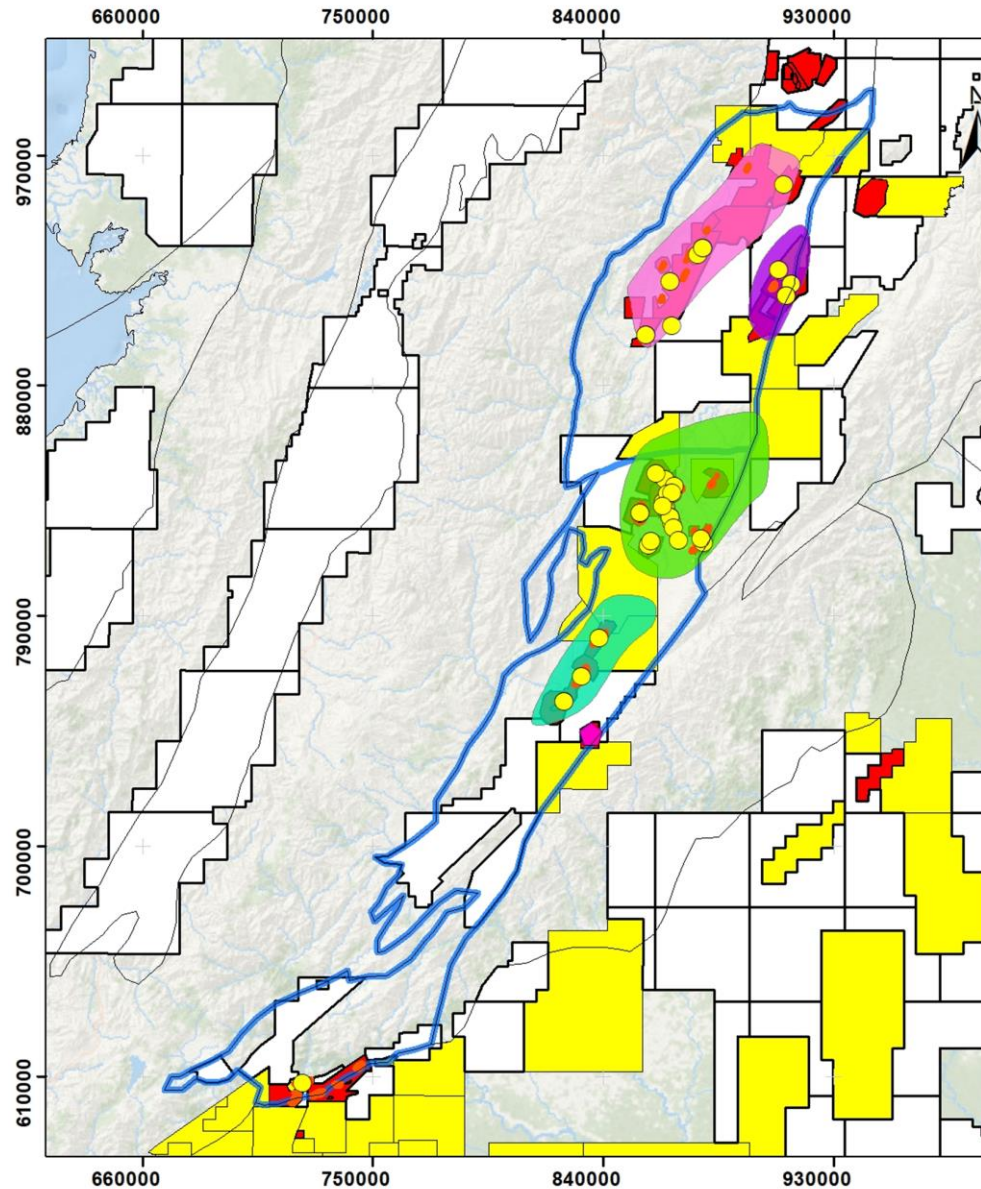
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Unidades: Metros

Kilometros

**Mapa de  
Corredores de Prospectividad  
Valle Medio del Magdalena**



# Upper Magdalena Basin - Fairway paths



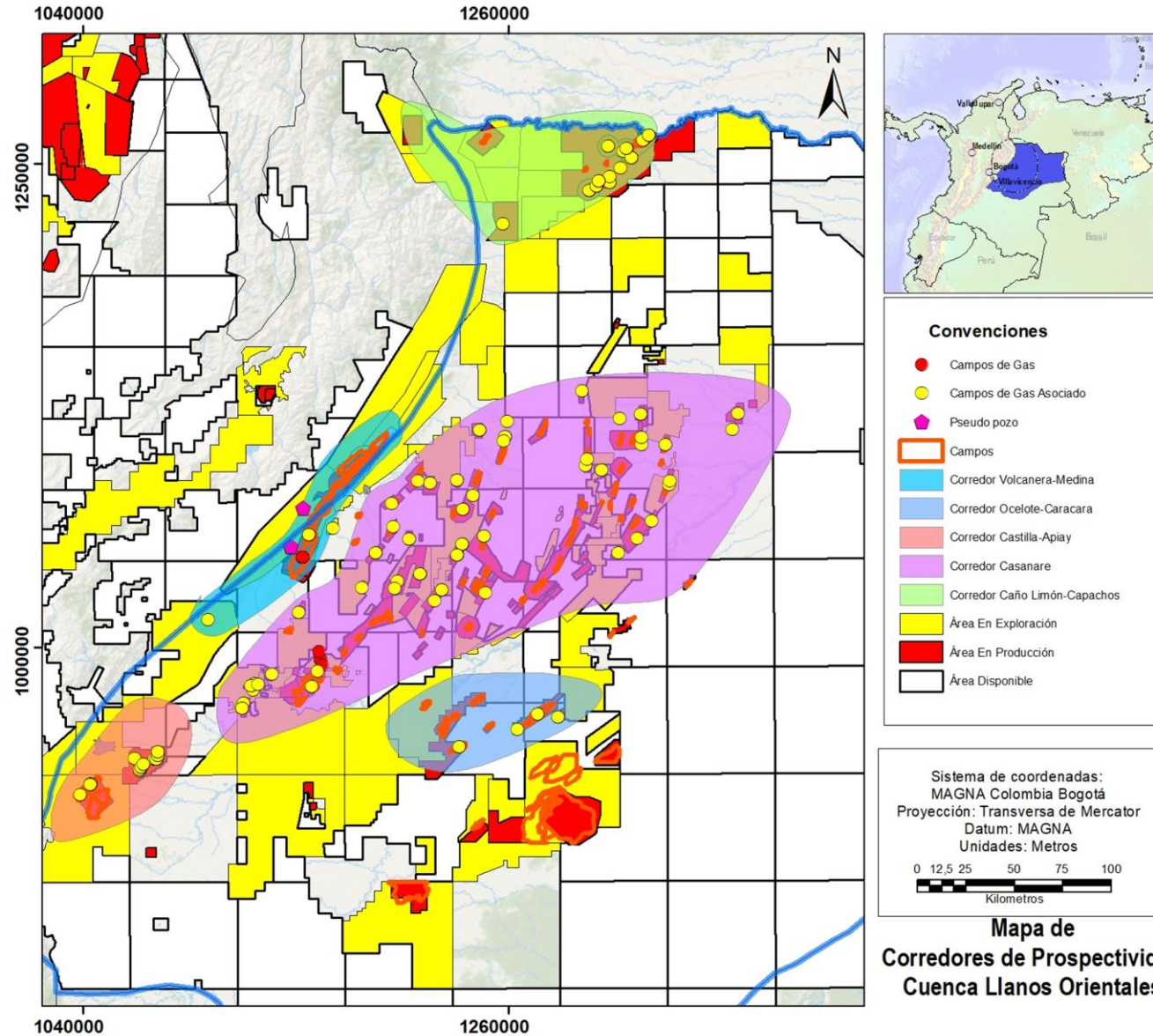
### Convenciones

- Pseudo pozo
- Campos de Gas Asociado
- Campos
- Corredor de Prospectividad Yaguará-Gigante
- Corredor de Prospectividad San Francisco-Balcón
- Corredor de Prospectividad Chenche-Matachín
- Corredor de Prospectividad Abanico-Rio Saldaña
- Cuenca VSM
- Área En Exploración
- Área En Producción
- Área Disponible

Sistema de coordenadas:  
MAGNA Colombia Bogotá  
Proyección: Transversa de Mercator  
Datum: MAGNA  
Unidades: Metros

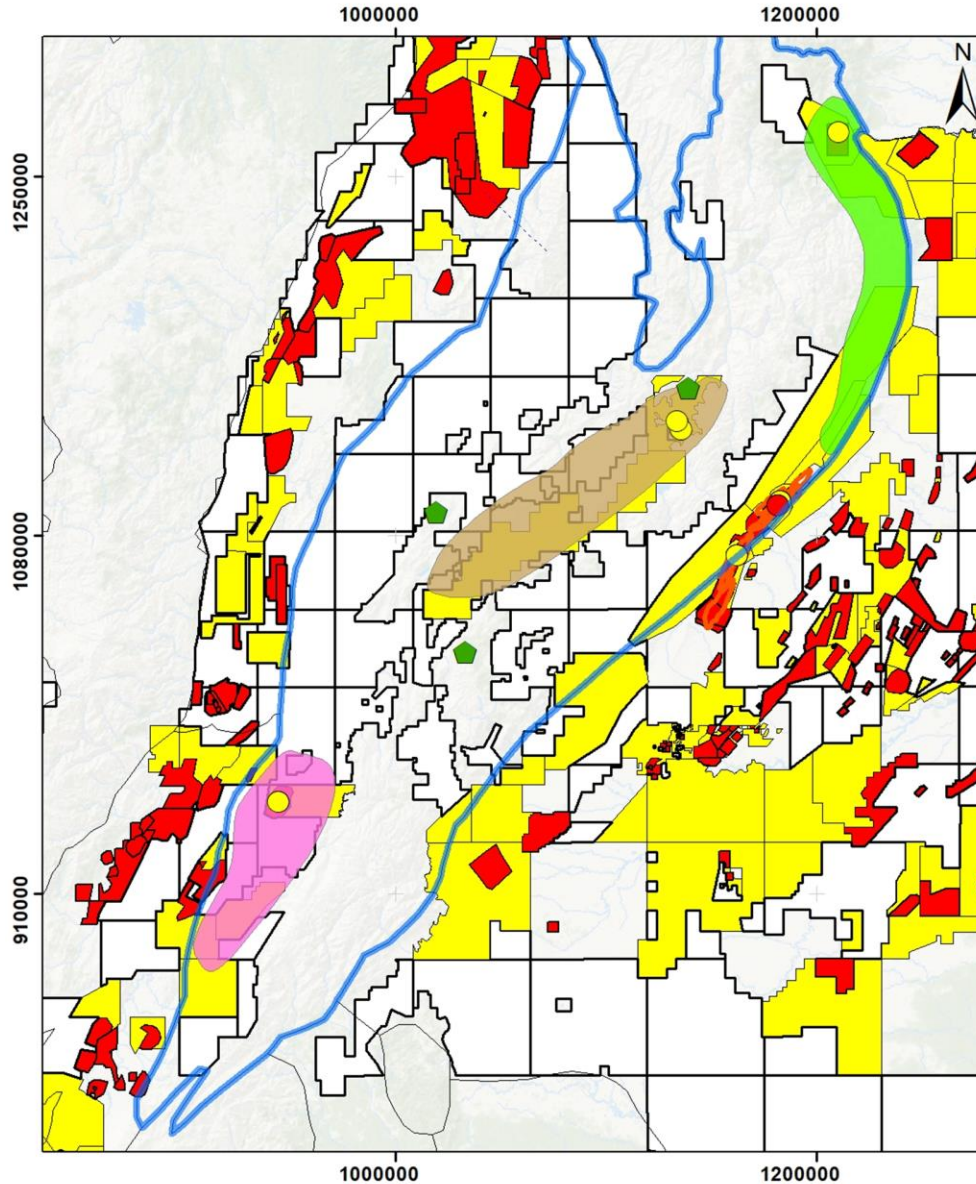
**Mapa de  
Corredores de Prospectividad  
Valle Superior del Magdalena**

# Llanos Orientales Basin - Fairway paths



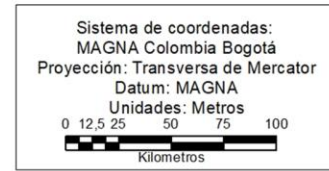


# Eastern Cordillera Basin - Fairway paths



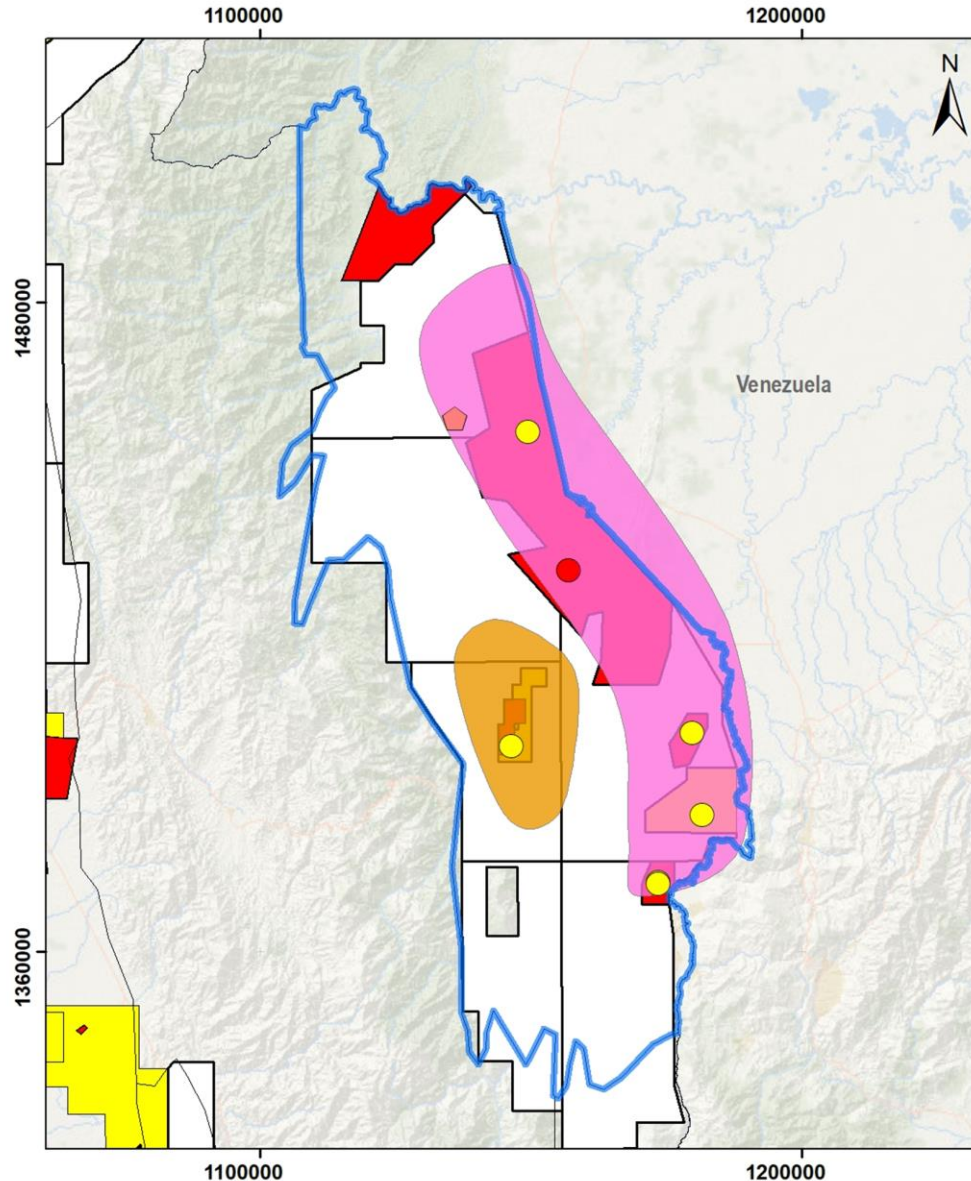
### Convenciones

- Pozo
- Campos de Gas
- Campos de Gas Asociado
- Campos
- Corredor Prospectividad Guando-Alpujarra
- Corredor Prospectividad Bolivar-Suesca
- Corredor Prospectividad Piedemonte Norte
- Área En Exploración
- Área En Producción
- Área Disponible
- Cuenca Cordillera Oriental



**Mapa de  
Corredores de Prospectividad  
Cuenca Cordillera Oriental**

# Catatumbo Basin - Fairway paths



### Convenciones

- Campos Producción de Gas
- Campos de Gas Asociado
- ▭ Pseudo pozo
- ▭ Corredor Tibú-Cerrito
- ▭ Corredor Cerro Gordo
- ▭ Área En Exploración
- ▭ Área En Producción
- ▭ Área Disponible

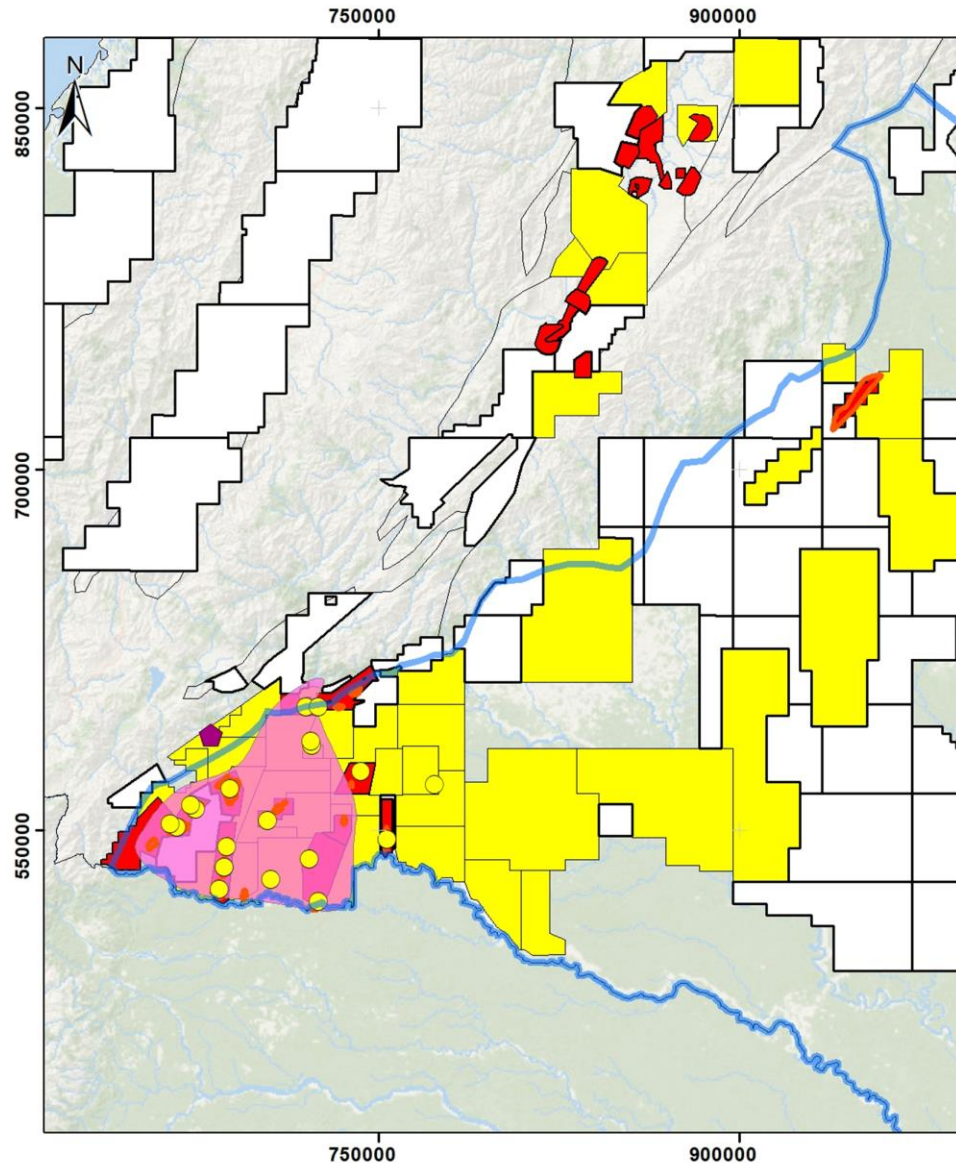
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Proyección: Transversa de Mercator  
Datum: MAGNA  
Unidades: Metros



**Mapa de  
Corredores de Prospectividad  
Cuenca Catatumbo**



# Putumayo Basin - Fairway paths



### Convenciones

- Pseudo pozo
- Campos de Gas Asociado
- Campos
- Corredor Putumayo
- Área En Exploración
- Área En Producción
- Área Disponible
- Cuenca Caguaán-Putumayo

Sistema de coordenadas:  
MAGNA Colombia Bogotá  
Proyección: Transversa de Mercator  
Datum: MAGNA  
Unidades: Metros

Kilómetros

Mapa de  
Corredores de Prospectividad  
Cuenca Caguaán-Putumayo