

QUALITY OF TERRIGENOUS RESERVOIR OF COLOMBIA'S CARIBBEAN AND PACIFIC MARGINS

MinCiencias Project
Convocatoria 877/2020

G MAS SAS, Research Group Category C
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ACOGGP

gmas+



El conocimiento
es de todos

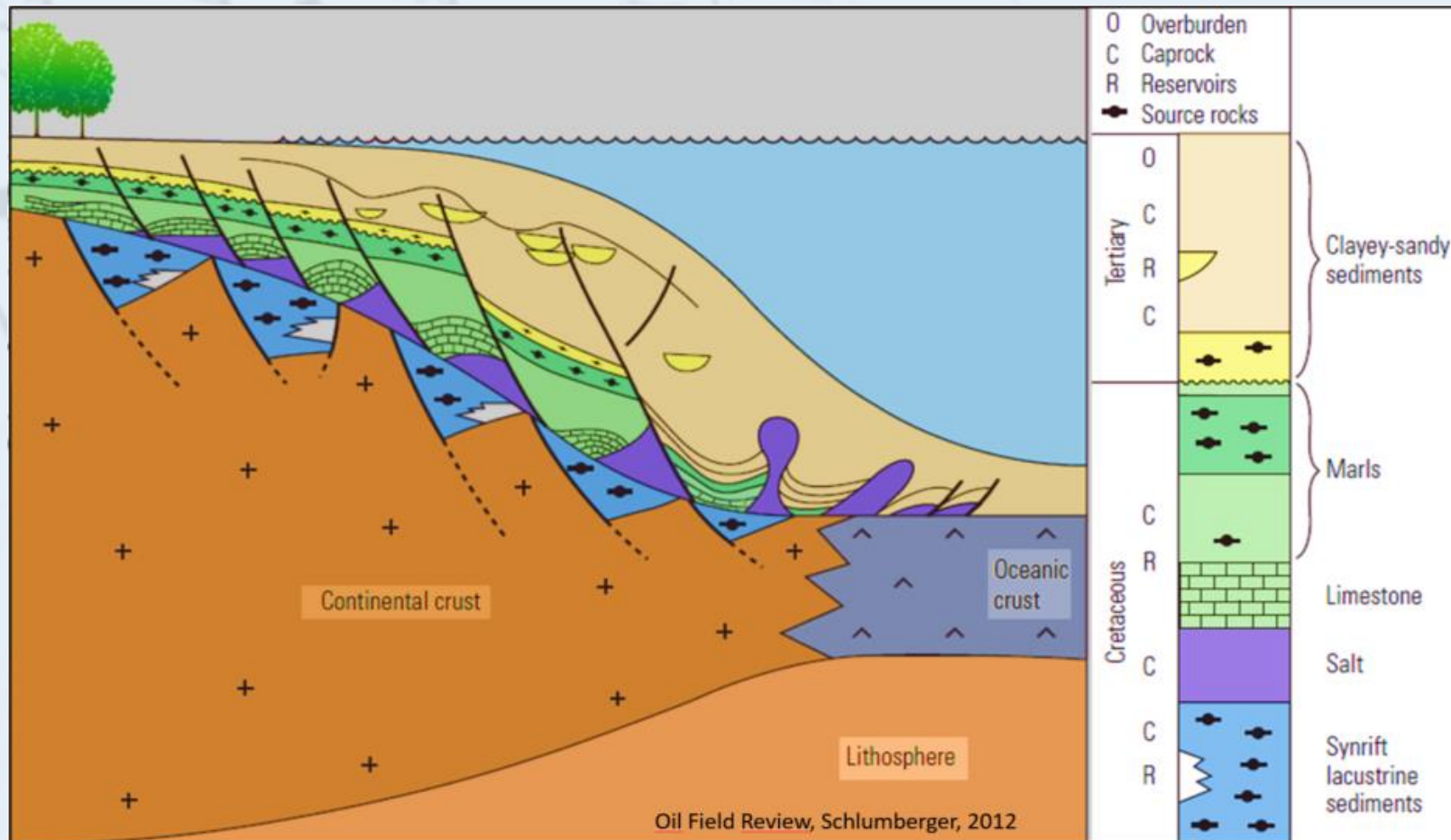
Minciencias

Project financed with resources from Agreement 785-2019, subscribed by the ANH, the Science Ministry and National Fund for Science, Technology and Innovation Francisco Jose de Caldas.

- **BASIS**
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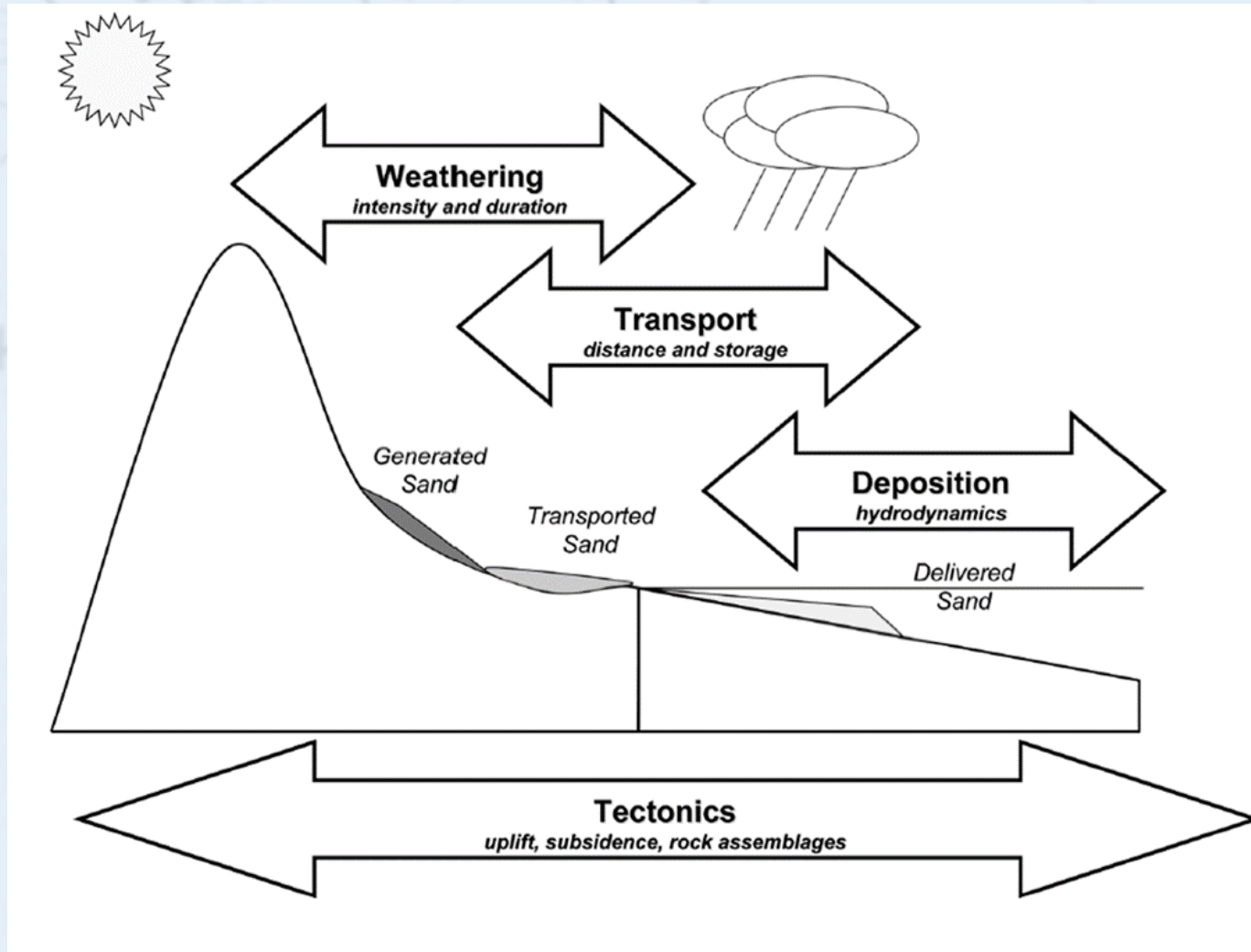
BASIS

Contribution to the knowledge of offshore Colombia reservoir rocks, as key components of the petroleum system.



BASIS

Key factors in sediment generation and evolution

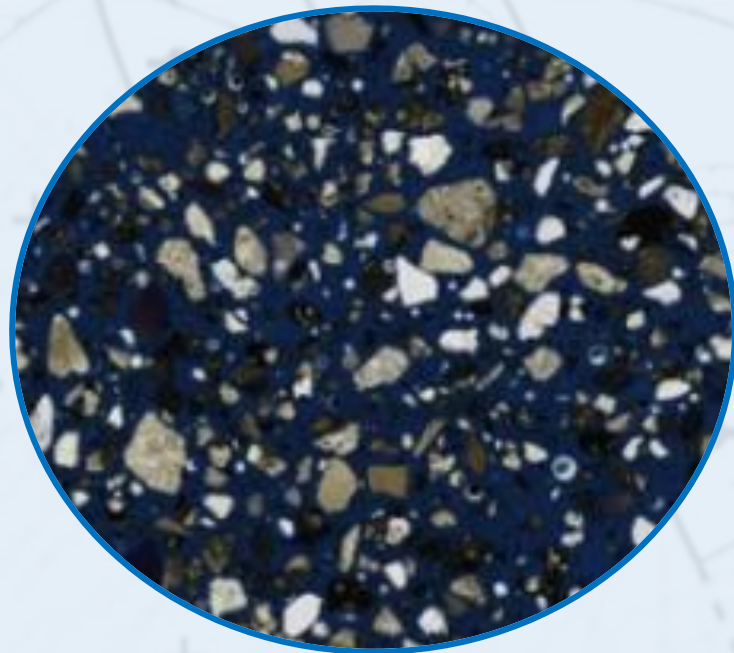


Heins and Kairo, 2007

BASIS

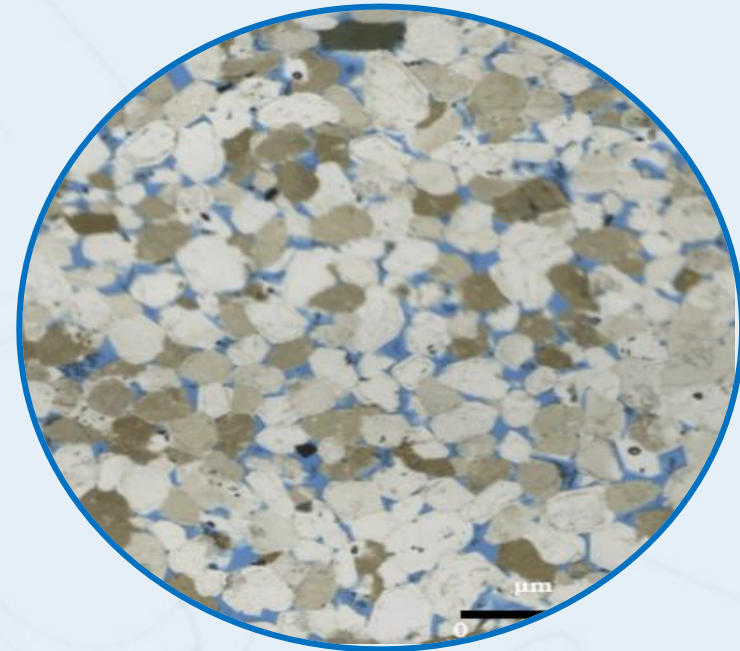
Reservoir quality is mainly controlled by mineralogy and texture.

POOR QUALITY



Lithics
Angular
Poor Sorting

GOOD QUALITY



Quartz
Rounded
Good Sorting



SCOPE

Prediction of reservoir quality in Colombia's Caribbean and Pacific margins.

OBJECTIVES

1. Collect 93 samples of beach sediments.
2. Study mineral and textural composition of the collected samples.
3. Study samples of 10 offshore exploratory wells from the Litoteca. Get porosity data based on electrical logs.
4. Perform diagenesis simulation models, using mineral and textural data from the collected samples.
5. Consolidate results of the models into regional distribution maps of reservoir quality.
6. Preserve samples at the Litoteca for future research projects.
7. Publish an atlas of the beach sediments of Colombia, as a contribution to the knowledge of coastal dynamics.

SCIENTIFIC TEAM

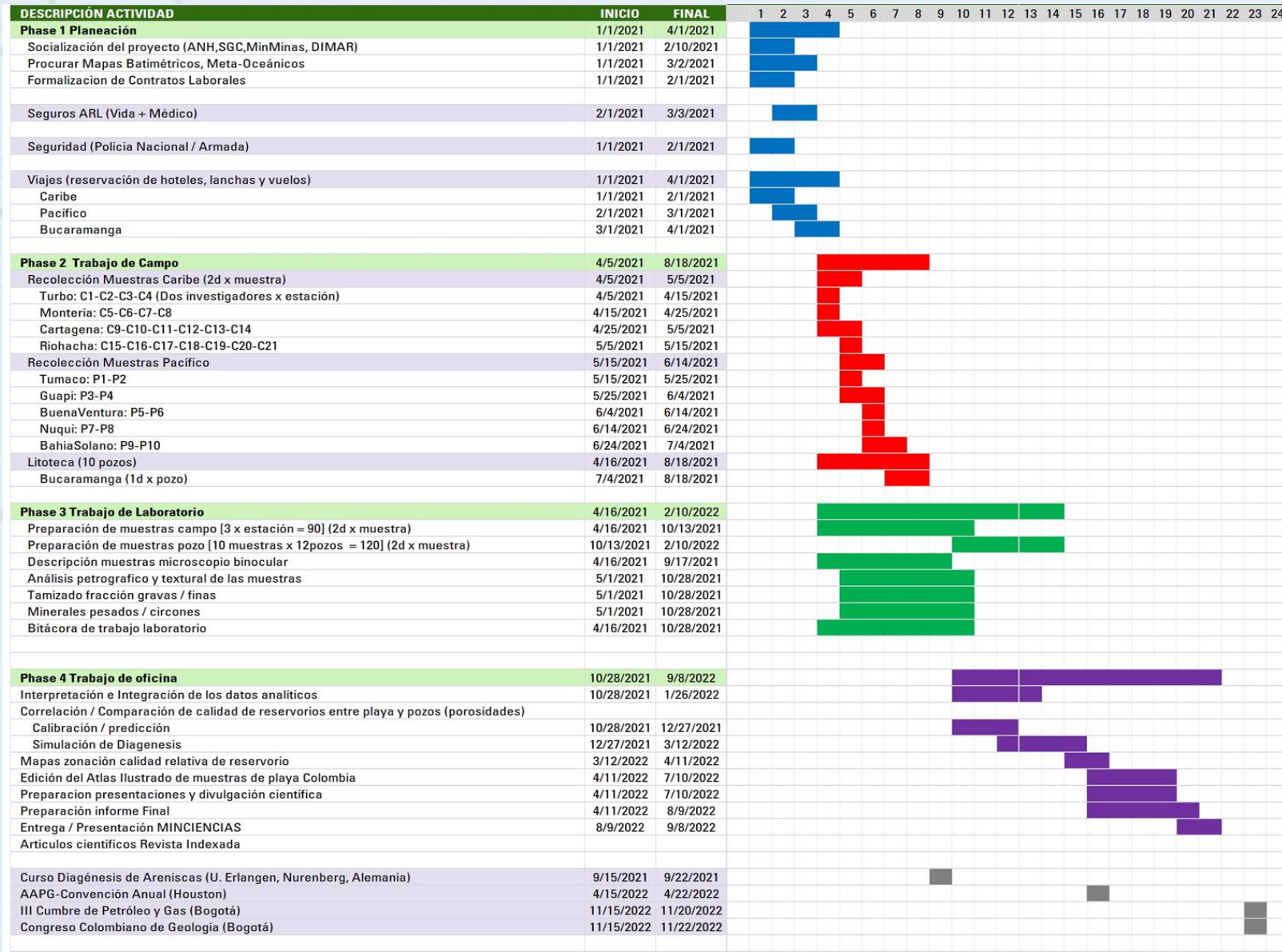


Name	profile	experience	institution	roll
Victor O. Ramirez C.	Geologist MSc	28 yr	GMAS SAS	Principal researcher
José M. Jaramillo M.	Geologist PhD	47 yr	GMAS SAS	Senior researcher
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Germán D. Moreno B	Geologist MSc	8 yr	GMAS SAS	Co researcher
Iván Ricardo Luna B.	Geologist	2 yr	GMAS SAS	Co researcher
Andrés Felipe Vásquez C	Geologist	2 yr	ACGGP	Junior researcher
Omar Fabián Molina S.	Geologist	2 yr	ACGGP	Junior researcher
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Oscar Daniel Figueredo C	Geology student	UniPamplona undergrad	ACGGP	Junior researcher

EXECUTION AND LOGISTICS



Execution timeframe



- Logistics Planning

- Field work

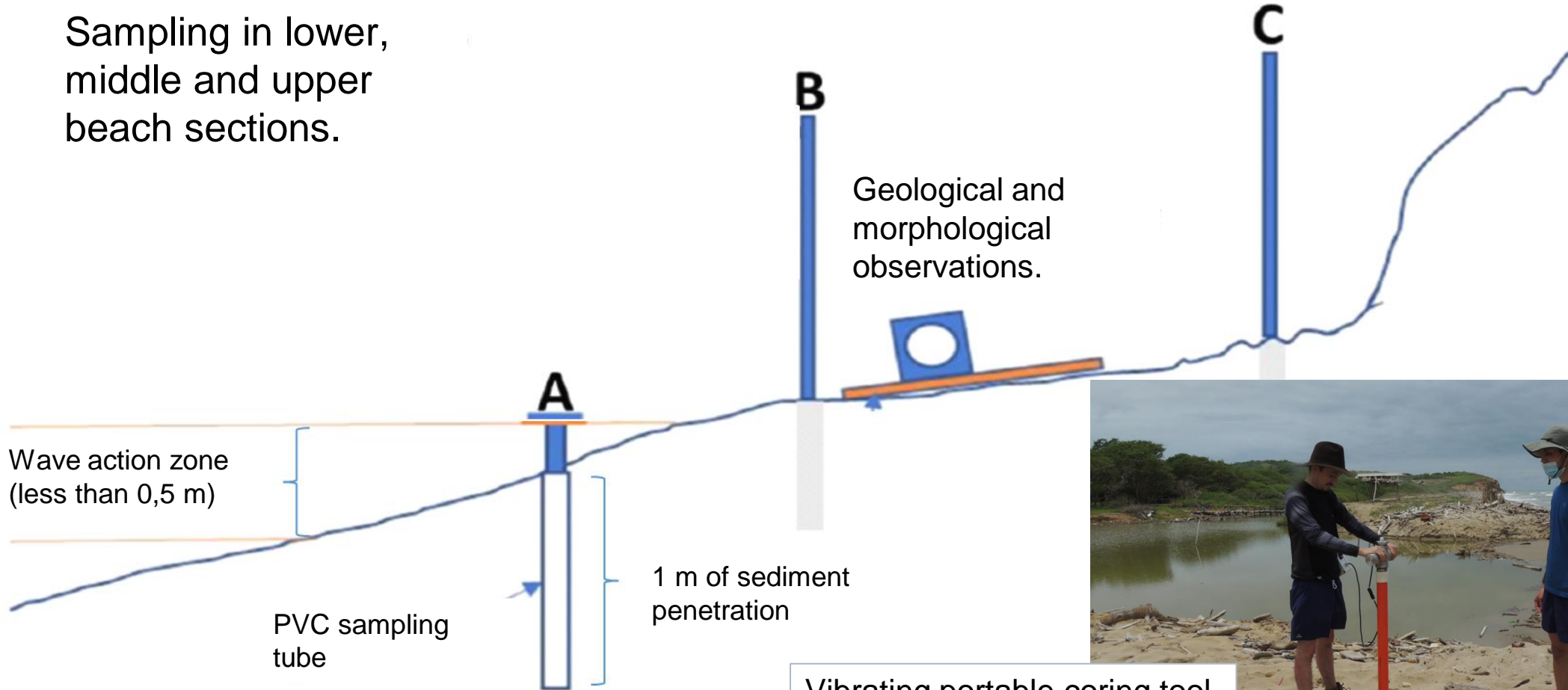
- Lab work

- Analysis / Interpretation

- Results

SAMPLING METHOD

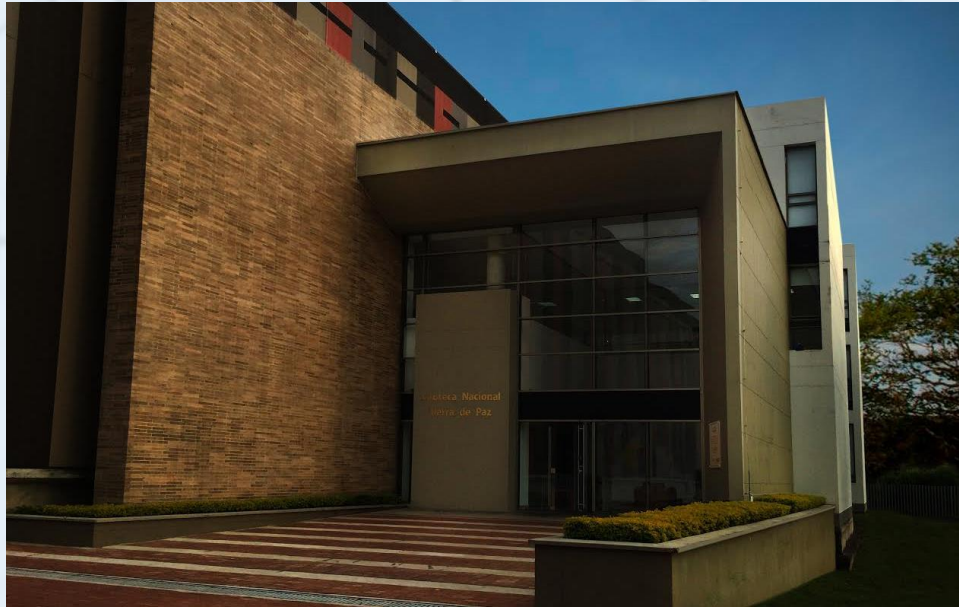
Sampling in lower, middle and upper beach sections.



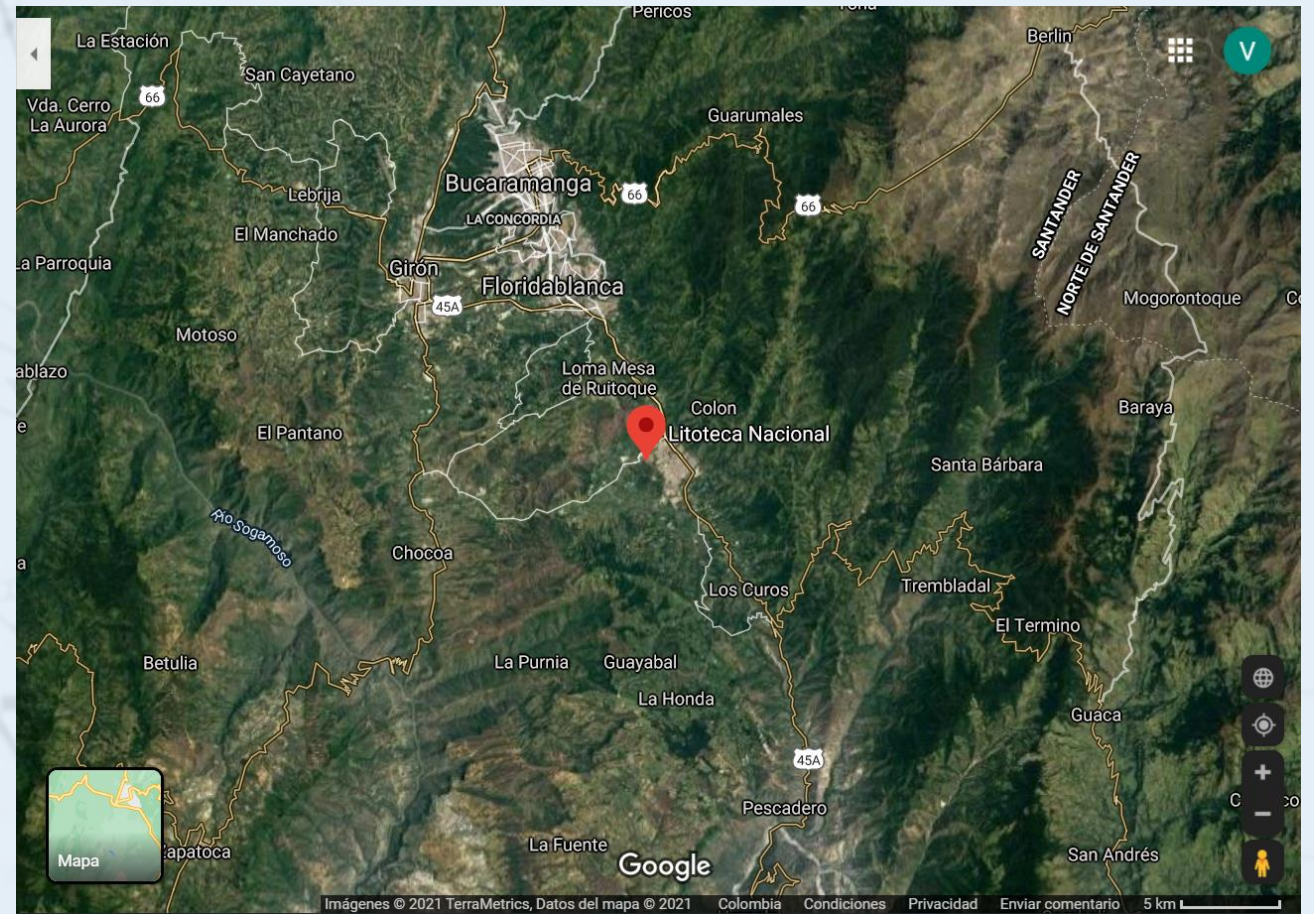
Vibrating portable coring tool designed and built by GMas, coupled with PVC tubing.

FIELD WORK

Visit to Core Depository (Litoteca) at Piedecuesta Santander to study selected wells.



Litoteca Nacional, located in Piedecuesta Santander, Parque Tecnológico Guatiguará, Universidad Industrial de Santander UIS.



FIELD WORK

Core and ditch well samples study and selection for lab análisis/
secure porosity logs.



Caribbean wells :

- Cienaga-1,
- SantaAna-1,
- Tairona-1,
- Arazá-1,
- Cartagena-1,
- Morrosquillo-1,
- Kronos-1, Gorgón-1,
- Calasú-1,
- Mapalé-1,
- Araza-1,
- Molusco-1,
- Siluro-1,

Pacific wells

- Sandi-1,
- Tambora-1.

LAB WORK



PETROGRAFÍA

ANÁLISIS DE SECCIONES DELGADAS



XRF

ANÁLISIS ELEMENTAL



S4 Explorer

XRD

ANÁLISIS MINERAL

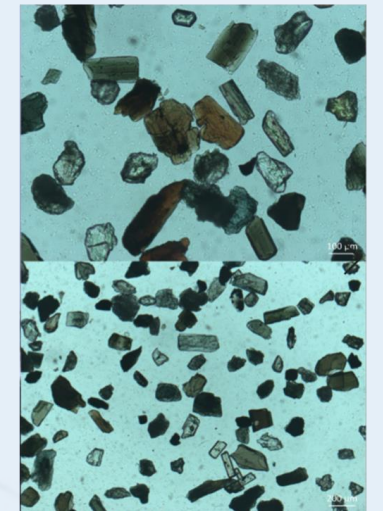


D4 Endeavor



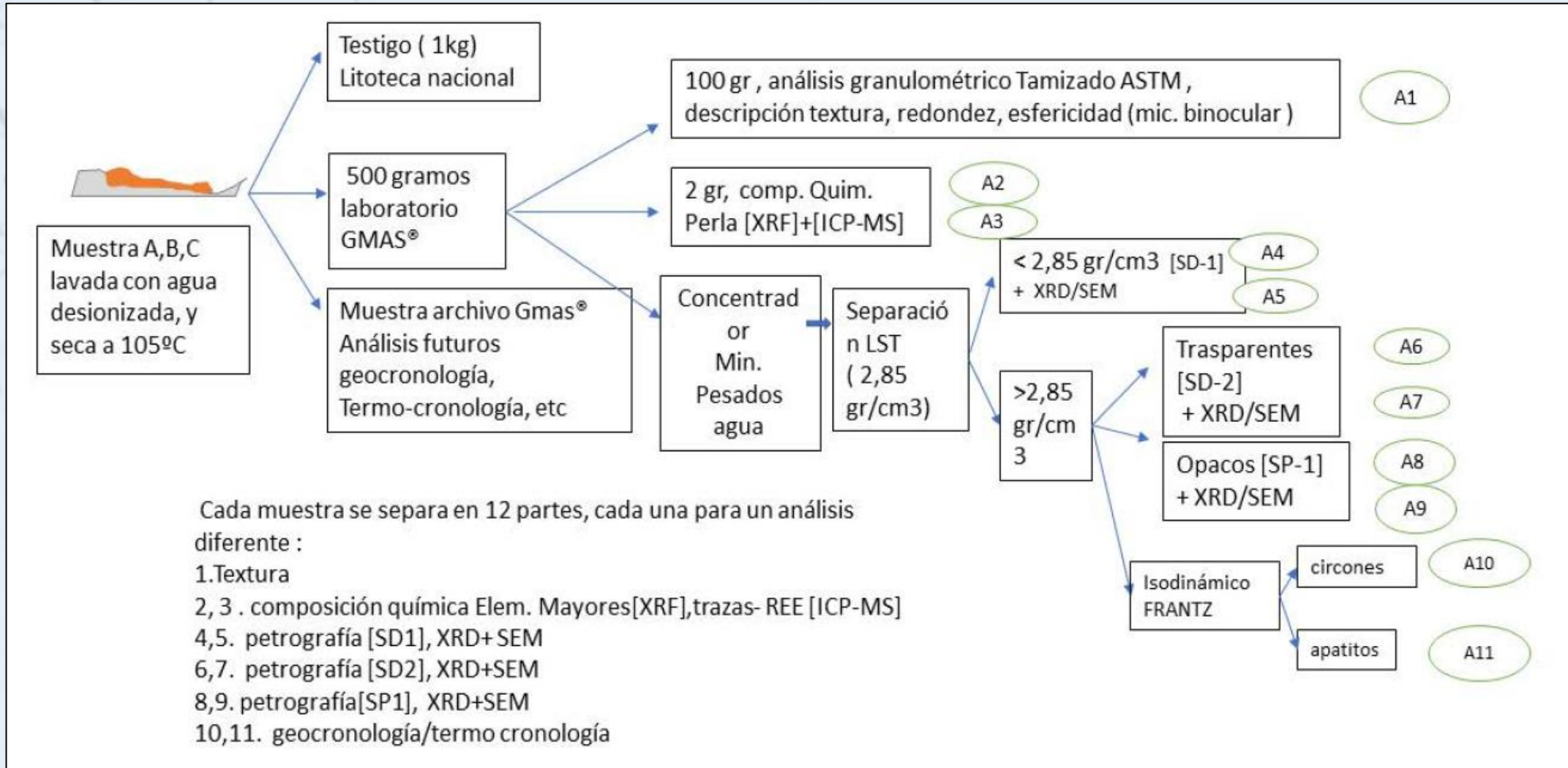
SEPARACIÓN DE MINERALES

(CIRCONES, MINERALES PESADOS)



GMAS is a reputed and experienced Geosciences Colombian Lab, founded in 2007, which has provided technical services to oil, mining and academic institution. Expert personnel and state of the art equipment and technology are available for this project.

SAMPLE ANALYSIS WORKFLOW



DELIVERABLES

- Reservoir quality correlation / comparison
 - Properties Calibration / Prediction
 - Diagenesis Modeling and Simulation
- Regional maps of reservoir quality
- Atlas of beach sediments of Colombia
- Presentations and scientific divulgation
 - Workshops
 - Training in sedimentology
- Scientific papers for peer-reviewed publications

SCIENTIFIC KNOWLEDGE CONTRIBUTION

- Two thesis BSc level
- Two thesis MSc level
- Workshops
- Two presentations at technical meetings
- Sedimentology learning through courses and “on the job” training
- Scientific papers
- Beach samples preservation at the Litoteca



SOCIAL IMPACT



Work in coordination with ACGGP pedagogy program

- Presentations of the project / geology topics to communities.
 - Community councils, local authorities, universities, schools, etc.
 - Townhall meetings: Barranquilla, Capurganá, Tolú, Riohacha, Tumaco, Buenaventura, Nuquí, among others.



MAIN PUBLICATIONS OF REFERENCE

Caracciolo, L., D. Chew and S. Ando, 2020, Sediment generation and sediment routing systems, Earth-Science Reviews, <https://doi.org/10.1016/j.earscirev.2020.103221>.

Heins, W.A., and Kairo S., Predicting sand character with integrated genetic analysis. Geological Society of America, Special Paper 420, 2007.

Magoon, L. B., and W. G Dow, 1994, eds., The petroleum system—from source to trap: American Association of Petroleum Geologists, Memoir 60.

Restrepo J., Franco D., Escobar J., Correa I. D., Otero L., and Gutiérrez J., Cartagena Bay (Colombia): Superficial Sediments Distribution and Sedimentary Environments. Lat. Am. J. Aquat. Res. vol.41 no.1 Valparaíso mar. 2013



Thanks for your time!!!

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