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SEAGAS: A Brazilian-European project to compare gas hydrate systems on the Atlantic and Mediterranean ocean margins

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Marie Skłodowska-Curie Actions (MSCA)



MSCA-GF-SEAGAS Objectives

Research Objective
1st comparison of gas hydrate dynamics on ocean margins that undergo different forms of climate forcing: open Atlantic margin of Brazil and semi-enclosed Mediterranean Sea

Training Objective
To diversify the competencies of the researcher and the two hosts, through joint research activities addressing shared research interests

Strategic Objective
To stimulate the development of future projects involving Brazilian and European scientists in mutually beneficial research activities

MSCA-GF-SEAGAS (2016-2019)

| | |
|---|--|
| Strengths in marine geochemistry | Strengths in marine geology & geophysics |
| Shared interests in building capacity in gas hydrate research | |

Gas Hydrate – Ice that Burns

Formation dependent on :

- pressure (higher)
- temperature (lower)
- a source of gas

Found in :

- areas of permafrost
- water depths >300 m
- mainly on continental margins (natural sources of gas)

Global gas hydrate locations

Submarine gas hydrate stability zone (GHSZ)

Formation dependent on :

- ice-like compounds of water (H₂O molecular cages) and natural gas
- gas concentrators - mainly methane (CH₄), a powerful greenhouse gas

1 m³ solid yields up to 160 m³ of gas

on conservative estimates, form the largest natural reserve of carbon on Earth

SEAGAS Study Areas and Project Structure

Gas Hydrate Occurrences on the Atlantic-Mediterranean margins

SEAGAS study areas

- Nile fan (enclosed sea)
- Amazon fan (open Atlantic)
- Rio Grande cone (open Atlantic)

Project structure

- Numerical modelling of gas hydrate stability to guide interrogations of datasets held by hosts on the Brazilian and Nile margins
- generate hypotheses to test through the acquisition of new data, during a joint research campaign to the Nile or Amazon deep-sea fans

Source: USGS Gas Hydrates Project

SEAGAS conceptual framework : first comparison of gas hydrate systems on margins that have undergone different forms of glacial-interglacial (10⁴ yr) climate forcing

Expected changes in gas hydrate stability for a post-glacial rise in both sea level and bottom water temperatures

Changes on upper slope ← **Basin-wide changes**

MSCA Opportunities for Researchers

Where to find more information

- Website **MSCA** : <http://ec.europa.eu/msca>
- H2020 Participants Portal : <http://ec.europa.eu/research/participants/portal>
- Euraxess Links Brazil : <https://euraxess.ec.europa.eu/worldwide/brazil>
- CONFAP/FAPs: "Guidelines for the preparation of research proposals in collaboration with proposals submitted to EU Horizon 2020 (<http://www.fapesp.br/9775>)"

SEAGAS proposed French-Brazilian campaigns

Aim : to test hypotheses on gas hydrate dynamics through the joint acquisition of multi-disciplinary data (geological/geochemical/geothermal/geotechnical/geophysical)

Proposals submitted to French national ship-time programme

- Nile fan - SEAGAL
Submitted 09/2016 by S. Migeon (, ranked top priority, decision on vessel scheduling expected 2018-2019)
- Amazon fan – AMARYLLIS
Submitted 09./2016 by A. Govein (CNRS), ranked second priority; resubmitted 09/2017 (for 2019-2020)

Scientific drilling proposal in preparation - IODP

- Amazon fan - submission led by UFF planned for 2018, campaign possible in 2019-2020

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