

CASE STUDY

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Repsol

How ScienceDirect knowledge is vital for success at Repsol



**SUMMARY**

Discover how exploration professionals meet the challenge of locating and evaluating potential product site in increasingly demanding environments.





**DR. CARLOS GIRALDO**  
ENGINEER AND SENIOR GEOLOGIST,  
REPSOL

With more than 40 discoveries in the last five years, eight of which are the world's largest finds, Repsol's exploration and production activity proves to be a strong growth engine. This Madrid-based integrated global energy company, with Upstream and downstream operations in 50 countries, has a strong exploration pipeline: a projected average annual production growth of 200,000 barrels of oil equivalent per day by 2016, with ten key growth projects — including seven already underway — in Brazil, the United States, Russia, Spain, Venezuela, Peru, Bolivia and Algeria.

Technological innovation is integral to Repsol's upstream growth. 400 specialists and researchers at Repsol focus on developing technologies that allow more efficient hydrocarbon exploration. Approximately \$1 billion per year has been committed to exploration activity, with an additional goal of increasing production and reserves.

**Exploration professionals must locate and evaluate potential production sites in increasingly challenging environments**

The race to find potential new production fields and quickly ascertain their viability is competitive and fast-paced. Geologists and geophysicists like Dr. Carlos Giraldo, a Repsol Senior Geologist working in the energy industry for 26 years, need instant access to a variety of research and data to meet mandates for site identification and development. For more than a decade,

Repsol researchers like Giraldo have relied on ScienceDirect's peer-reviewed journals to provide the key information they need to successfully evaluate these potential environments and opportunities.

Giraldo directs studies within Repsol's Geology Department, and as a regional specialist he is responsible for identifying exploration opportunities on the European continent and surrounding areas. "One of the steps in exploration is to recognize the basins from a very regional point of view, and then you can go into detail in a specific area. So my part is looking for opportunities within these regions," he explains.

Prior to the advent of online research access, the research process could stretch for months. Now, geologists and geophysicists benefit from intelligent search tools that allow them to successfully juggle multiple projects, while cutting the time it takes for them to evaluate and make recommendations to management on which sites to pursue. This in turn allows Exploration & Production executives to quickly prioritize high-probability sites and avoid committing resources to less profitable areas. "The information we gather from scientific research allows us to develop our own opinion. We produce reports with our conclusions, and these will lead our managers to go or not go to a specific area depending on our recommendation," Giraldo says.

## About Repsol

More than eight decades of energy industry experience; dating to the 1927 creation of CAMPSA (Compañía Arrendataria del Monopolio de Petróleos S.A.) to administer the handing over of the state monopoly oil companies.

Today's Repsol was founded in 1987 with five subsidiaries for worldwide exploration, production, transport and oil and gas refining.

Successful exploration activity resulted in Repsol having the highest reserve replacement ratio amongst its peers in 2013.

At the close of the second quarter of 2014, Repsol's net income increased 47% from the year-earlier period to 1.327 billion euros.

## Effective projects rely on a deep understanding of science knowledge and geological data

Giraldo explains that literature review and data interpretation are important parts of building their reports and recommendations. "We don't do science here in Exploration, but we need to be very close to academia and the institutions doing research," he says. He manages about 80% of the literature review for his projects, identifying relevant research and assimilating opinions. In the course of evaluating a project, he'll typically review between twenty and forty research papers.

"Some particular projects can be managed by building a complete scientific bibliography, and then we document recommendations based on the opinions of different authors about the geology and the exploration potential. In parallel, you can work directly with the seismic data, interpreting seismic sections and producing maps to understand the hydrocarbon potential of an area," he says. "The most important benefit for me is to update our knowledge, and that is very important in exploration."

## ScienceDirect literature review is vital to successful evaluations

For Giraldo, the authoritative research in ScienceDirect is essential to the task of successfully advising management on exploration opportunities. "We are always connected to the research. This is part of the business to be in — updating the knowledge of new methodologies, research and the new topics to any specific field of exploration."

Science Direct's unique combination of authoritative research and accessibility make it an indispensable tool. Journals like *Geological Society of America* and *Marine and Petroleum Geology* are a must-have for Giraldo's research. "For that reason, I spend several hours a week reviewing new and old papers, with a very significant number of them coming from ScienceDirect. I'm using ScienceDirect every week; the papers allow us to understand the geology and to focus and make a decision about an area where we should spend more time or more money in our business."

Giraldo also presents research at industry conferences. In 2013, he and colleagues presented at the AAPG European Regional Conference & Exhibition in Barcelona, Spain on tectonic evidence prior to the Messinian Salinity Crisis (MSC, Late Miocene) which dried out the Mediterranean Sea.

"We're always focusing on the exploration side. And what is important in this area is that around 5.6 million years ago, the Mediterranean Sea dried out. That was a very important geological phenomenon. After that, the Atlantic water came back again around 5.3 million years ago. This geological process has an impact on the exploration."



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In his analysis, Giraldo relied on ScienceDirect journals *Marine Geology*, *Tectonophysics*, *Journal of Geodynamics* and *Earth and Planetary Science Letters*. In particular, he cites the value of Iribarren et al.(2007) and Medialdea et al.(2008), who published in *Marine Geology* and *Tectonophysics*. “These articles provide the scientific community with good geological data to understand the geology around Gibraltar arch,” he says. “After reading these papers, we as ‘exploration-ists’ can speculate on the impact in the hydrocarbon exploration around the Mediterranean sea.”

#### **ScienceDirect is a critical tool for the Information & Documentation Services group at Repsol**

As the directors and caretakers of Repsol’s vast information and documentation resources, Head of Global Information and Documentation Leticia De Castro and Manager Patricia Delgado Moreno ensure that the company’s researchers in upstream, downstream, new energy and financial departments have ready access to the tools and information they need.

For ten years, ScienceDirect has been a primary tool used by the 2,000 Repsol researchers served by the library, and with 2,000 downloads in a recent month

it is by far the most heavily used of the library’s 500 information subscription services. Additionally, roughly 85% of ScienceDirect usage falls among the firm’s Geologists, so the subjects of geology, geophysics and sedimentology are of particularly strong interest among Repsol’s researchers.

De Castro notes that ScienceDirect is a staple to these researchers. “Elsevier was the first, so ScienceDirect is very widely used. I think they have the most important collection from the oil and gas sector here in the Exploration and Production division,” she says.

De Castro and Delgado regularly collect feedback from researchers on the value of the information resources provided by the Information and Documentation department.

“We know that ScienceDirect is a very good tool because the researchers have used and compared more tools than us in the course of their work. And in this case when we ask them if they want to renew our subscription to Elsevier, they always say that it is critical for their job. They cannot be without the ScienceDirect subscription,” she says.