



**movinmarine**

research & explorer

Who we are

Introduction to the Marine Motion Radar (M2)

Applications in the Hydrocarbon Sector

- Reservoir Location

- 2D and 3D Seismic Survey

  - Exploration

  - Development

Applications in Developed Fields

- **Quienes somos**

- **Introducción Radar Movin Marin (M2)**

- **Aplicación en el sector Hidrocarburos**

  - **Localización de yacimientos**

  - **Estudio sísmico 2D, 3D**

    - **Exploración**

    - **Desarrollo**

- **Aplicaciones en campos desarrollados**



**Movin Marine is a leading company in subsurface reconnaissance through remote sensing and geophysical prospecting, focused on providing services for the identification and detailed examination of hydrocarbon deposits and various minerals..**

### **main services**

- **Detection and delineation of gas-bearing areas.**
- **Mineral-rich areas, primarily gold (Au) and copper (Cu) deposits.**
- **Hybrid resources.**
- **Oil deposits.**
- **Onshore archaeological sites.**
- **Underwater remains or shipwrecks.**
- **Underground cavities.**





**Radar M2 is a multispectral radiometer, a passive device for recording electromagnetic waves originating from the Earth's crust. It allows the detection of areas with anomalies that may be related to subsurface geological structures emitting a certain wave spectrum. The results can be determined by the presence or absence of that frequency through a spectral filter.**

**In this way, the Radar M2 can locate areas with water or hydrocarbons, subsurface cavities, or stratigraphy in geological areas with high metal content.**



### **characteristics**

- **Detection depth: 8,000 m**
- **Typical surface coverage: 25,000 m**
- **Spatial resolution: 10 m**
- **Average vertical resolution: 20 m**
- **Suitable for use in high-altitude flights**

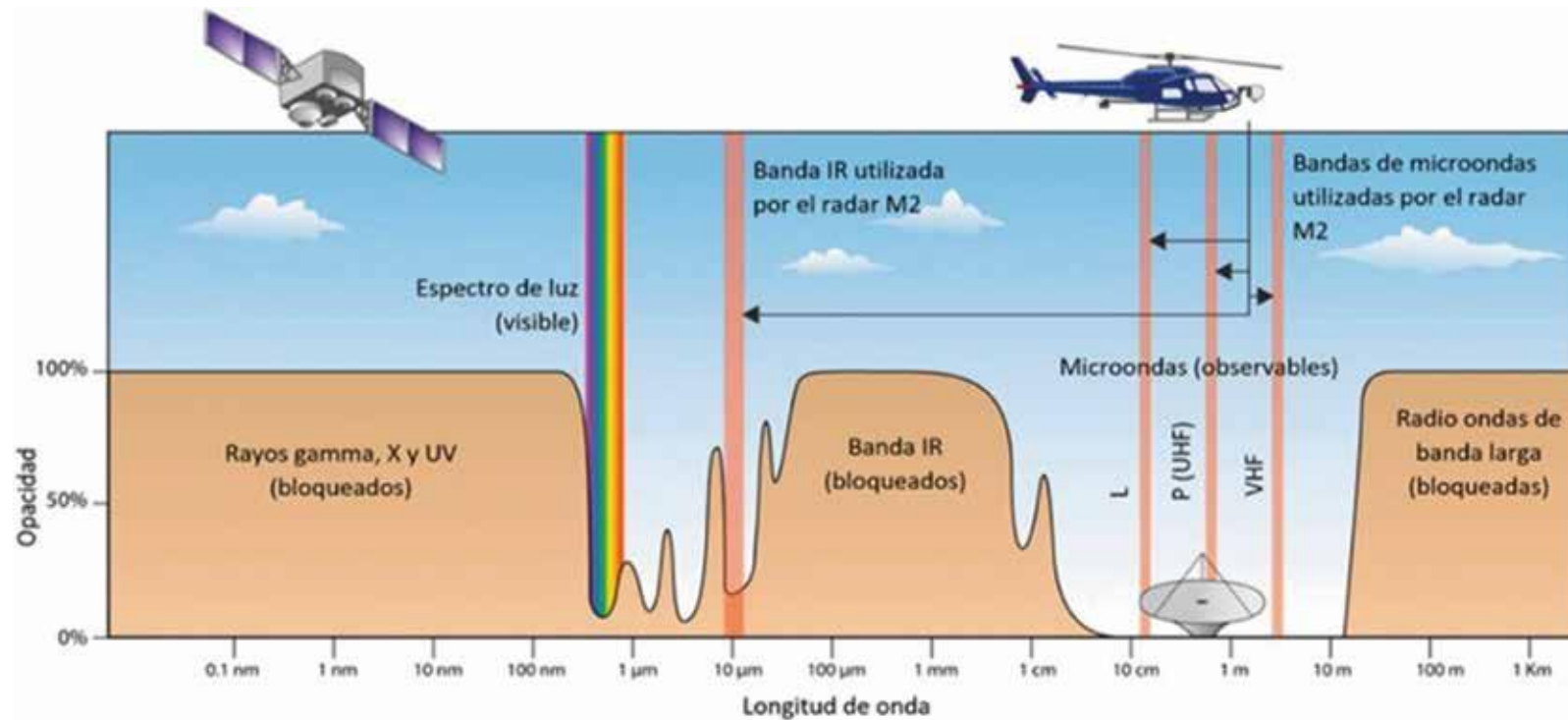


According to the laws of physics, "Any substance above absolute zero (-273.15 °C) emits some form of electromagnetic radiation." This means that, with the right device, every object can be detected and distinguished from any other.

In Earth science, remote sensing refers to the ability of satellites to detect electromagnetic (EM) radiation from the Earth's surface or atmosphere.

To be able to measure using remote sensing, the medium through which EM waves propagate must be transparent.

As can be seen, the region of the spectrum corresponding to radio waves is the most permeable in the atmosphere. This region is the microwave (EM) band, and, along with infrared (IR), is the one in which the various M2 radar sensors operate.





## Comparative results

### Conventional Methods

Satellite image analysis.

Geophysical prospecting.

Deviation monitoring.

Surface exploration.

Geological mapping and geochemical sampling.

**6 months – 10 years of work total.**

### Movin Marine Radar M2

Digital data analysis.

Avoids unnecessary drilling.

Non-invasive method.

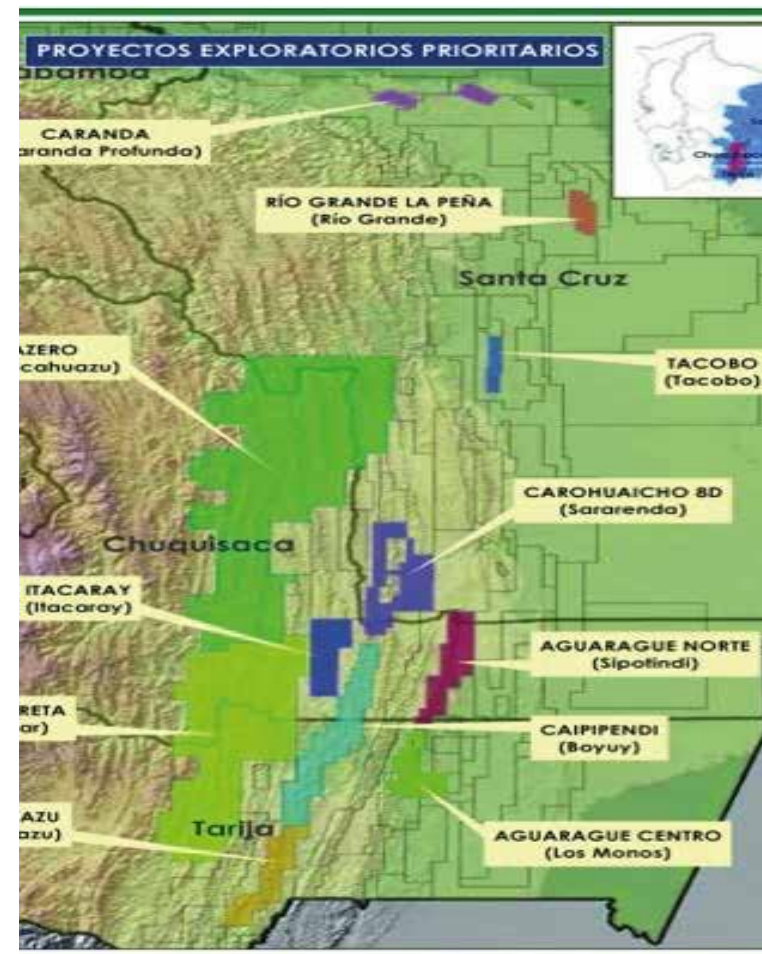
Reduction in exploration costs by up to 75%.

15-20 business days in general with direct results indicating gas and hydrocarbons.



## Advantages of the M2 RADAR over 3D seismic:

- Shorter work and operation times.
- Minimized environmental impact.
- No issues with community involvement.
- The location of the first exploratory well can be precisely determined.
- If this is not possible, costs are much lower compared to 3D seismic surveys, as are times.





## RADAR M2

### Hydrocarbon Applications: Field Development Optimizations

Using the M2 RADAR system as a complement to geological and 3D seismic studies can optimize the development of a given field, defining well locations more accurately in both area and depth.

This is feasible based on information from previously drilled wells, which allows us to more accurately calibrate the final objectives.



Equipo de perforación campo Margarita - Subandino Sur

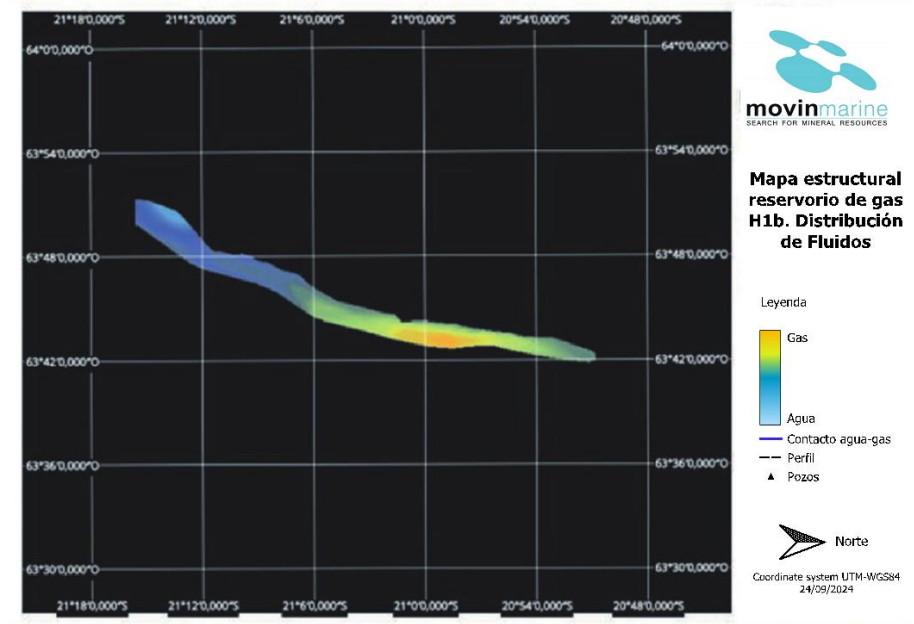
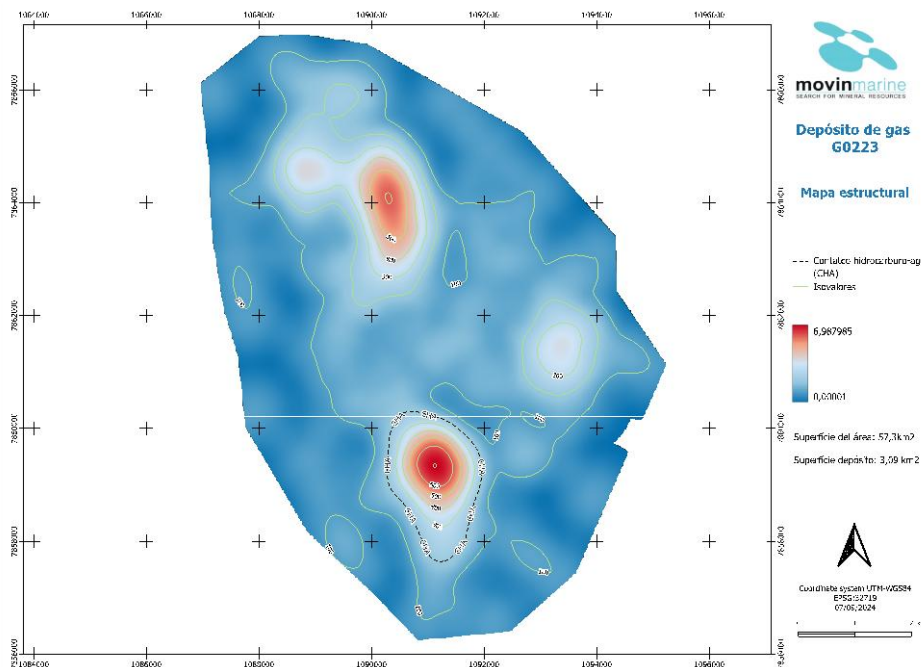


## RADAR M2

### Applications in hydrocarbons: Delineation of structures

Gas fields allow for secondary recovery projects, optimizing resources for locating injection wells in areas with the highest gas or liquid concentrations..

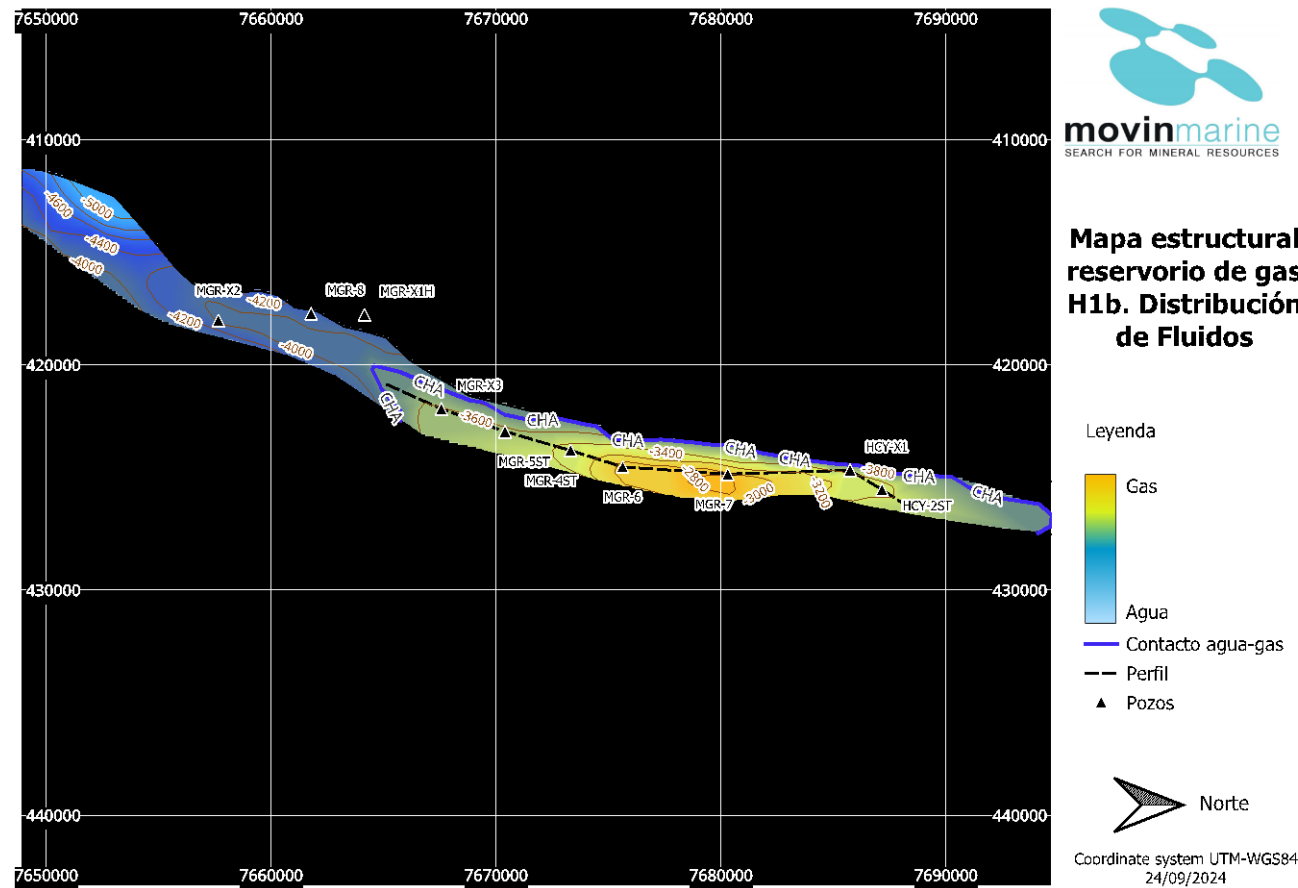
Likewise, delineation of structures in depth, differentiating the mineralized zones with hydrocarbons from the water zones.





## RADAR M2

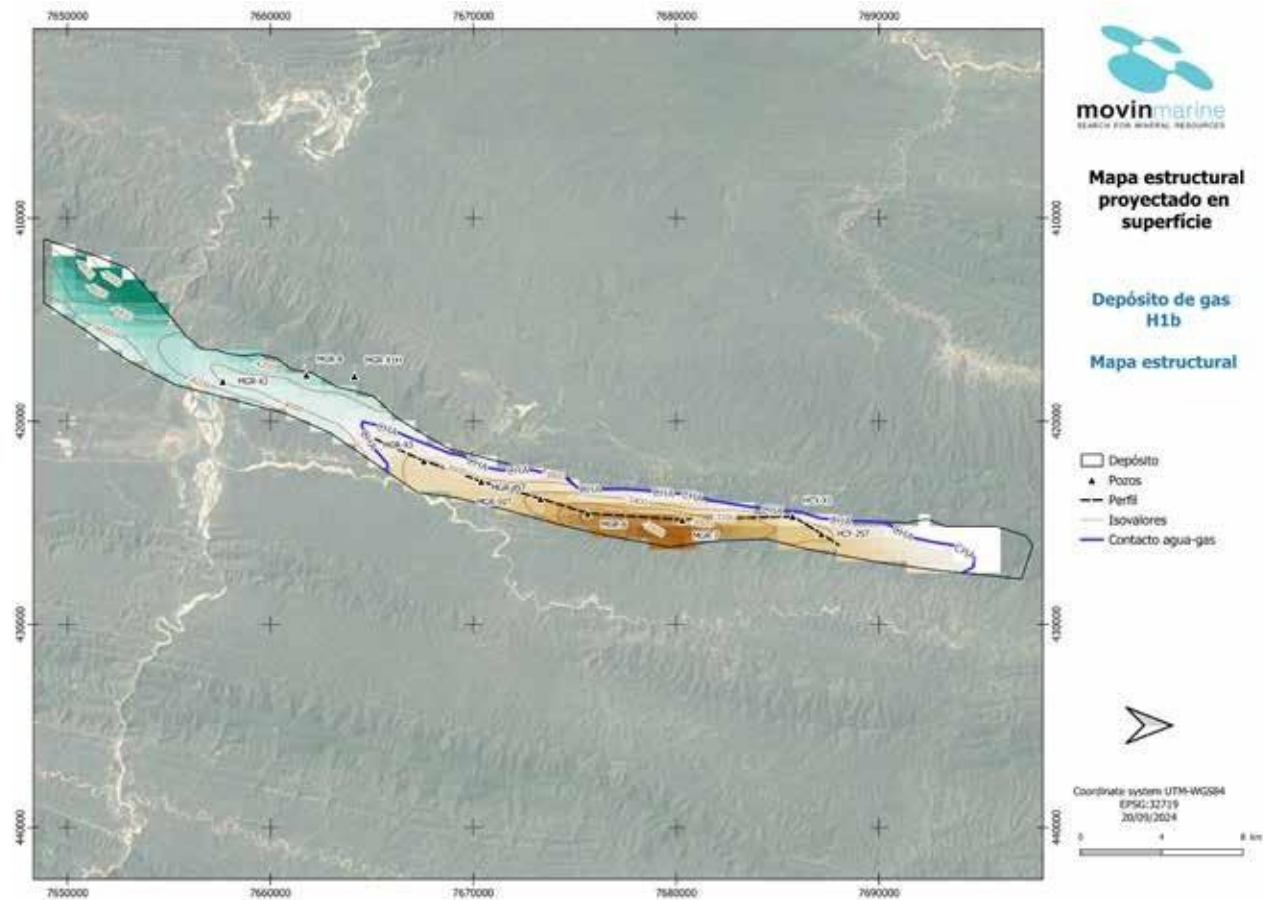
### Applications in hydrocarbonss





## RADAR M2

### Applications in hydrocarbonss



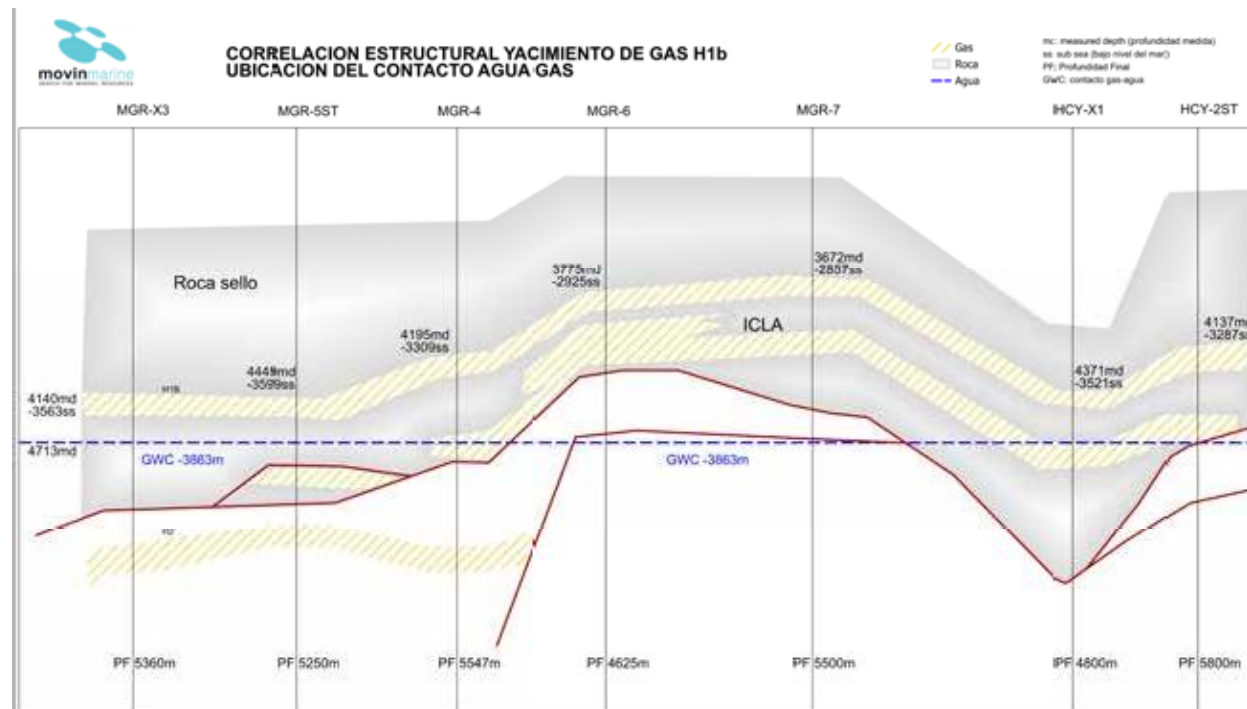


## RADAR M2

### Applications in hydrocarbons: Development of structural cuts

Longitudinal and cross-sectional structural sections of the areas of interest, identifying potential thicknesses of the gas or oil reservoirs. This can be much more optimized if they exist.

This can be much more optimized if there are already drilled wells.

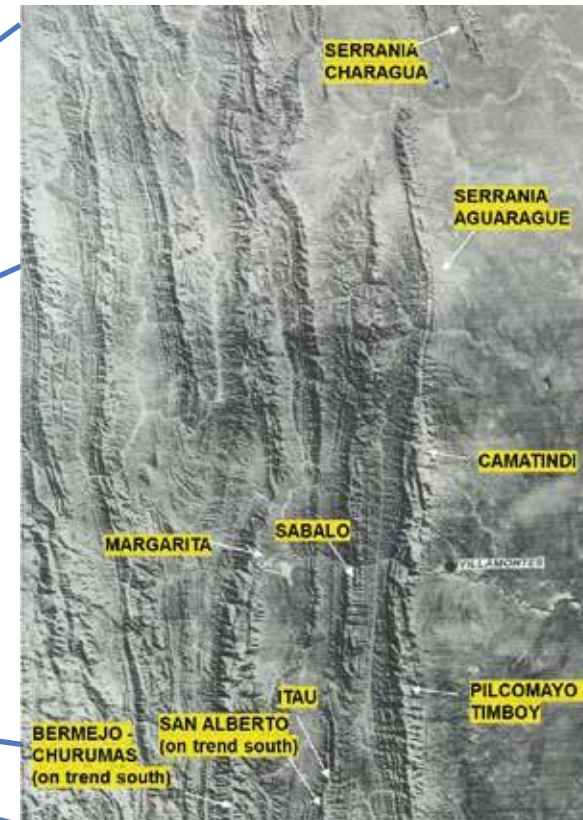
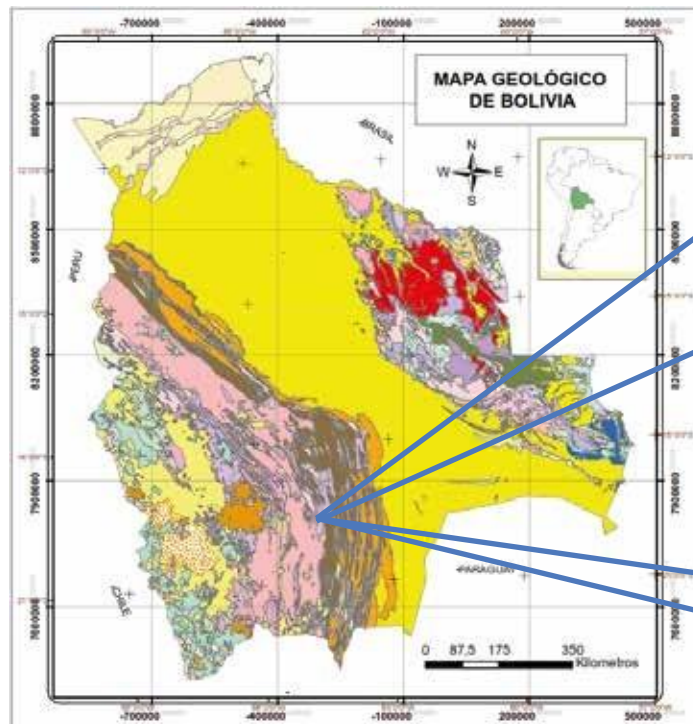




## RADAR M2

### Applications in hydrocarbons

Area of interest for the most important megafields in Bolivia





## Conclusions

The prospecting work carried out to find new sources of hydrocarbons and minerals requires technological and sustainable advances that increase productivity with the lowest possible environmental impact.

Reducing costs implies improving the discovery of these sources, whether water, hydrocarbons, or minerals, with the lowest possible uncertainty.

The use of the proposed technology achieves cost reduction and improves the discovery of these sources (water, hydrocarbons, or minerals) more quickly and with optimized costs.

Geophysical prospecting with M2 equipment and optional GPR allows for detailed exploration of the subsoil over vast areas with high resolution, maximizing the chances of success.

The state-of-the-art exploration method used by Movin Marine is up to 75% cheaper than traditional methods.

Movin Marine is a leading exploration company with over 20 years of experience, its main characteristic being its high level of commitment and punctuality to its clients.

