



25th world gas conference
"Gas: Sustaining Future Global Growth"

Prospecting and Exploration of Hydrocarbon Fields by Earth Remote Sensing Methods

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Convention Centre, Room 302/3



Patron



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Nowadays
seismics has become de facto the main tool
for geological exploration

Disadvantages

- 3D seismics is expensive
- A large number of prospect wells, despite expectations, occur empty
- Need to have a legal licence to make geological exploration in a given region

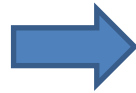
Q: How can one enhance the efficiency of geological exploration?

A: This can be done using remote sensing methods, that is involving **remote prospecting**

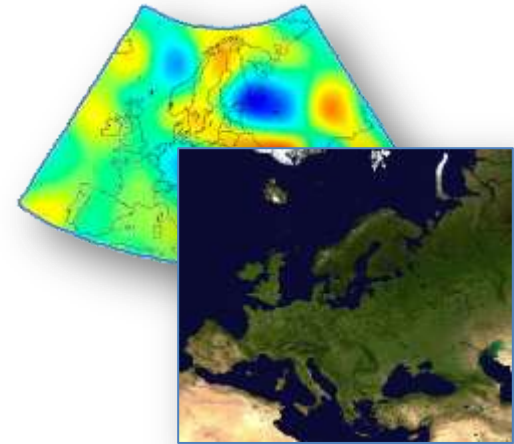
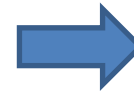


Input

(data obtained from satellites and/or aircrafts)



Processing



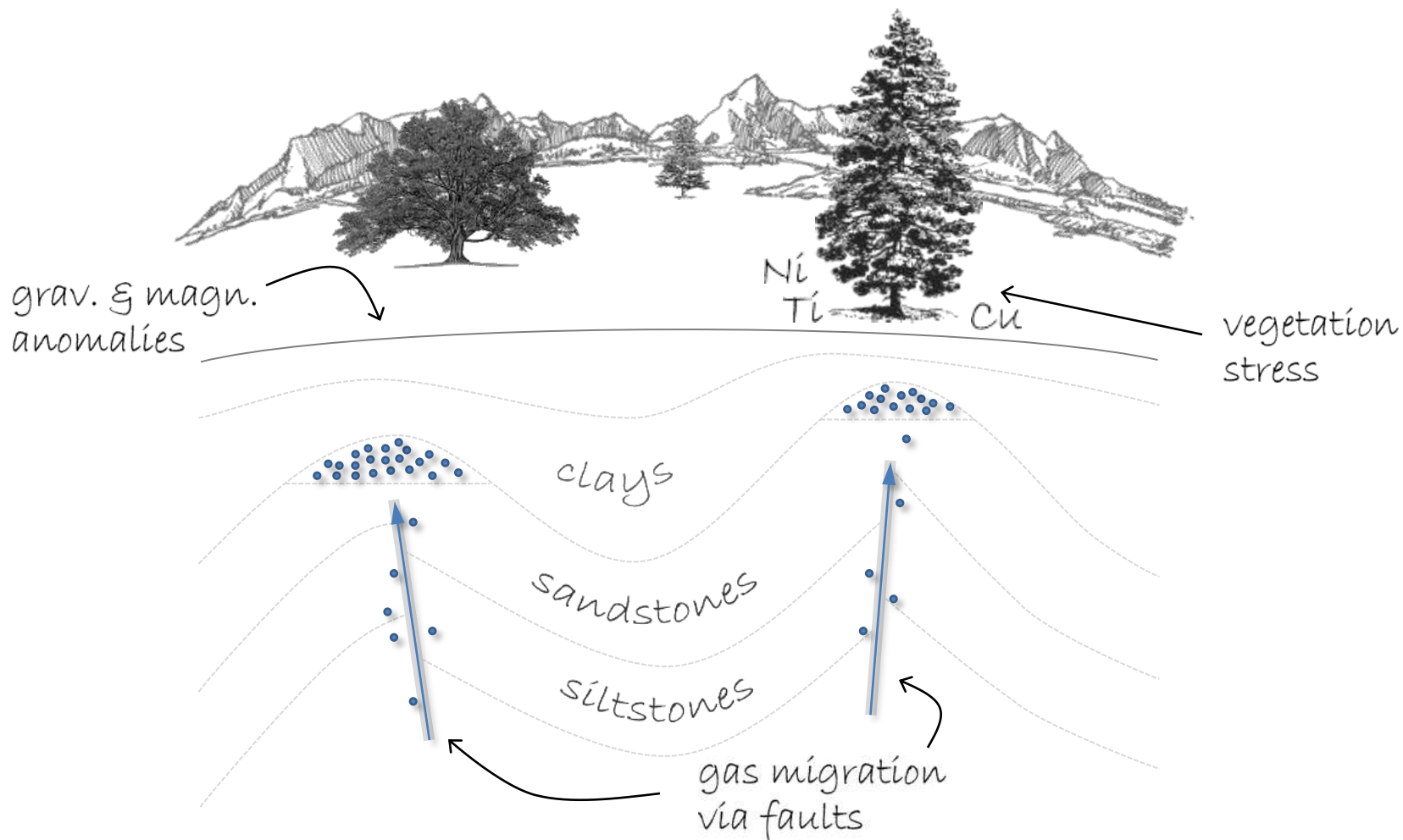
Output

(presence indicators of hydrocarbons)

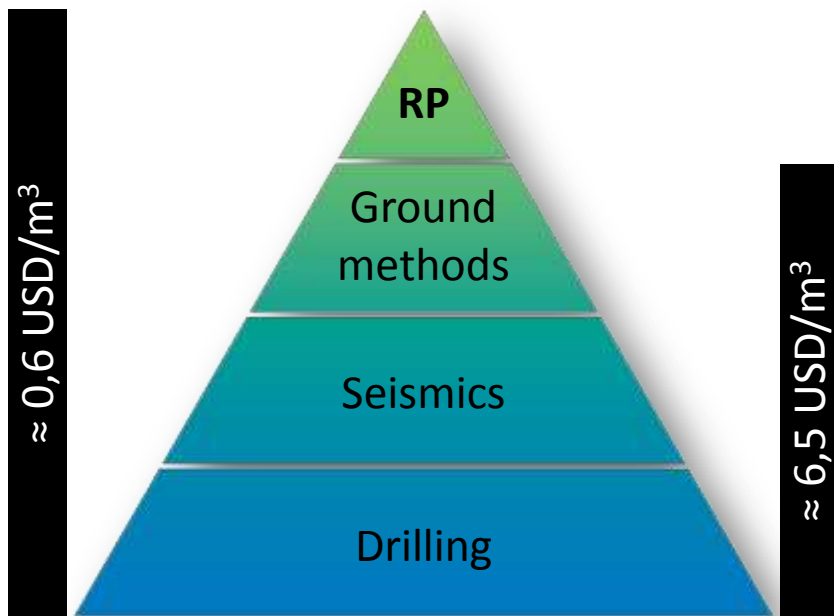
- gravitational and magnetic fields
- space images (both visual and radar)

- gravitational and magnetic anomalies
- vegetation stress maps
- land surface displacements due to active faults

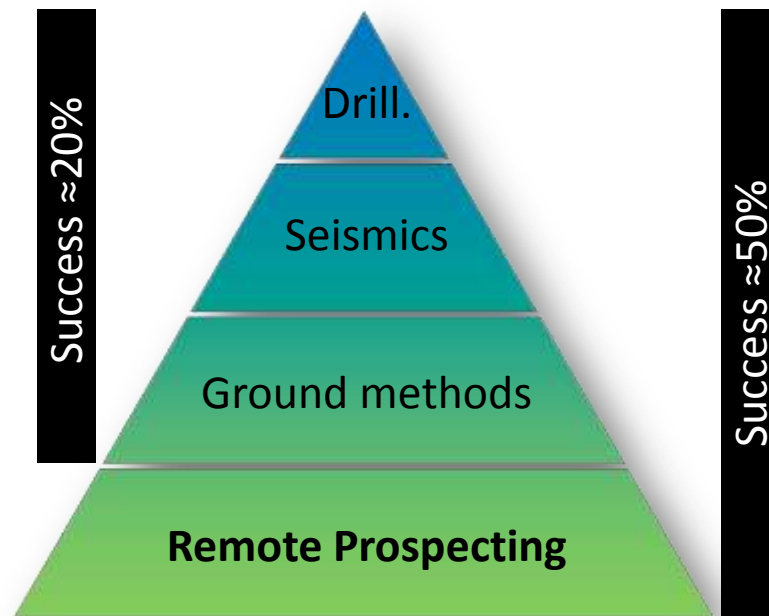
What is Remote Prospecting Based on?



Hydrocarbon microseepage

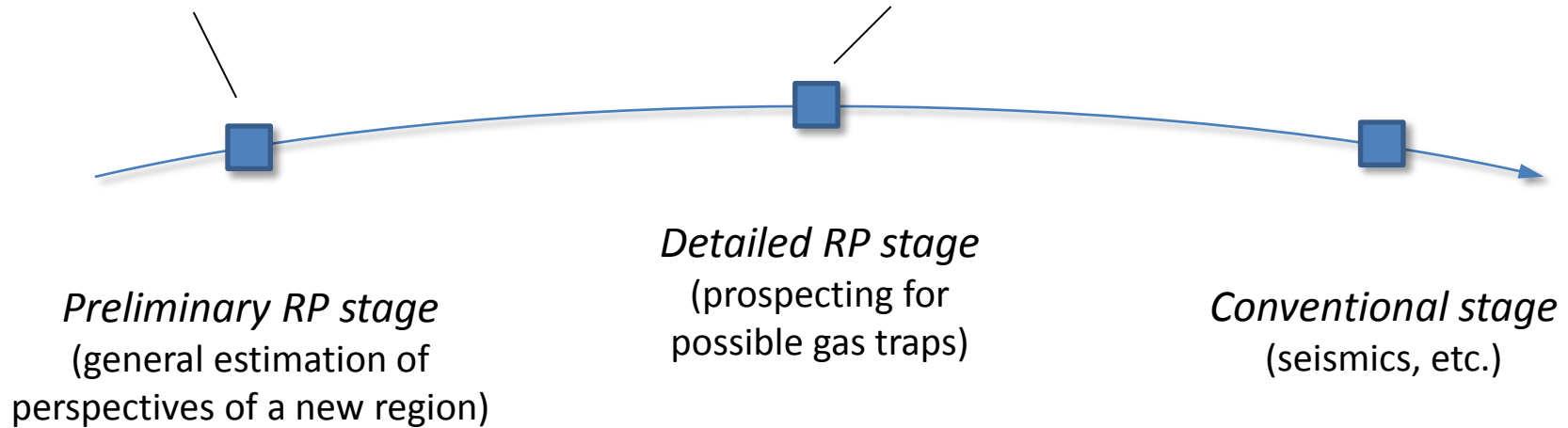


Exploration costs



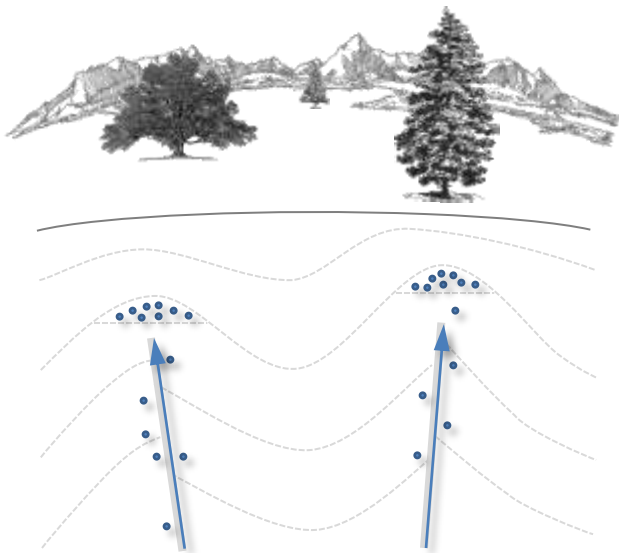
Exploration area's size

- low-resolution satellite images (Landsat, Envisat, Hyperion, etc.)
- gravitational and magnetic fields at scale up to 1 : 200 000
- high-resolution satellite images (WorldView-2, TerraSAR-X, etc.)
- gravitational and magnetic fields at scale 1 : 100 000 or better

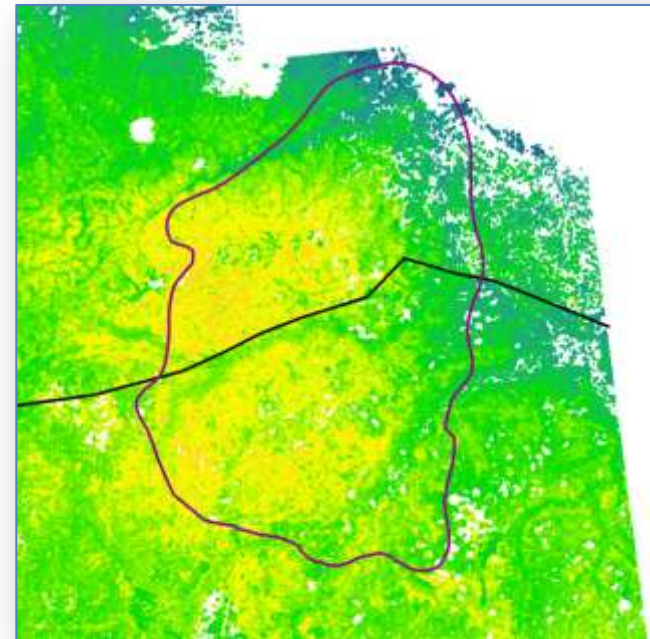


Exploration process

Theory (microseepage)

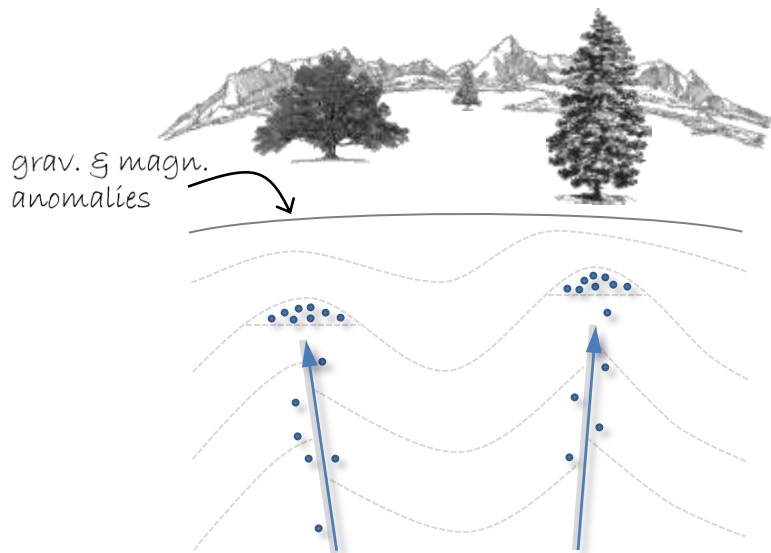


Practice (how it works)

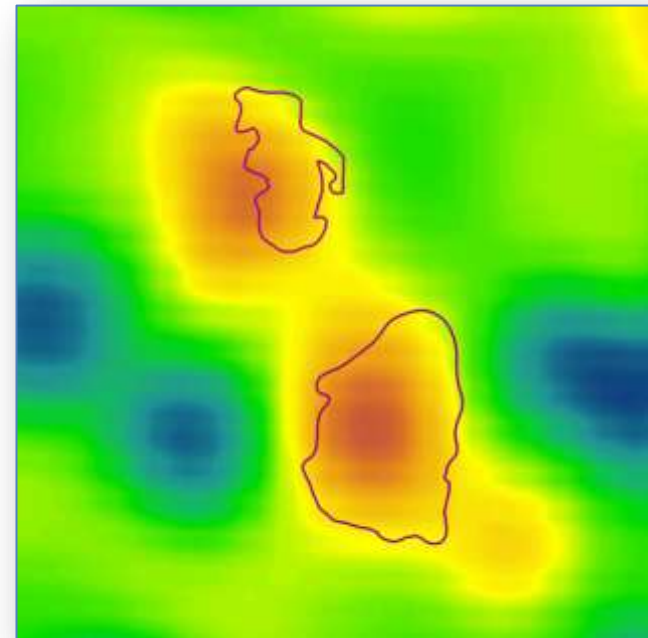


A modern fault on
the land displacements map

Theory (microseepage)

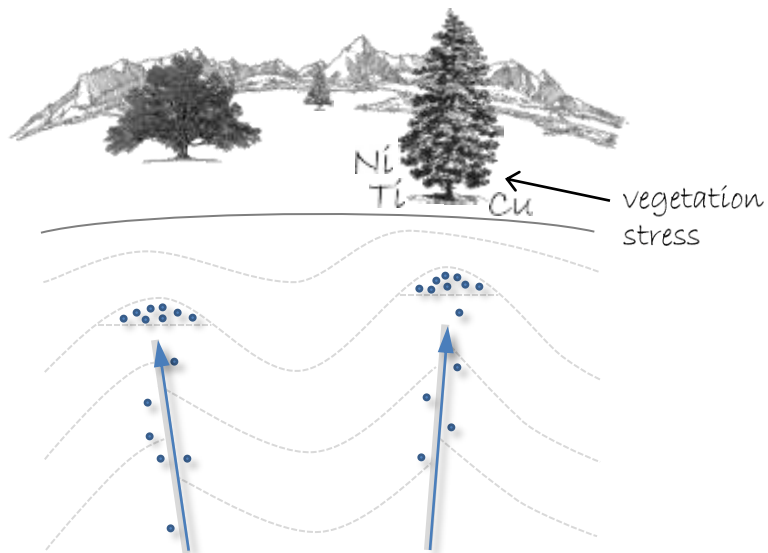


Practice (how it works)



Magnetic field anomalies
over gas fields

Theory (microseepage)



Practice (how it works)



Vegetation stress along a river
flowing in a fault

- Remote prospecting essentially uses **satellite images** of the Earth, as well as **gravitational and magnetic fields** obtained from satellites and/or aircrafts
- Remote prospecting implies **ten times reduction of the exploration costs** due to the increase of the number of non-empty wells while drilling
- Remote prospecting allows substantial increase of the size of the regions of interest, thus making the entire geological **exploration process faster**

The Remote Prospecting Crew Thank you! ;)

