

# Learning from the field: using FRAM to analyse the geologist's works in Brazil, Argentina and South Africa outcrops

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Engineer, professor and PhD, with 14-year experience on O&G Industry.



Father and husband, having adventures around the World!



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## 1 Introduction

**Exploration, drilling and production** are the main activities of upstream segment and defines strategy, guidelines and budgets of many O&G companies. However, none of these can happens without an important first step, where there is a huge work from geocientists: **the field geological studies, where for years geologists, geophysicists and petroleum engineers** have studied surface outcrops together to determine subsurface geological models for oil reservoirs.



<https://www.americangeosciences.org/geoscience-currents/geoscientists-petroleum-and-environment>

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## 1 Introduction

**When safety engineers and geologists work together, in outcrops, the activity is observed from a wider perspective, having safety arising as the element of connection and interaction in the field.**

Therefore, hazardous elements that could not be recognized individually, for example, power lines over the trees and poisonous foliage, are recognized together. For safety engineers, the interaction between geoscientists and outcrops is rather complex, giving rise to a deep and scientific understanding of Earth's surface.



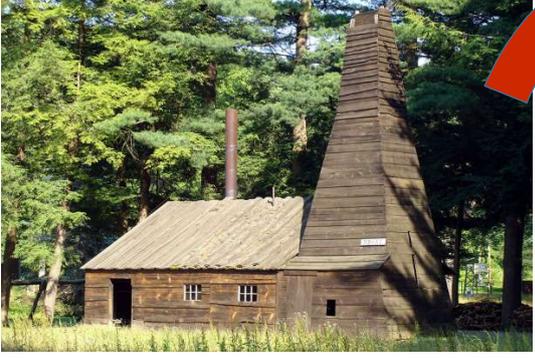
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## 2 The Evolution of Field Geology

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<https://www.usgs.gov/media/images/field-geologists-cheryl-ganeski-and-sam-isgett-make-measuerments-n>

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## 3 Understanding the Risks of Geology Field Activities

### 3.1 Risks of Geology Field Activities: animals



Since the first field works, even before the born of the modern geology, naturalists, philosophers, and enthusiasts of the natural sciences had lived with the presence of various kinds of animals on the outdoors.

**The Figure shows a spider on the rocks of the Sigmóides outcrop of the Itajaí Valley Turbidite Field Course, in Santa Catarina State, Brazil.**

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**3 Understanding the Risks of Geology Field Activities**

**3.1 Risks of Geology Field Activities: animals**

Different species (and sizes!) of animals in the outdoors



Karoo Basin Field Course, Karoo, South Africa



Karoo Basin Field Course, Karoo, South Africa

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**3 Understanding the Risks of Geology Field Activities**

**3.2 Risks of Geology Field Activities: roads and highways**



Roughly half of the outcrops of geology field courses are located on highways, roads and dirt roads, which add a severe risk to field activities: vehicles. These vehicles are a dynamic, semi-predictable element that stores a great deal of energy at high speeds, enhancing damage and injury on impact.

The Figure shows signaling gear and reflective vests as safety procedures for field activities in the highway shoulders of the Seabra outcrop, in the High-Resolution Stratigraphy of Chapada Diamantina Field Course, in Bahia State, Brazil.

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### 3 Understanding the Risks of Geology Field Activities

#### 3.3 Risks of Geology Field Activities: falls



The scenario of fall of objects over the workers implies in the fall of rock fragments mainly. It is important to ascribe that, depending on the size of the rock fragment, personal protective equipment, notably the hardhat, does not provide the necessary protection, requiring another barrier, which is the safe positioning.

**The Figure is the Puente Picún Leufú outcrop, in Neuquén Province, Argentina, where is held the Stratigraphy, Sedimentology and Depositional Geometries - Neuquén Field Course.**

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### 3 Understanding the Risks of Geology Field Activities

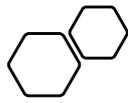
#### 3.4 Risks of Geology Field Activities: weather conditions



Although working in the outdoors may offer upsides, it is not all sunshine and blue skies. According with NIOSH, outdoor workers are exposed to many types of hazards that depend on their type of work, geographic region, season, and duration of time they are outside.

**The Figure is the Placa Hotel outcrop, in the High-Resolution Stratigraphy of Chapada da Diamantina Field Course, in a rainy day of work.**

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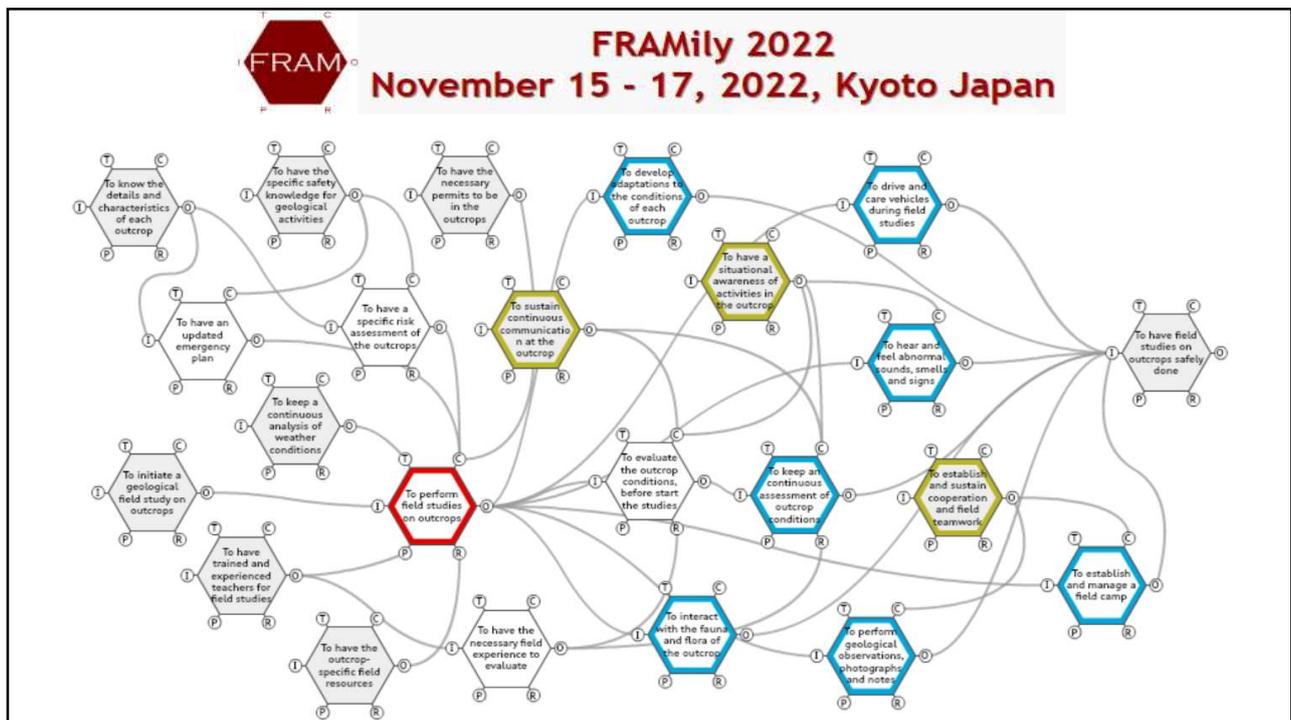


## 4 Creating a safety culture in the field

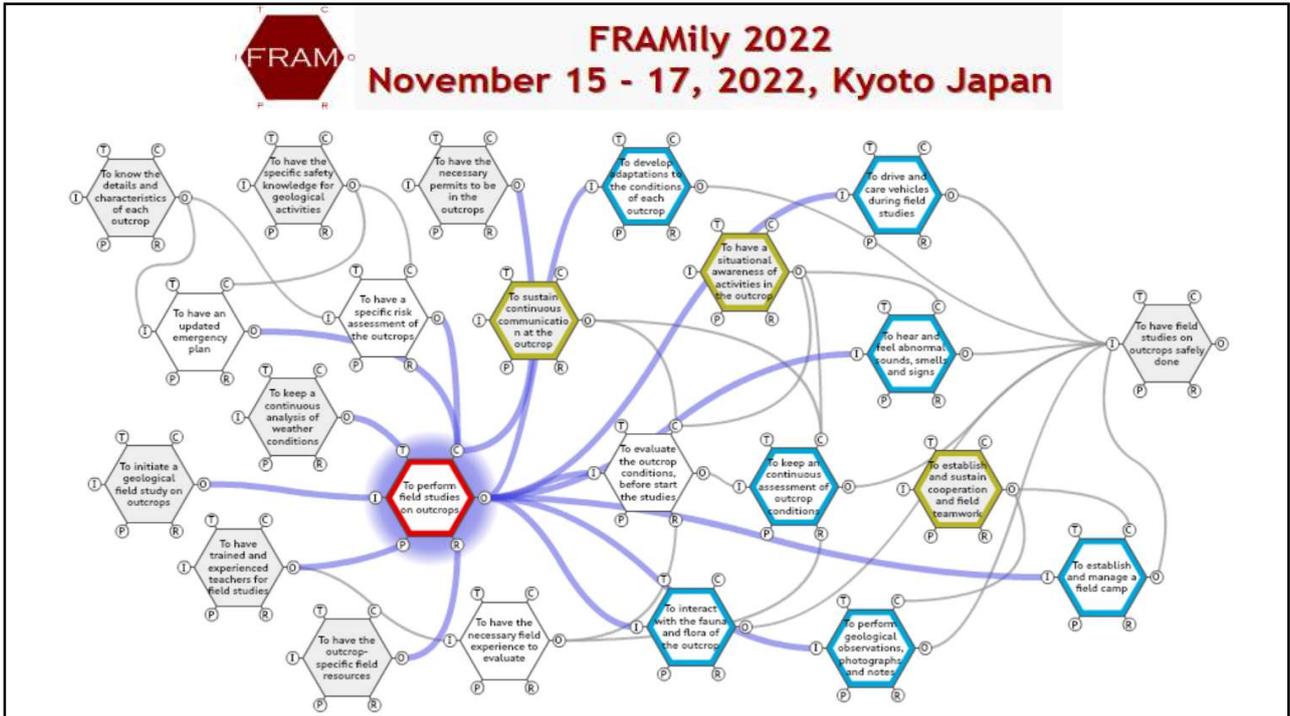


The variabilities of human performance is exactly what allows the work to be done safely. When every worker understands their role and acts in a spirit of cooperation, a strong and lasting safety culture can be developed.

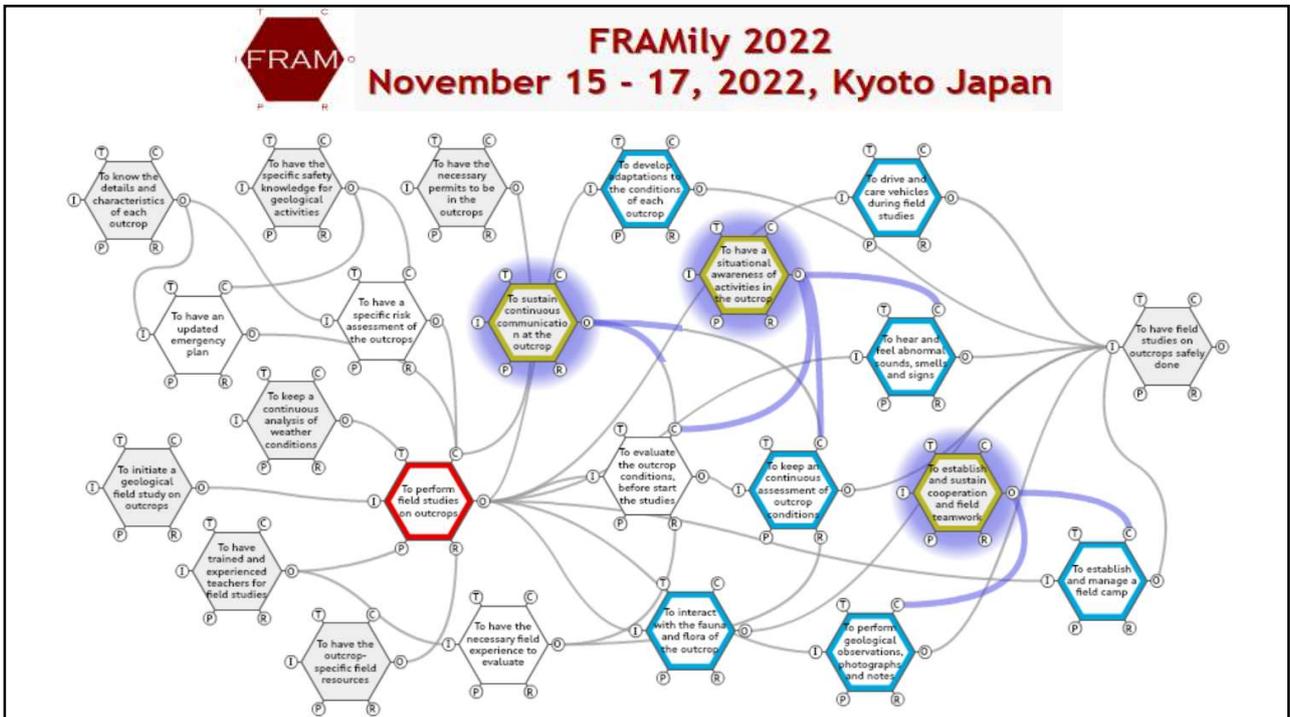
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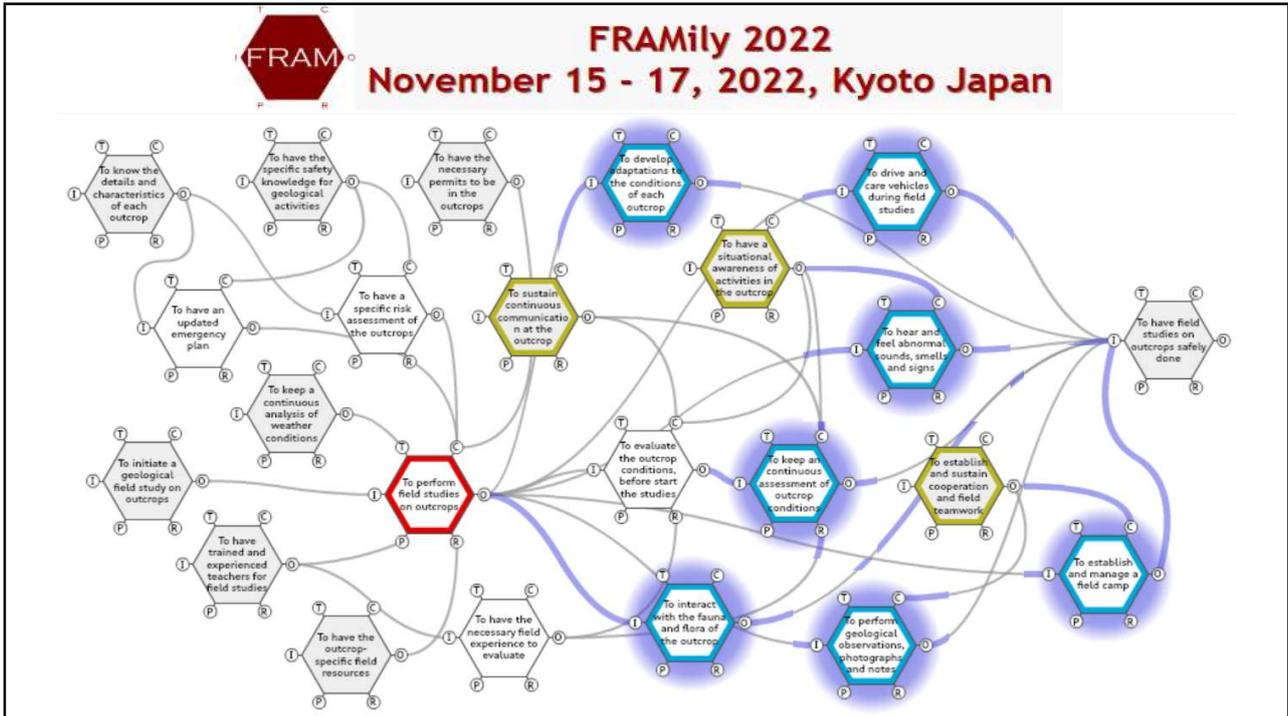
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## 4 Creating a safety culture in the field

Safety is a collective construction of all workers and the company!

In the outcrops of geological field studies, could not be otherwise. Whether in Brazil, Argentina or South Africa, the joint work of geologists and safety engineers has been the driving force behind building a safety culture in geological field activities.



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## 5 Conclusions

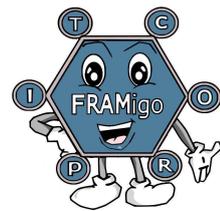
One of the most important steps to understand the risks of one activity is the understanding of where and how the work is performed. In this sense, the shared work of geocientists and safety engineers in the field promote a wider perspective of risk, starting by a deep comprehension of the activities, led by the geocientists.

Respect, exchange and knowledge are the key elements that defined this work, building a new culture in field geology activities, a new four-handed safety culture, with safety engineers and geocientist working in cooperation.



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**You** 



*YouTube "Professor Josué E. Maia Franca"*

<https://www.youtube.com/c/ProfessorJosu%C3%A9MaiaFranca/videos>

**Obrigado!**

**Dōmo arigatō!**

**Tack så mycket!**

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