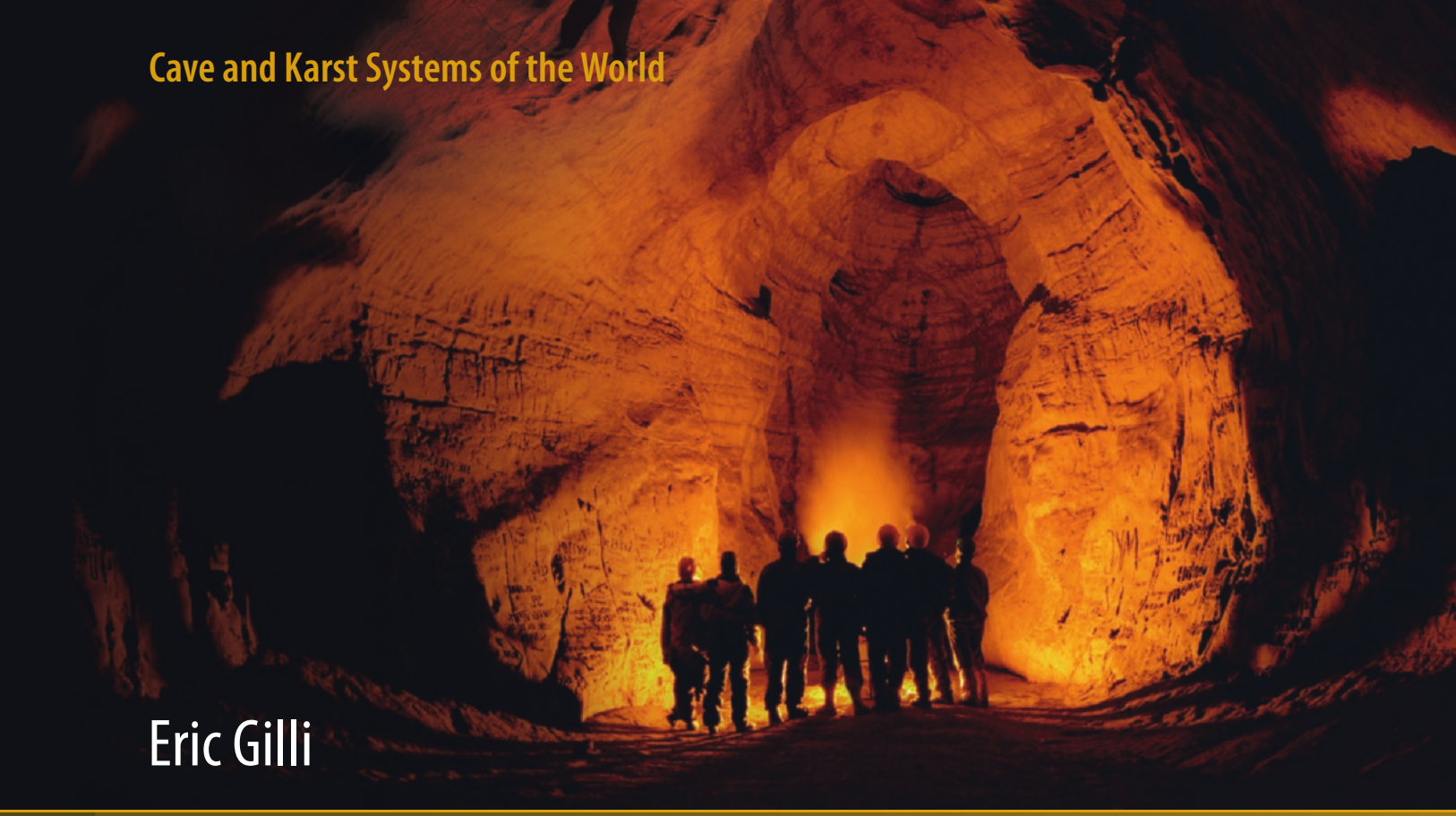
Cave and Karst Systems of the World



Eric Gilli

Port Miou and Le Bestouan (Cassis, France)

The Largest French Submarine Karst Springs

Springer

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Eric Gilli
Department of Geography
University of Paris 8
Saint-Denis, France

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Foreword

Port Miou is an extraordinary speleological, scientific and human adventure. In Southern France, close to the small city of Cassis, at the gates of Marseille City, a gigantic and mysterious brackish river flows under the arid landscape of the Calanques massif. Known from the Antiquity, this underground river could only be studied after the invention of the scuba diving in the 1950s. Seventy years later, although a tremendous amount of information was collected in the 1970s then from 2000, the mystery of its origin is still present.

Economic interest, attraction of the unknown, scientific questions have been the motor of a long series of grouped or individual actions, sometimes titanic, sometimes tragic, where explorers, scientists or managers, have associated or confronted each other around three main issues:

- How long are the caves, where do they extend?
- Where does Port Miou water come from?
- Why is the water brackish?

Port Miou is an area where the notion of mutual contribution finds all its grandeur. Countless are those who, famous or unknown, have brought their brick to the construction of the knowledge of this complex system. Technological progress, speleological exploration and scientific research are closely intertwined in that adventure.

I entered in Port Miou cave history in the late 1970s when I started becoming a caver. A member of our cavers group had told us that he had been diving there. He had explained us that the construction of a submarine dam was in progress into the cave. He had been allowed to join the divers who were in charge of the work. His description was very attractive, but the place was closed, and the access was forbidden thus visiting Port Miou was no more than a secret dream. The Port Miou project failed a few years later, and I did not heard about it for a long time.

However in the 1990s, I started to study several submarine springs around Nice (South-eastern France), close to the Italian border. I could inventory and quantify the water outlets that were flowing, either on the shore, or below the sea surface. The purpose was mainly to catch the water, as this area was suffering a lack of water during the summer. A second aim was to estimate the total amount of water that was flowing from the local karst units in view to equilibrate the hydrologic balance of that zone. The catchment failed but the collected data gave valuable information on several karst systems which made it possible to equilibrate the balance.

This study, that was supported by the French Ministry of Environment, was considered as a success, and a few months later, I was asked by the Regional Water Agency to inventory the coastal and submarine karst springs in the whole Southeastern France, including Corsica island. This was an opportunity to collect and study many documents that concerned Port Miou. I was surprised by the important discharge of the springs, measured by the technicians during the construction of the dam in the 1970s.

In addition, at that time, three important discoveries had changed my view on karst systems:

- During their explorations, cave divers had reached a depth of 174 m in Port Miou, in a shaft, far from the entrance;
- The model of a Mediterranean salinity crisis during the Messinian was widely accepted, and several authors had described their effects on coastal karsts;
- After the discovery of the prehistoric Cosquer Cave, a colleague of mine had realized a bathymetric map that was presenting a karst plateau, 150 m below the sea level.

Thanks to my experience on Nice submarine springs I quickly understood that Port Miou was a gigantic and old system that was related to the Messinian salinity crisis. This was the beginning of a new Port Miou adventure.

In this book, I describe the site, the previous works, and I present my Messinian model and the recent explorations that confirm it. The purpose of the book is also to share, with as many as possible, this passion for this phenomenon which will remain mysterious for a few decades and which will certainly promote new vocations.

Nice (France) Eric Gilli

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