

Preface

I decided to write about my experience at sea on the 8th of October 2002, while sailing on board the German research vessel F.S. *SONNE*. Looking out at the ocean, I suddenly noticed that time was passing too quickly and I seemed to have more difficulty remembering previous cruises and discoveries. At that time, I thought this would have been my last cruise and I should summarize what I have learned during all these years.

Now that I have finished writing this text, I must admit that 2002 was certainly not the year of my last cruise. Indeed, since then I continued to go to sea every year until 2005. The Research Vessel F.S. *SONNE* is particularly important to me because I have navigated more than 14 months on this ship from 1986 to 2005. That is more time than I've spent on any other research vessel.

The history of our planet Earth is written in the rocks. The record left on the emerged continents indicates that water has been a major architect shaping our planet. Since the magma ocean forming our early planet more than 4 billion years ago cooled and gave rise to blue seawater and the atmosphere, Earth has become a haven for living organisms. Many species have evolved and disappeared, while other new ones have appeared and flourished ever since the first organisms, in the form of bacteria, were born in the earliest periods of Earth's existence.

As humans, our impact during our short time on Earth is insignificant. Humans cannot alter the course of Earth's evolution but rather they have to adapt. Our living planet is in constant motion; its outer shell is created through the transfer of molten mantle at spreading ridge axes and will eventually disappear inside the deep Earth to regenerate itself again.

This book concludes with my last diving experience looking at an area near the Tonga-Kermadec subduction zone, where old crust is being returned to the mantle to be re-melted once again. While old lithosphere is disappearing, new crust is being created to form a volcanic arc.

When looking at a map of the Earth it might appear that the ocean and the continents are immutable, and one might think that they have always been there, that nothing has changed since their creation. This is just an illusion due to the brief time we humans have spent on this planet, as opposed to the Earth's rocks, which have a geological time scale and are related to the beginning of the Universe, which occurred 15 billion years ago.

I have written this book to give the reader the fruit of my experience and some of the information we have gleaned during my 45 years as a marine geologist and volcanologist. If you close this book a bit wiser about the mysteries of our planet, I will be pleased to think that I have fulfilled my work as an author.

Sea Floor Exploration

Scientific Adventures Diving into the Abyss

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