

GeoGuide

Wolfgang Fraedrich · Neli Heidari

# Iceland from the West to the South



Springer

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# GeoGuide

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Wolfgang Fraedrich · Neli Heidari

# Iceland from the West to the South

Wolfgang Fraedrich  
Gymnasium Heidberg  
Hamburg, Germany

Neli Heidari  
Department of Geoscience  
Christian-Albrechts-Universität  
Kiel, Germany

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## Preface

Almost all tourists, who experienced the fascinating landscapes of Iceland, are delighted by the diversity and the beauty of it. Well, the weather is not all sunshine and summers do not always exceed 20 °C, still everyone travelling to Iceland is well prepared for that. Iceland's summers with the light nights are appealing. Iceland's winters with the opportunity to encounter polar lights are unique.

As authors of this book, we aim at raising the interest for a trip to Iceland and experiencing natural beauties in all its detail. Our idea for the publication of this GeoGuide arose after supervising a field trip to Iceland with a small group of young researchers (high school students) who worked on various research projects in June 2013. This trip was prepared through an intensive study of the geology of Iceland to develop research topics for the student's projects. In the field, young researchers mapped the terrain depending on the project's topic, recorded temperatures in high-temperature areas with a thermal imaging camera and sampled rock material. We would like to thank Mr. Kristján Jónasson, curator of Mineralogy and Petrology of the Icelandic Institute of Natural History in Garðabær, who has issued us a permit for our work, which has already been the case during numerous research trips previously and a research trip in June 2018. After the trip, extensive laboratory analyses and result evaluations were carried out.

The creation of a travel guide was only possible through numerous private trips to Iceland. Most of them were field trips with students funded by Hamburg's Education Ministry (Behörde für Schule und Berufsbildung). We would also like to thank Agnes-Gräfe-Foundation travel allowances, which have continuously been granted.

Dr. Armann Hoskuldsson, currently volcanologist at the University of Iceland in Reykjavik, former volcanologist at Náttúrustofa Suðurlands in Vestmannaeyjar, we would like to thank him for his support of various

research projects on our field trip to Heimaey in 2000 and for providing research material for the projects. His support was essential for the success of further student research projects on Heimaey in the following years.

We also thank Ms. Renate Walter, scientific assistant at the Zoological Institute of the University of Hamburg, for her support to guide student groups of different age during analyses of rocks, sinter deposits from hot springs, soil samples and lake sediments by a scanning electron microscope. Without this work, we would have never been able to gain a deep insight into the geology and geoecology of Iceland. Equally important was the tireless commitment of Mr. Peter Stutz, laboratory technician at the Mineralogical-Petrographic Institute of the University of Hamburg, who chemically analysed more than one hundred Icelandic rock samples with the help of an X-ray fluorescence analysis. His hard work in providing those results in extensive tables and producing thin samples from more than hundred different volcanic rocks was essential for the young researcher's detailed analyses. Even we, as authors of this book, would not have understood the volcanology of Iceland in detail without this insight.

Finally, we would like to thank all junior researchers who worked in Iceland in 2000, 2002, 2008, 2010, 2013 and 2018. With their almost 30 research projects, they have worked out many very valuable results, which provided an essential basis for us in writing and publishing this book in the GeoGuide series.

The excursion proposals made in this book are only a very limited selection. All of these have been 'experienced' by Wolfgang Fraedrich during numerous trips to Iceland. This guide will therefore propose only a selection of the best routes based on additional extensive research of numerous scientific publications, as well as many reliable websites. The almost exclusively self-created graphics result, among other things, from this research.

It was important to us, to illustrate the excursion proposals with many pictures. The vast majority of the photographs were taken during Iceland excursions, some of which already in 1993. We would like to thank the respective authors as well as the numerous photographs for the granting of imprint rights in some graphics, we have all mentioned them in the list of figures. We thank Ms. Anne Wilke for editing the English texts. And finally, thanks to the Springer-Verlag in Heidelberg (Germany), who has included this publication in the series GeoGuide, and Ms. Janet Sterrit-Brunner for editorial support and Mr. Sanjeevkumar Mathiyazhagan and Ms. Sindhu Sundararajan for their care during the project production.

We hope that the readers of the GeoGuide will find the routes and information of specific geological and geomorphological formations as impressive as we do. We also hope that we could encourage you for a journey to Iceland, perhaps even an individually planned and carried out trip. We wish you good luck with your planning and hope you have a unique journey creating many beautiful memories of impressive places from the west, southwest and south of Iceland.

Hamburg, Germany  
Kiel, Germany  
August 2018

Wolfgang Fraedrich  
Neli Heidari



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# Iceland—A Worthwhile and Popular Island to Visit

# 1

Approach to the international airport of Keflavík at the furthest West of Iceland. A tension arises, even when one has before to this volcanic island in the North Atlantic been many times. The screen shows, that we fly along the south coast in the direction of Keflavík. Right on time before the landing the sun is breaking through the clouds and our view is (also in June) focused on partly snow covered mountains, wild river systems and huge, partly vegetation covered lava fields that come closer.

We are almost there and a typical Iceland settlement with its colorful roofs on the houses will appear—Keflavík. Finally our plane is landing.

We enter the terminal of a very modern airport. Everything goes frictionless and we approach the car rental counter, where we are friendly welcomed. Everyone is relaxed here, even though there is a long queue after every plane landing, especially during the summer months. In less than ten minutes all formalities are done and we go with our luggage to a shuttle bus from the car rental office which will bring us to our car. A short checkup around, luggage is put in the trunk and off we go. Adventure Iceland—for ten days.

Iceland is about 3000 km away from Germany and roughly 6000 km away from the east coast of America. It is in the center of the North Atlantic. Especially since the beginning of the 1980s it became a popular tourist destination. While it was before a 'secret destination' especially for those who love pure nature, the number of tourists rose immensely meanwhile. In 1980, for example Iceland had as many as 80,000 tourists—which was a third of the population then. 2015 about one million tourists were there, which is three times as much as the population at present.

Iceland's attraction for tourists is its unique, altogether varied, and sometimes monotonous scenery. Despite being close to the North Polar Region its climate is relatively mild, which is based on the influence of the Gulf Stream. Especially



**Fig. 1.1** Approach to Iceland © Wolfgang Fraedrich

during the summer the long days with almost 24 h of sunshine are fascinating. While during winter time it is the opposite way.

The island is part of the 60,000 km long global mid-ocean ridge, which rise at a few parts of these submarine mountains out of the ocean. Through the middle of the island runs—from southwest to the north—the divergent plate boundary between two tectonic plates, the North American Plate to the west and the Eurasian Plate to the east. It is accompanied by active volcanoes that show now and again spectacular eruptions. But the volcanoes are only one part of the geological interest for the visitors. There are many places with hot springs, long glaciers, by the glacially formed sceneries, fascinating rivers and sometimes spectacular water falls.

Equally fascinating is the vegetation which adapted to the subpolar climate after the last great ice age and gives the island—according to the region—a various character. Even a drive on the street in the south of the island, which leads many times through flat old lava streams, covered by moss, is of great fascination (Fig. 1.2).

Also the settlements are fascinating. In March 2018 exactly 350,710 inhabitants (<https://www.statice.is/publications/news-archive/population/population-in-the-1st-quarter-2018>) lived on the island. More than a third lived in the capital of Reykjavík (January 1<sup>st</sup>, 2018, 124,847 inhabitants, [http://www.citypopulation.de/Iceland-UA\\_d.html](http://www.citypopulation.de/Iceland-UA_d.html)). Altogether about 200,000 live in the capital region (or metropole region) of Reykjavík, which includes also besides the country capital the close by settlements Kópavogur, Garðabær, Mosfellsbær, Seltjarnarnes 93% of all inhabitants live in cities. The wide-ranging scenery with the many colorful



**Fig. 1.2** The Eldhraun lava landscape covered with moss in South Iceland  
© Wolfgang Fraedrich

house roofs, the numerous museums, the restaurants, the many swimming pools and the charming and open-minded inhabitants animate and invite the visitor for discoveries.

But also the lonely rural settlements give the picture of the landscape a special character. Soon, when one leaves the metropole region towards north and towards east, nature gives the landscape is character.



**Fig. 1.3** Reykjavík © Wolfgang Fraedrich



**Fig. 1.4** Uninhabited Farm Núpsstaður in South Iceland © Wolfgang Fraedrich

The drive leads us through small towns such as Hveragerði in the east of Reykjavík or Borgarnes on the way along the west coast towards north, often along the way are lonely situated farms (Fig. 1.4).

Iceland is a country of extraordinary contrasts and special beauty. It is in a way characterized by the subpolar climate, but the influence of the warm North Atlantic Stream makes it mild. The ‘Isle of Fire and Ice’ is an interesting destination away from the mass tourism. There is a great number of travel agents who are specialized in tours for groups, but the country offers so many possibilities for individual trip planning. Especially therefore many locations are interesting, which are very far out for bus tours, but by individual planning easy to reach by car with not problems. The GeoGuide ‘Iceland from the West to the South’ has apart from important basic geographical and geological information also numerous descriptions and hints for a varied individual holiday, with which the unusual qualities of the country can be really reached.

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