Preface

Eruption styles are broadly divided into magmatic, phreatomagmatic, and phreatic eruptions. The intensity of explosive volcanism is expressed using the Volcanic Explosivity Index (VEI), which ranges from 0 for Hawaiian-type eruptions to 8 for super volcanic eruptions.

Magmatic eruptions are driven primarily by gas release due to decompression. Low-viscosity magma with little dissolved gas produces relatively gentle effusive eruptions. High-viscosity magma with a high content of dissolved gas produces violent explosive eruptions. The range of observed eruption styles is expressed from historical examples.

Hawaiian eruptions are typical of volcanoes that erupt mafic lava with a relatively low gas content. These are almost entirely effusive, producing local fire fountains and highly fluid lava flows but relatively little tephra. They are named after the Hawaiian volcanoes.

Phreatomagmatic eruptions are characterized by the interaction of rising magma with groundwater. They are driven by the resulting rapid buildup of pressure in the superheated groundwater.

Phreatic eruptions are characterized by superheating of groundwater that comes in contact with hot rock or magma. They are distinguished from phreatomagmatic eruptions because the erupted material is all country rock; no magma is erupted.[1]

In the present book, ten typical literatures about volcano eruption published on international authoritative journals were selected to introduce the worldwide newest progress, which contains reviews or original researches on volcano eruption. We hope this book can demonstrate advances in volcano eruption as well as give references to the researchers, students and other related people.

[1] https://en.wikipedia.org/wiki/Volcano