Part I
Introduction

This book is an Atlas and Glossary of data sets of geounits associated with geohazards that are detectable in optical and radar airphotos and satellite images. These sets are intended to provide a reference and instructional aid for geoscience professionals and students in physical, engineering, environmental geology as well as hydrogeology, geomorphology and physical geography. Its geographical reach is global.

Hazard mitigation measures are illustrated incidentally where they happen to be evident in the airphotos and space images or within characterizing photos of geounits.

Background

The approach to environmental studies used in the Atlas and Glossary is a result of the author’s more than three decades of consultancy practice worldwide, and teaching of photogeology and remote sensing in engineering geology and physical geography. During that time a scheme was evolved to order and classify geological units as they are resolved spatially and spectrally on airphotos and images. This has resulted in a comprehensive updated glossary of photogeological units comprising 177 basic units and 178 variants. The present Atlas Glossary was derived from the more general glossary by applying the method described below to identify geohazard-associated geounits. It comprises autonomous data sets of 94 basic units and 70 facies.

Definition of a Geohazard

The following definition of a geohazard is extracted from that as given by Gares et al. (1994, p 5):

“Geomorphic hazards must be regarded as the suite of threats to human resources arising from instability of the surface features of the earth. The threat arises from landform response to surficial processes, although the initiating processes may originate at great distances from the surface.”

Geohazard Types

The geounits have been evaluated as associated with 15 principal hazard types. They are either agents of a particular hazard or are susceptible to particular hazards including three hydrologic hazards. The hazard types are listed in Table I.1. This dual evaluation of a geounit incorporates both hazard process and landform response as proposed by Gare et al. (1994).