

1. Record Nr.	UNINA9910132317303321
Titolo	The technical avalanche protection handbook // edited by Florian Rudolf-Miklau, Siegfried Sauermoser, Arthur I. Mears
Pubbl/distr/stampa	Berlin : , : Ernst & Sohn, , [2015] ©2015
ISBN	3-433-60387-1 3-433-60384-7 3-433-60386-3
Edizione	[5th ed.]
Descrizione fisica	1 online resource (433 p.)
Disciplina	551.57 551.57848
Soggetti	Avalanches - Control
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	The Technical Avalanche Protection Handbook; Preface; List of contributors; Contents; 1. Introduction; 1.1 Avalanche hazards; 1.1.1 Overview and terminology; 1.1.2 Avalanche hazards: historical and geographical relevance; 1.2 Technical avalanche defense: classification; 1.2.1 Classification scheme of defense measures and their effects; 1.2.2 Permanent technical avalanche protection (defense structures); 1.2.3 Technical avalanche defense with temporary effects; 1.3 Avalanche disasters, development of avalanche defense: historical overview; 1.3.1 Chronicle of avalanche catastrophes 1.3.1.1 Avalanche disasters in the Alps 1.3.1.2 Avalanche disasters in other regions; 1.4 History of avalanche defense; 1.4.1 Historical development in Europe; 2. Avalanches: evolution and impact; 2.1 Characteristics of avalanches; 2.1.1 Definitions and classifications; 2.1.2 Spatial and temporal occurrence of avalanches; 2.2 Meteorological principles of avalanche evolution; 2.2.1 Weather conditions forming avalanches in the European Alps; 2.2.1.1 General remarks; 2.2.1.2 Northwestern (precipitation build up) area; 2.2.1.3 Western weather conditions; 2.2.1.4 South foehn situation 2.2.1.5 Occlusion from the North East - north-east location 2.2.2

Weather conditions forming avalanches in North America (western ranges); 2.2.3 Weather conditions forming avalanches in other mountain regions; 2.3 Nivological principles of avalanche evolution; 2.3.1 Properties of material snow; 2.3.2 Genesis of snow; 2.3.3 Snow metamorphism; 2.3.3.1 General remarks; 2.3.3.2 Principles of snow metamorphosis; 2.3.3.3 Initial metamorphism; 2.3.3.4 Equilibrium growth metamorphism; 2.3.3.5 Faceting; 2.3.3.6 Melt-freeze metamorphism; 2.3.4 Snowpack; 2.3.4.1 Formation of snowpack and layering
2.3.4.2 Movements and tensions in snow cover
2.3.4.3 Avalanche classification according to evolution; 2.4 Frequency and magnitude of avalanche events; 2.4.1 Criteria for frequency, magnitude and risk assessment; 2.4.2 Frequency (recurrence) of avalanche events; 2.4.3 Magnitude of avalanche events; 2.4.4 Intensity of avalanche impact; 2.5 Morphological principles of avalanche evolution; 2.5.1 Avalanche catchment area; 2.5.2 Avalanche starting zone; 2.5.3 Avalanche path; 2.5.4 Avalanche runout zone (deposition zone); 2.6 Avalanche protection forest
2.6.1 Effects of vegetation and forest on avalanche formation
2.6.2 Effects of avalanches on trees and forests; 3. Avalanche dynamics: models and impact; 3.1 Principles of avalanche dynamics; 3.1.1 Physical principles; 3.1.1.1 General remarks; 3.1.1.2 Characteristic criteria of avalanche movement; 3.1.1.3 Avalanche velocity; 3.1.1.4 Model laws of avalanche movement; 3.1.1.5 Mathematical models for avalanche dynamics; 3.1.1.6 Constitutive law; 3.1.2 Dynamics of flow and powder snow avalanches; 3.1.2.1 Avalanche release; 3.1.2.2 Movement of flow avalanches
3.1.2.3 Movement of powder snow avalanches

Sommario/riassunto

Large, high-energy snow avalanches can have high destructive consequences in developed areas. Each year, avalanche catastrophes occur in many mountain regions around the globe. This causes a large number of fatalities and severe damage to buildings and infrastructure. In some mountain areas, especially in the European Alps, a high level of safety for settlement areas is attained by application of technical avalanche defense construction. Simultaneously, new risk potentials continue to emerge in mountain regions from building in endangered areas, the establishment of new roads and railway lines
