

1. Record Nr.	UNINA9910139025503321
Autore	Schrefler B. A
Titolo	Environmental geomechanics [[electronic resource] /] / edited by Bernhard Schrefler, Pierre Delage
Pubbl/distr/stampa	London, : ISTE Hoboken, N.J., : John Wiley, 2010
ISBN	1-118-61983-8 1-299-44929-8 1-118-62013-5
Descrizione fisica	1 online resource (534 p.)
Collana	ISTE
Altri autori (Persone)	SchreflerB. A DelagePierre
Disciplina	624.151 628.5/5 628.55
Soggetti	Environmental geotechnology Soil pollution Electronic books.
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	Cover; Environmental Geomechanics; Title Page; Copyright Page; Table of Contents; Introduction; Chapter 1. Debris Flows; 1.1. Introduction; 1.2. Typology of torrential flows; 1.2.1. Watershed as a complex physical system; 1.2.2. Types of transport; 1.3. Initiation, motion and effects of debris flows; 1.3.1. Initiation; 1.3.2. Motion; 1.3.3. Deposition and effects; 1.4. Modeling debris flows; 1.4.1. Debris flow classification and rheological behavior; 1.4.2. Rheometry; 1.4.3. Application: sheet flows; 1.4.4. Slow motion; 1.4.5. Fast motion; 1.5. Bibliography; Chapter 2. Snow Avalanches 2.1. Introduction 2.1.1. A physical picture of avalanches; 2.1.2. Avalanche release; 2.1.3. Avalanche motion; 2.2. Modeling avalanches; 2.2.1. Statistical methods; 2.2.2. Fluid-mechanics approach (avalanche-dynamics models); 2.2.3. Simple models; 2.2.4. Intermediate models (depth-averaged models); 2.2.5. Three-dimensional computational models; 2.2.6. Small-scale models; 2.3.

Bibliography; Chapter 3. Instability of Soil Masses; 3.1. Introduction; 3.2. Slowly moving slopes; 3.2.1. Principal characteristics; 3.2.2. Determination of the laws of creep in situ; 3.2.3. Modeling of the mass; 3.3. Limit state analysis; 3.3.1. Mohr-Coulomb criterion; 3.3.2. Infinitely long slope; 3.3.3. Methods of slices; 3.3.4. Finite-elements method; 3.4. Case of non-saturated masses; 3.4.1. Problem; 3.4.2. Types of modeling; 3.4.3. Three-phase modeling; 3.4.4. Applications; 3.5. Conclusion and prospects; 3.6. Bibliography; Chapter 4. Instability of Rock Masses; 4.1. Introduction; 4.2. Cliff stability and toppling; 4.2.1. Sliding; 4.2.2. Toppling; 4.3. Contact-impact; 4.3.1. General remarks; 4.3.2. Impact at the surface of the terrain; 4.4. Flight trajectory; 4.5. Sliding and rolling; 4.5.1. Sliding; 4.5.2. Rolling; 4.5.3. Rolling with sliding; 4.6. Impact on an embankment (safety embankment); 4.6.1. Poncelet's empirical formula; 4.6.2. Method of elastic shocks; 4.6.3. Dynamic punching; 4.7. Capacity of the protective structures; 4.7.1. Elastoplastic model; 4.7.2. Capacity of the various types of structures; 4.8. Conclusion; 4.9. Bibliography; Chapter 5. Subsidence Phenomena; 5.1. Subsidence caused by water withdrawal; 5.1.1. Introduction; 5.1.2. The mathematical model; 5.1.3. Possible numerical problems; 5.1.4. Case studies: comparison between observed behavior and the predictions of numerical models; 5.1.5. Second study case: the subsidence of Albano Terme; 5.2. Artificially-induced land uplift; 5.3. Conclusions; 5.4. Bibliography; Chapter 6. Soil Collapse due to Water Infiltration; 6.1. Introduction; 6.2. The loess in Northern France; 6.2.1. The collapse of loess; 6.2.2. Geotechnical characterization of the samples; 6.2.3. Collapse behavior of the loess; 6.2.4. Evaluation of various collapsibility criteria; 6.3. Conclusion; 6.4. Bibliography; Chapter 7. Subsidence Induced by Fossil Fuel Extraction

Sommario/riassunto

This book covers a range of topics that are of increasing importance in engineering practice: natural hazards, pollution, and environmental protection through good practice. The first half of the book deals with natural risk factors, of both natural and human origin, that should be considered: subsidence, accidental infiltration, soil instability, rockslides and mudslides, debris flow, and degradation of buildings and monuments due to pollution and climactic effects, for example. These problems are highlighted and it is shown that a combination of sophisticated numerical techniques and e
