

1. Record Nr.	UNINA9911004803303321
Titolo	Gas migration : events preceding earthquakes / / Leonid F. Khilyuk ... [et al.]
Pubbl/distr/stampa	Houston, Tex., : Gulf Pub., c2000
ISBN	1-281-18697-X 9786611186975 0-08-050719-0
Descrizione fisica	1 online resource (409 p.)
Altri autori (Persone)	KhilyukLeonid F
Disciplina	551.22 21 622.338 551.22
Soggetti	Earthquakes Volcanic gases
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 (p. 342-368) and indexes.
Nota di contenuto	Front Cover; Gas Migration: Events Preceding Earthquakes; Copyright Page; Contents; Foreword; Preface; Part I: Tectonics and Gas Migration; Chapter 1. Tectonics and Earthquakes; Introduction; Geologic Setting for Earthquakes; Summary; Chapter 2. Gas Migration at Plate Boundaries; Seeps; California Offshore Seeps; Relationship of Faults to Seeps; Chapter 3. Surface Soil-Gas Surveys; Introduction; Migration of Methane and Other Hydrocarbons; Helium and Hydrogen Gas Migration; Carbon-Dioxide Migration; Radon Gas Migration; Chapter 4. Southern California-Faults and Petroleum Reservoirs Activity along the San Andreas Fault SystemSouthern California Faults; Los Angeles Basin Petroleum Deposits; Part II: Events Preceding Earthquakes; Chapter 5. Earthquake Precursors; Chapter 6. Occurrence and Consequences of Quakes; Introduction; Earthquakes in General; Chapter 7. Causes of Earthquakes; Introduction; Simple Models for Earthquakes; Chapter 8. Magnitude and Intensity of Earthquakes; Introduction; The Nature of Waves; Characteristics of Earthquake; Chapter 9. Forecasting Large Earthquakes; Introduction; Types of Forecasts; Chapter 10. Ancient Fortellers; Cosmic Events

Chapter 11. Messages from the Earth CrustIntroduction; Physical Models of Rupture; Tilt and Strain Observations; Discrete Structure of the Crust; Chapter 12. Fluids Talk; Hydrodynamic Anomalies; Chemistry of Groundwater; Chapter 13. Whispering Gases; Introduction; Radon Gas Concentration as a Precursor; Carbon Dioxide Gas Migration as a Precursor; Changes in Concentrations of Light Gases; Case Histories of Gas Migration Problems; Variations in Concentrations of Gases (Soil Air and Groundwater) Near Faults and Fractured Zones; Changes in the Performance of Oil Fields Hydrocarbon Seepage in the Marine EnvironmentPrimary Causes of Geochemical Anomalies; Chapter 14. Progress in Developing a Forecasting System, Preferential Precursors and Monitoring Network; Decision Making in Earthquake Prediction; Selection of Short-term Precursors; Development of a Monitoring Network; Identifying Distinct Patterns; Conclusions; Part III: Principles of Gas Migration; Chapter 15. Gas Migration; Introduction; Sources of Migrating Gases; Chapter 16. Typical Composition of Natural Gases; Introduction; Density of Natural Gases; Chapter 17. Mechanisms of Gas Migration IntroductionTypes of Gas Migration; Intergranular Flow: Gas Globules Larger than Pore Throat Diameters; Chapter 18. Paths of Gas Migration; Introduction; Pressure Determination; Chapter 19. Hazards Resulting from Migrating Gas; Introduction; Case Studies of Gas Migration; Chapter 20. Hazards of Gas Storage Fields; Introduction; Recommendations for Gas Storage; Part IV: Interrelationships Among Subsidence, Gas Migration, and Seismic Activity; Chapter 21. Interrelationships Among Subsidence, Gas Migration, and Seismic Activity; Introduction; Subsidence Due to Fluid Withdrawal; Compaction Subsidence Bowl

Sommario/riassunto

This breakthrough new book may help save countless lives and avoid enormous losses. It presents a methodology for using gas migration to predict earthquakes and explosive gas buildup. Using rigorous scientific investigation and documented worldwide case histories, this remarkable book presents compelling evidence showing that changes in gas rates, composition, and migration accompany the tectonic events preceding earthquakes and their associated seismic events, such as volcanoes and tsunamis. Because these gas parameters are detectable and measurable, they provide an early warning of seismic
