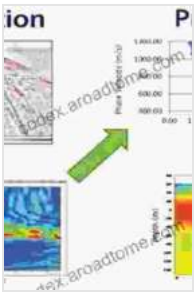
Unveiling Earth's Hidden Secrets: Surface Wave Methods for Near Surface Site Characterization



Surface Wave Methods for Near-Surface Site Characterization by Bill McGuire

4.5 out of 5

Language	: English
File size	: 68418 KB
Screen Reader	: Supported
Print length	: 487 pages

Welcome to the captivating world of surface wave methods, where the hidden secrets of our planet's surface layers reveal themselves. Surface Wave Methods For Near Surface Site Characterization, authored by esteemed geophysicists Dr. Xiaomei Li and Dr. Joel Comina, presents a comprehensive and cutting-edge exploration of these remarkable techniques that unlock valuable insights into the subsurface.

As you delve into this authoritative volume, you'll embark on a journey through the fundamentals of surface wave propagation, gaining a deep understanding of the underlying principles that empower these methods. The authors meticulously guide you through various seismic wave types, their dispersion characteristics, and the sophisticated mathematical algorithms used to extract subsurface information from surface wave measurements.

The book's strength lies in its practical applications, showcasing the versatility of surface wave methods across diverse engineering and environmental disciplines. You'll learn how these methods unveil essential soil properties, including shear wave velocity, a crucial parameter for seismic hazard assessment and geotechnical design. Discover how surface wave techniques aid in site characterization for infrastructure projects, such as bridges, buildings, and pipelines, ensuring their structural integrity and resilience.

Environmental investigations also benefit greatly from surface wave methods. The book demonstrates their effectiveness in detecting and delineating subsurface contaminants, groundwater plumes, and geological hazards, providing invaluable information for environmental remediation and risk assessment.

Through captivating case studies and real-world examples, the authors vividly illustrate the practical implementation of surface wave methods. These case studies encompass a wide range of geotechnical and environmental applications, from earthquake hazard mitigation to groundwater exploration. Each case study provides a comprehensive overview of the problem at hand, the specific surface wave techniques employed, and the valuable insights gained.

Not only does Surface Wave Methods For Near Surface Site Characterization provide a thorough theoretical foundation, but it also offers practical guidance for conducting successful field surveys. The authors share their expertise in survey design, data acquisition, and data processing, ensuring that readers are well-equipped to execute reliable and accurate surface wave measurements.

Furthermore, the book includes an appendix brimming with MATLAB® scripts, giving readers the opportunity to delve deeper into the mathematical algorithms and apply them to their own research or projects. This invaluable resource empowers you to customize surface wave analysis techniques and extend your understanding beyond the theoretical framework.

Surface Wave Methods For Near Surface Site Characterization is an indispensable resource for a broad audience, including geophysicists, geotechnical engineers, environmental scientists, and researchers seeking to unravel the secrets of the Earth's surface layers. Its comprehensive coverage, practical applications, and hands-on guidance make it an essential addition to any professional's library.

As you embark on this captivating journey into the realm of surface wave methods, you'll gain a profound appreciation for their power to illuminate the hidden depths of our planet. Empower yourself with the knowledge and skills to unlock critical subsurface information for a myriad of engineering and environmental projects, contributing to a safer and more sustainable future.

Key Features:

- Comprehensive coverage of surface wave propagation theory and analysis techniques
- Practical applications in geotechnical engineering, environmental investigations, and earthquake hazard assessment
- Detailed case studies showcasing real-world implementations
- Step-by-step guidance for conducting successful field surveys

- MATLAB® scripts for advanced data analysis

About the Authors:

Dr. Xiaomei Li is a Professor of Geophysics at the University of Nevada, Reno. Her research focuses on surface wave methods, seismic imaging, and earthquake hazard assessment.

Dr. Joel Comina is a Senior Geophysicist at GEOVISION. His expertise lies in surface wave analysis, seismic hazard evaluation, and geotechnical site characterization.

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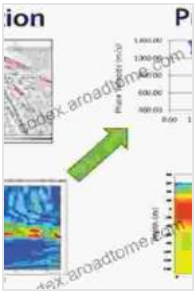

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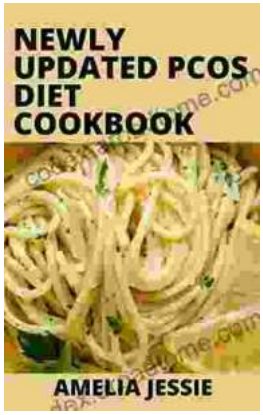

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