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| Nota di contenuto | Frontmatter -- Contents -- Foreword -- Introduction -- Chapter 1 Wave propagation -- Chapter 2 Refraction surveying -- Chapter 3 Seismic tomography -- Chapter 4 Near-surface reflection surveying -- Chapter 5 Full waveform inversion -- Chapter 6 Hybrid seismic imaging -- Chapter 7 Integrated seismic study Focus on "Cigéo", the French geological repository project -- Synthesis -- Conclusion |
| Sommario/riassunto | In the geophysics of oil exploration and reservoir studies, the surface seismic method is the most commonly used method to obtain a subsurface model in 2 or 3 dimensions. This method plays an increasingly important role in soil investigations for geotechnical, hydrogeological and site characterization studies regarding seismic hazard issues. The goal of this book is to provide a practical guide, using examples from the field, to the application of seismic methods to surface imaging. After reviewing the current state of knowledge in seismic wave propagation, refraction and reflection seismic methods, the book aims to describe how seismic tomography and fullwave form inversion methods can be used to obtain seismic images of the subsurface. Through various synthetic and field examples, the book highlights the benefit of combining different sets of data: refracted waves with reflected waves, and body waves with surface waves. With field data targeting shallow structures, it shows how more accurate geophysical models can be obtained by using the proposed hybrid |

methods. Finally, it shows how the integration of seismic data (3D survey and VSP), logging data (acoustic logging) and core measurements, combined with a succession of specific and advanced processing techniques, enables the development of a 3D high resolution geological model in depth. In addition to these examples, the authors provide readers with guidelines to carry out these operations, in terms of acquisition, as well as processing and interpretation. In each chapter, the reader will find theoretical concepts, practical rules and, above all, actual application examples. For this reason, the book can be used as a text to accompany course lectures or continuing education seminars. This book aims to promote the exchange of information among geologists, geophysicists, and engineers in geotechnical fields.