

## Contents

Preface	vii
<b>Introduction</b>	
FAGERENG, Å. & TOY, V. G. Geology of the earthquake source: an introduction	1
<b>Observations in active fault zones</b>	
BOULLIER, A.-M. Fault-zone geology: lessons from drilling through the Nojima and Chelungpu faults	17
ELLSWORTH, W. L. & MALIN, P. E. Deep rock damage in the San Andreas Fault revealed by P- and S-type fault-zone-guided waves	39
<b>Fault rocks and fault-slip styles</b>	
FAGERENG, Å. Geology of the seismogenic subduction thrust interface	55
ROWE, C. D., MENEGHINI, F. & MOORE, J. C. Textural record of the seismic cycle: strain-rate variation in an ancient subduction thrust	77
SMITH, S. A. F., HOLDSWORTH, R. E., COLLETTINI, C. & PEARCE, M. A. The microstructural character and mechanical significance of fault rocks associated with a continental low-angle normal fault: the Zuccale Fault, Elba Island, Italy	97
<b>The base of the seismogenic zone</b>	
TOY, V. G., RITCHIE, S. & SIBSON, R. H. Diverse habitats of pseudotachylytes in the Alpine Fault Zone and relationships to current seismicity	115
ALLEN, J. L. & SHAW, C. A. Seismogenic structure of a crystalline thrust fault: fabric anisotropy and coeval pseudotachylyte–mylonitic pseudotachylyte in the Grizzly Creek Shear Zone, Colorado	135
ALTENBERGER, U., PROSSER, G., RUGGIERO, M. & GÜNTER, C. Microstructure and petrology of a Calabrian garnet-bearing pseudotachylyte – a link to lower-crustal seismicity	153
MOECHER, D. P. & STELTENPOHL, M. G. Petrological evidence for co-seismic slip in extending middle–lower continental crust: Heier’s zone of pseudotachylyte, north Norway	169
NÜCHTER, J.-A. & ELLIS, S. Mid-crustal controls on episodic stress-field rotation around major reverse, normal and strike-slip faults	187
<b>Effects of fluids on faulting</b>	
BARKER, S. L. L. & COX, S. F. Evolution of fluid chemistry and fluid-flow pathways during folding and faulting: an example from Taemas, NSW, Australia	203
NURIEL, P., ROSENBAUM, G., UYSAL, T. I., ZHAO, J., GOLDING, S. D., WEINBERGER, R., KARABACAK, V. & AVNI, Y. Formation of fault-related calcite precipitates and their implications for dating fault activity in the East Anatolian and Dead Sea fault zones	229

UPTON, P., CRAW, D., YU, B. & CHEN, Y.-G. Controls on fluid flow in transpressive orogens, Taiwan and New Zealand	249
UJIE, K., TSUTSUMI, A. & KAMEDA, J. Reproduction of thermal pressurization and fluidization of clay-rich fault gouges by high-velocity friction experiments and implications for seismic slip in natural faults	267
<b>Fault reactivation v. initiation</b>	
NORTJE, G. S., OLIVER, N. H. S., BLENKINSOP, T. G., KEYS, D. L., McLELLAN, J. G. & OXENBURGH, S. New faults v. fault reactivation: implications for fault cohesion, fluid flow and copper mineralization, Mount Gordon Fault Zone, Mount Isa District, Australia	287
SCHOLZ, C. H. First-order splay faults: dip-slip examples	313
<b>Future directions</b>	
SIBSON, R. H. The scope of earthquake geology	319
Index	333