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Collana	Advances in Volcanology, An Official Book Series of the International Association of Volcanology and Chemistry of the Earth's Interior, , 2364-3277
Disciplina	551
Soggetti	Volcanic hazard analysis Volcanoes - Monitoring
Lingua di pubblicazione	Inglese
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Livello bibliografico	Monografia
Note generali	Includes index.
Nota di contenuto	Part 1 – Overview on volcanic unrest -- Significance of unrest -- Past experiences -- Part 2 - Geophysical and geochemical insights on unrest and precursory activity -- Volcano Seismology: detecting unrest in wiggly lines -- Volcano geodesy and multiparameter investigations -- Volcanic gases and low temperature volcanic fluids -- MONITORING CAPACITY: obvious and hidden problems -- Part 3 – Magma dynamics: Lessons from experiments and models -- Storage and ascent of magma -- Magma rejuvenation: Insights from numerical models -- Crystals, bubbles and melt: critical conduit processes revealed by numerical models -- Interaction between magma and hydrothermal system -- The magma laboratory: Constraining unrest mechanisms -- From unrest to eruption: Conditions for phreatic vs. magmatic activity -- Geochemical and isotopic investigations in the light of unrest -- Magma mixing as a prelude to unrest -- Part 4 – Bridging the gap between science and decision-making -- Legal governance -- A Warner paper incl Cost benefit -- Recognizing and tracking volcanic unrest: a probabilistic approach -- Probabilistic tools for hazard assessment and risk management -- Deterministic vs. probabilistic forecasts -- Perspective on global practices of communication and

decision-makers' needs -- Social resilience and compliance during unrest crises -- Outreach and education -- Volcanic Unrest Simulation Exercises – guidance for future exercises -- Glossary -- INDEX.

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## Sommario/riassunto

This open access book summarizes the findings of the VUELCO project, a multi-disciplinary and cross-boundary research funded by the European Commission's 7th framework program. It comprises four broad topics: 1. The global significance of volcanic unrest 2. Geophysical and geochemical fingerprints of unrest and precursory activity 3. Magma dynamics leading to unrest phenomena 4. Bridging the gap between science and decision-making Volcanic unrest is a complex multi-hazard phenomenon. The fact that unrest may, or may not lead to an imminent eruption contributes significant uncertainty to short-term volcanic hazard and risk assessment. Although it is reasonable to assume that all eruptions are associated with precursory activity of some sort, the understanding of the causative links between subsurface processes, resulting unrest signals and imminent eruption is incomplete. When a volcano evolves from dormancy into a phase of unrest, important scientific, political and social questions need to be addressed. This book is aimed at graduate students, researchers of volcanic phenomena, professionals in volcanic hazard and risk assessment, observatory personnel, as well as emergency managers who wish to learn about the complex nature of volcanic unrest and how to utilize new findings to deal with unrest phenomena at scientific and emergency managing levels.

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