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| Descrizione fisica | 1 online resource (390 pages) |
| Disciplina | 551.6 |
| Soggetti | Climatology<br>Quantitative research<br>Sampling (Statistics)<br>Climate Sciences<br>Data Analysis and Big Data<br>Methodology of Data Collection and Processing |
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| Nota di contenuto | Chapter 1: What is “Actionable” Science for Climate and Environment -- Chapter 2: Data Foundation for Actionable Science -- Chapter 3: Technology Landscape for Making Climate and Environmental Science “Actionable” -- Chapter 4: Actionable Science for Greenhouse Gas Emission Reduction -- Chapter 5: Actionable Science for Hurricanes -- Chapter 6: Actionable Science for Wildfire Response -- Chapter 7: Actionable Science for Sea Level Rising -- Chapter 8: Actionable Science for Irrigation -- Chapter 9: Actionable Science for Snow Monitoring and Response -- Chapter 10: Towards more actionable vulnerability indices for Global Environmental Change -- Chapter 11: Actionable Science in Environmental Health -- Chapter 12: Actionable AI for Climate and Environment -- Chapter 13: Actionable Environmental Science through Social Media Platforms -- Chapter 14: Ethics and Accountability of Science in Action. |
| Sommario/riassunto | This volume teaches readers how to sort through the vast mountain of climate and environmental science data to extract actionable insights. With the advancements in sensing technology, we now observe |

petabytes of data related to climate and the environment. While the volume of data is impressive, collecting big data for the sake of data alone proves to be of limited utility. Instead, our quest is for actionable data that can drive tangible actions and meaningful impact. Yet, unearthing actionable insights from the accumulated big data and delivering them to global stakeholders remains a burgeoning field. Although traditional data mining struggles to keep pace with data accumulation, scientific evolution has spurred the emergence of new technologies like numeric modeling and machine learning. These cutting-edge tools are now tackling grand challenges in climate and the environment, from forecasting extreme climate events and enhancing environmental productivity to monitoringgreenhouse gas emissions, fostering smart environmental solutions, and understanding aerosols. Additionally, they model environmental-human interactions, inform policy, and steer markets towards a healthier and more environment-friendly direction. While there's no universal solution to address all these formidable tasks, this book takes us on a guided journey through three sections, enriched with chapters from domain scientists. Part I defines actionable science and explores what truly renders data actionable. Part II showcases compelling case studies and practical use scenarios, illustrating these principles in action. Finally, Part III provides an insightful glimpse into the future of actionable science, focusing on the pressing climate and environmental issues we must confront. Embark on this illuminating voyage with us, where big data meets practical research, and discover how our collective efforts move us closer to a sustainable and thriving future. This book is an invitation to unlock the mysteries of our environment, transforming data into decisive action for generations to come.