

1. Record Nr.	UNINA9911011650003321
Autore	Phillips Jonathan D
Titolo	Abiotic Selection in Earth Surface Systems // by Jonathan D. Phillips
Pubbl/distr/stampa	Cham : , : Springer Nature Switzerland : , : Imprint : Springer, , 2025
ISBN	3-031-85862-X
Edizione	[1st ed. 2025.]
Descrizione fisica	1 online resource (354 pages)
Collana	Geophysics and Environmental Physics, , 2948-2194
Disciplina	550 910.02
Soggetti	Physical geography Geophysics Stochastic models Statistics Ecology Geology Earth System Sciences Stochastic Modelling in Statistics Statistics in Engineering, Physics, Computer Science, Chemistry and Earth Sciences Theoretical and Statistical Ecology
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Introduction Abiotic Selection in Earth Surface Systems ESS -- Key Principles Review and Overview -- Forms of selection in geophysics -- Gradient selection -- Resistance selection -- Thermodynamic selection -- Geophysical selection & landscape evolution -- Goals & emergence -- An integrated approach to geophysics in Earth Surface Systems -- Implications & applications of geophysical selection.
Sommario/riassunto	This book is about abiotic selection in Earth surface systems. It demonstrates that seemingly purposeful or goal-oriented phenomena in Earth's processes actually emerge from selection dynamics. While many think of selection in the context of biological evolution, it extends to abiotic processes crucial in understanding Earth's function and evolution. The author delineates four forms of geophysical

selection: gradient, resistance, network, and thermodynamic. These selections manifest in various natural systems, from fluid flows shaping landscapes to the efficient transport of mass and energy. The book acknowledges the interplay of geophysical and ecological processes, employing them as pedagogical tools. Structured with an introduction to abiotic selection and its context, the book delves into the application of key principles—such as thermodynamics and flow dynamics—to Earth surface systems. Each subsequent chapter examines one of the four types of selection, featuring diverse real-world examples from climate dynamics to oceanography. Geared toward researchers, graduate students, and practitioners in fields such as geophysics, geology, geography, hydrology, and ecosystem sciences, it also appeals to those interested in evolutionary thinking beyond traditional life sciences.
