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Sommario/riassunto	In dit rapport gaat het om de gewenste beleidsvorming voor de nu nog openstaande, hardnekkige milieuproblemen zoals de problematiek van de CO2-uitstoot en van klimaatverandering en de afnemende biodiversiteit. Deze problemen zijn van bovennationale schaal en hebben een lange tijdsdimensie. Voor dit soort problemen kan niet worden uitgegaan van de bestaande, vertrouwde beleidsconcepten. De legitimatie van het overheidsbeleid vraagt om nieuwe combinaties van mobilisatie van kennis en een brede maatschappelijke deling en inbedding van kennis.

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Sommario/riassunto

A comprehensive introduction and up-to-date reference to SiC power semiconductor devices covering topics from material properties to applications. Based on a number of breakthroughs in SiC material science and fabrication technology in the 1980's and 1990's, the first SiC Schottky barrier diodes (SBDs) were released as commercial products in 2001. The SiC SBD market has grown significantly since that time, and SBDs are now used in a variety of power systems, particularly switch-mode power supplies and motor controls. SiC power MOSFET's entered commercial production in 2011, providing rugged, high

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Sommario/riassunto	The studies in this dissertation aim at advancing our scientific understandings about physical processes involved in the aerosol-cloud-precipitation interaction and quantitatively assessing the impacts of aerosols on the cloud systems with diverse scales over the globe on the basis of the observational data analysis and various modeling studies. As recognized in the Fifth Assessment Report by the Intergovernmental Panel on Climate Change, the magnitude of radiative forcing by atmospheric aerosols is highly uncertain, representing the largest uncertainty in projections of future climate by anthropogenic activities. By using a newly implemented cloud microphysical scheme in

the cloud-resolving model, the thesis assesses aerosol-cloud interaction for distinct weather systems, ranging from individual cumulus to mesoscale convective systems. This thesis also introduces a novel hierarchical modeling approach that solves a long outstanding mismatch between simulations by regional weather models and global climate models in the climate modeling community. More importantly, the thesis provides key scientific solutions to several challenging questions in climate science, including the global impacts of the Asian pollution. As scientists wrestle with the complexities of climate change in response to varied anthropogenic forcings, perhaps no problem is more challenging than the understanding of the impacts of atmospheric aerosols from air pollution on clouds and the global circulation.
