



The Development of Environmental Geoscience Contributes to the Construction of Ecological Civilization

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Recently, China unveiled “The Implementation Plan for the National Ecological Civilization Zone”, which recognizes ecosystems as a community of life and fosters such things as environmental restoration, ecological restoration, and watershed management. As one of the first national ecological civilization experimental zones, reform achievements in Guizhou Province have been listed in the national promotion list, with a forest coverage rate reaching 61.5%, the ratio of days with excellent air quality in cities above the county level reaching 99.4%, and water quality ratings in major rivers reaching 100%. Guizhou’s ecological answer has achieved great success. This serves as a backdrop for the 7th Youth Geoscience Forum that took place in Guiyang, Guizhou Province, from July 9 to 11, 2021. The theme of this conference was “scientific and technological self-reliance, innovative geoscience and regional development”. Many outstanding young environmental scientists and geochemists presented their recent research, making it a convergence of environmental geoscience, which will contribute to the construction of an ecological civilization in China. We organized this special issue, *Young Scientist Forum on Earth Science*, to highlight the latest progress

in interdisciplinary research in environmental science and geochemistry. We invited participants and researchers in environmental geoscience to submit reviews and research papers focusing on recent progress in this field. This issue could be a milestone in environmental geoscience and provides a future approach to the construction of an ecological civilization in China.

This special issue includes a total of 17 articles, including this editorial, 2 reviews, and 14 research papers that have been selected for publication. A series of topics related to environmental geoscience are included covering regional characteristics in research. This special issue is divided into three parts: (1) The first part focuses on field investigation and evaluations covering wetlands in Southwest China, including Caohai Lake, Changshou Lake, Yangtze River, Jialing River, as well as some typical karst areas in Guizhou Province. These papers focus on different themes (e.g., accumulation and source identification of arsenic, risk identification of heavy metals in agricultural soils, microbial production of toxic methylmercury) in environmental geoscience, which largely improve our understanding of the risks in these complex systems; (2) The second part focuses on laboratory-based studies on the environmental processes of heavy metals and emerging contaminants under simulated environmental conditions. Methods (e.g., assessment of the bioavailability of mercuric sulfides in soils), processes (e.g., production of hydroxyl radicals from oxygenation of simulated acid mine drainage), and effects (e.g., comparison adsorption between pristine and aged microplastics) that relate to environmental geoscience are included in this section. In addition, this section explores the environmental state and heavy metal contamination in the Beijing-Tianjin-Hebei region, North China; (3) The final section, including 1 research article and 2 review papers, highlights the aspects of environmental mechanisms and application technologies for metal-contaminated sites. The metal tolerance in halophytes and remediation of mercury-polluted farmland soils were reviewed, and low-temperature thermal desorption

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was applied to mitigate mercury accumulation in plants providing guidance to mitigate metal pollution in physical, chemical, and biological processes.

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