

INTERDISCIPLINARY SCIENCE FOR A CHANGING WORLD: A NEW PARADIGM FOR GEOLOGISTS

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Emerging societal problems concerning natural hazards, the environment, and natural resources require innovative interdisciplinary approaches and an expanding role for geologists. Increasingly, the earth- science community is asked to address such questions as: (1) What are the total environmental effects and economic costs associated with infrastructure development and rebuilding? (2) What are the consequences of potential climate change on landscapes and what are their accompanying societal impacts? (3) What are the potential consequences and true societal costs of ecosystem restoration in critical areas? Such broad questions, involving complex interrelated natural phenomena and their societal impacts, require partnering among and integration of geologic expertise with many diverse scientific and social disciplines. In addition, the role of the geologist is expanding rapidly beyond the traditional tasks of observing and interpreting Earth processes to include greater emphasis on scenario development, predictive modeling, decision support to policymakers, and an emphasis on defining and explaining uncertainty. The U.S. Geological Survey (USGS) has recently developed a strategy to guide its activities into the first decade of the new century. This strategy involves integrating activities between the physical and biological sciences and partnering with social scientists and economists to better address the needs of policymakers and the public. In addition, the work of the USGS will continue to address fundamental earth science questions through basic research, monitoring, and interpretation. Advancing understanding of the fundamental physical and biological processes forms the basis for predictive modeling, promotes integration across disciplines, and supports the information needs of society.