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The mission of the U.S. Geological Survey (USGS) Water Resources Discipline is to provide the information and understanding needed for wise management of the Nation's water resources. Inherent in this mission is the responsibility of collecting data that accurately describe the physical, chemical, and biological attributes of water systems. These data are used for environmental and resource assessments by the USGS, other government agencies and scientific organizations, and the general public. Reliable and quality-assured data are essential to the credibility and impartiality of the water-resources appraisals carried out by the USGS.

"The purposes of this guide are to provide information to Soil Conservation Service (SCS) Field Office Personnel on the control of nonpoint sources of pollution from agricultural lands and to incorporate a water quality perspective into all conservation planning. Nonpoint source pollution is both a relatively concern and a complex phenomenon with many unknowns. Knowing the extent to which agricultural sources contribute to the total pollution load, the extent to which various control practices decrease this load, and the effect of reducing the pollutants delivered to a water body are basic to the achievement of water quality."--Page 3.

Data on water quality and other environmental issues are being collected at an ever-increasing rate. In the past, however, the techniques used by scientists to interpret this data have not progressed as quickly. This is a book of modern statistical methods for analysis of practical problems in water quality and water resources. The last fifteen years have seen major advances in the fields of exploratory data analysis (EDA) and robust statistical methods. The 'real-life' characteristics of environmental data tend to drive analysis towards the use of these methods. These advances are presented in a practical and relevant format. Alternate methods are compared, highlighting the strengths and weaknesses of each as applied to environmental data. Techniques for trend analysis and dealing with water below the detection limit are topics covered, which are of great interest to consultants in water-quality and hydrology, scientists in state, provincial and federal water resources, and geological survey agencies. The practising water resources scientist will find the worked examples using actual field data from case studies of environmental problems, of real value. Exercises at the end of each chapter enable the mechanics of the methodological process to be fully understood, with data sets included on diskette for easy use. The result is a book that is both up-to-date and immediately relevant to ongoing work in the environmental and water sciences.

Science is increasingly driven by data, and spatial data underpin the science directions laid out in the 2007 U.S. Geological Survey (USGS) Science Strategy. A robust framework of spatial data, metadata, tools, and a user community that is interactively connected to use spatial data in an efficient and flexible way--known as a spatial data infrastructure (SDI)--must be available for scientists and managers to find, use, and share spatial data both within and beyond the USGS. Over the last decade, the USGS has conducted breakthrough research that has overcome some of the challenges associated with implementing a large SDI. Advancing Strategic Science: A Spatial Data Infrastructure Roadmap for the U.S. Geological Survey is intended to ground those efforts by providing a practical roadmap to full implementation of an SDI to enable the USGS to conduct strategic science.

Geoscience data and collections (such as, rock and sediment cores, geophysical data, engineering records, and fossils) are necessary for industries to discover and develop domestic natural resources to fulfill the nation's energy and mineral requirements and to improve the prediction of immediate and long term hazards, such as land slides, volcanic eruptions and global climate change. While the nation has assembled a wealth of geoscience data and collections, their utility remains incompletely tapped. Many could act as invaluable resources in the future but immediate action is needed if they are to remain available. Housing of and access to geoscience data and collections have become critical issues for industry, federal and state agencies, museums, and universities. Many resources are in imminent danger of being lost through mismanagement, neglect, or disposal. A striking 46 percent of the state geological surveys polled by the committee reported that there is no space available or they have refused to accept new material. In order to address these challenges, Geoscience Data and Collections offers a comprehensive strategy for managing geoscience data and collections in the United States.

Rivers provide about 60 percent of the nation's drinking water and irrigation water and 10 percent of the nation's electric power needs. The multiple and sometimes incompatible services demanded of rivers often lead to policy and management conflicts that require the integration of science-based information. This report advises the U.S. Geological Survey on how it can best address river science challenges by effectively using its resources and coordinating its activities with other agencies. The report identifies the highest priority river science issues for the USGS, including environmental flows and river restoration, sediment transport and geomorphology, and groundwater surface-water interactions. It also recommends two cross-cutting science activities including surveying and mapping the nation's river systems according to key physical and landscape features, and expanding work on predictive models, especially those that simulate interactions between physical-biological processes. The report identifies key variables to be monitored and data-managed. It proposes enhancements in streamflow, biological, and sediment monitoring; these include establishing multidisciplinary, integrated reach-scale monitoring sites and developing a comprehensive national sediment monitoring program. Finally, it encourages the USGS to be at the forefront of new technology application, including airborne lidar and embedded, networked, wireless sensors.

This is a hands-on book about ArcGIS that you work with as much as read. By the end, using Learn ArcGIS lessons, you'll be able to say you made a story map, conducted geographic analysis, edited geographic data, worked in a 3D web scene, built a 3D model of Venice, and more.

The only book of its kind detailing how the National Hydrography Dataset is used within an ArcGIS environment.

Describes geospatial data and information available from the U.S. Geological Survey (USGS) through its National Mapping Program (NMP). Notes methods of compiling cartographic data. Highlights printed maps, satellite data, publications, and software.

This DE Users Manual is designed to help potential users of digital elevation data understand and articulate their requirements in a way that their expectations are satisfied. if you have a dream that DEM's can help you do a better job, or you need to know more about DEM technologies and applications then this manual is for you.

Watershed research is conducted by the U.S. Geological Survey (USGS) to expand our understanding of basic hydrologic mechanisms and their responses at the watershed scale and to provide information that serves as the basis for water and environmental management activities carried out largely by other governmental and private entities. The

work of the USGS in this area is carried out by its Water Resources Division and occurs in three general program areas: basic research, regional and site assessments, and data collection. These activities are becoming increasingly important, especially in the context of water and environmental management, where contemporary problems are being approached more than ever on an integrated ecosystems or watershed basis and where the underlying physical, chemical, and biological science is complex. Although the value of this type of hydrologic research is well recognized within the USGS, available financial resources to support it remain modest. Thus, this study seeks to help maximize the effectiveness of the agency's work. The study took two years, during which time the committee visited field sites, received briefings, reviewed descriptive materials, deliberated toward conclusions, and wrote this report. Recommendations are intended to assist the USGS in improving its overall strategy for work in this area; descriptions of a number of scientific opportunities are included, and appropriate circumstances for collaboration with and support for others are identified.

The United States has more than 65 active or potentially active volcanoes, more than those of all other countries except Indonesia and Japan. During the twentieth century, volcanic eruptions in Alaska, California, Hawaii, and Washington devastated thousands of square kilometers of land, caused substantial economic and societal disruption and, in some instances, loss of life. More than 50 U.S. volcanoes have erupted one or more times in the past 200 years. Recently, there have been major advances in our understanding of how volcanoes work. This is partly because of detailed studies of eruptions and partly because of advances in global communications, remote sensing, and interdisciplinary cooperation. The mission of the Volcano Hazards Program (VHP) is to "lessen the harmful impacts of volcanic activity by monitoring active and potentially active volcanoes, assessing their hazards, responding to volcanic crises, and conducting research on how volcanoes work." To provide a fresh perspective and guidance to the VHP about the future of the program, the Geologic and Water Resources Divisions of the United States Geological Survey (USGS) requested that the National Research Council conduct an independent and comprehensive review. Review of the U. S. Geological Survey's Volcano Hazards Program is organized around the three components of hazards mitigation. Chapter 2 deals with research and hazard assessment. Chapter 3 covers monitoring and Chapter 4 discusses crisis response and other forms of outreach conducted by the VHP. Chapter 5 describes various cross-cutting programmatic issues such as staffing levels, data formats, and partnerships. Chapter 6 offers a vision for the future of the Volcano Hazards Program, and Chapter 7 summarizes the conclusions and recommendations of the preceding chapters. Throughout the report, major conclusions are printed in italics and recommendations in bold type. The committee has written this report for several different audiences. The main audience is upper management within the USGS and the VHP. However, the committee believes that scientists within the VHP will also find the report valuable. The report is written in such a manner as to be useful to congressional staff as well.

The techniques and standards for making discharge mea- surements at streamflow gaging stations are described in this publication. The vertical axis rotating-element current meter, principally the Price current meter, has been traditionally used for most measurements of discharge; however, advancements in acoustic technology have led to important developments in the use of acoustic Doppler current profilers, acoustic Dop- pler velocimeters, and other emerging technologies for the measurement of discharge. These new instruments, based on acoustic Doppler theory, have the advantage of no moving parts, and in the case of the acoustic Doppler current profiler, quickly and easily provide three-dimensional stream-velocity profile data through much of the vertical water column. For much of the discussion of acoustic Doppler current profiler moving-boat methodology, the reader is referred to U.S. Geo- logical Survey Techniques and Methods 3–A22 (Mueller and Wagner, 2009).

Losses of life and property in the United States-and throughout the world-resulting from hydrologic hazards, including floods, droughts, and related phenomena, are significant and increasing. Public awareness of, and federal attention to, natural disaster reduction, with a focus on mitigation or preparedness so as to minimize the impacts of such events, have probably never been greater than at present. With over three-quarters of federal disaster declarations resulting from water-related events, national interest in having the best-possible hydrologic data, information, and knowledge as the basis for assessment and reduction of risks from hydrologic hazards is clear. The U.S. Geological Survey (USGS) plays a variety of unique and critical roles relevant to hydrologic hazard understanding, preparedness, and response. The agency's data collection, research, techniques development, and interpretive studies provide the essential bases for national, state, and local hydrologic hazard risk assessment and reduction efforts. This work includes some of the more traditional activities of the Water Resources Division (e.g., streamflow measurement) and some of the more innovative interdisciplinary activities (e.g., hydrologic research, educational outreach, real-time data transmission, and risk communication) being pursued in cooperation with other divisions of the USGS, other federal and state agencies, and other local entities. This report aims to help shape a strategy and improve the overall framework of USGS efforts in these important areas.

Traces the secret double life of a nineteenth-century scientist and surveyor of the post-Civil War American West, revealing how he was able to cross color lines and live a second life with an African-American wife and five multi-racial children.

The U.S. Geological Survey (USGS) mission is to provide reliable and impartial scientific information to understand Earth, minimize loss of life and property from natural disasters, and manage water, biological, energy, and mineral resources. Data collection, analysis, interpretation, and dissemination are central to everything the USGS does. Among other activities, the USGS operates some 250 laboratories across the country to analyze physical and biological samples, including water, sediment, rock, plants, invertebrates, fish, and wildlife. The data generated in the laboratories help answer pressing scientific and societal questions or support regulation, resource management, or commercial applications. At the request of the USGS, this study reviews a representative sample of USGS laboratories to examine quality management systems and other approaches for assuring the quality of laboratory results and recommends best practices and procedures for USGS laboratories.