NEWS

Online Interactive U.S. Reservoir Sedimentation Survey Database

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In April 2009, the U.S. Geological Survey and the Natural Resources Conservation Service (prior to 1994, the Soil Conservation Service) created the Reservoir Sedimentation Survey Database (RESSED) and Web site, the most comprehensive compilation of data from reservoir bathymetric and dry basin surveys in the United States. RESSED data can be useful for a number of purposes, including calculating changes in reservoir storage characteristics, quantifying rates of sediment delivery to reservoirs, and estimating erosion rates in a reservoir's watershed.

The database contains results from 6616 surveys at 1823 reservoirs in the conterminous United States and two surveys at one reservoir in Puerto Rico (Figure 1). The data span the period 1755–1993, with 95% of the surveys performed between 1930 and 1990. Reservoir surface areas range from subhectare-scale farm ponds to 658-square-kilometer Lake Powell in the southwestern United States. There are 214 RESSED-documented reservoirs in California, the most in any state.

The database project, sponsored by the U.S. federal interagency Advisory Committee on Water Information's Subcommittee on Sedimentation (SOS), is a work in progress. No post-1993 data currently reside in the database, nor does RESSED currently include any data for Alaska, Delaware, Florida, Hawaii, Rhode Island, Vermont, and the District of Columbia. Some RESSED-documented reservoirs lack precise location coordinates. Additionally, the database structure, heretofore solely compatible with 1953 Soil Conservation Service bathymetric data acquisition requirements, is archaic and unsuitable for capturing all types of data produced by modern bathymetric surveys. For example, RESSED currently cannot store raw bathymetric transect data collected using a sonic sounder and the Global Positioning System, nor can it store survey uncertainty or quality assurance data.

The project aims to obtain more precise coordinates for reservoirs as needed, add additional extant survey data for RESSED and other reservoirs, and initiate the development of a RESSED database structure capable of capturing all relevant information produced by modern reservoir bathymetric surveys.

Pending the development of an SOS-sponsored data entry interface and modernization of the RESSED database structure, the SOS seeks the cooperation of managers, scientists, and others with access to reservoir survey information. Interim guidelines and an online form for submitting additional or revised reservoir survey information are available at http://ida.water.usgs.gov/ressed/. The Web site also enables an interactive review of selected reservoir characteristics nationally and by state, and allows for the RESSED database to be downloaded in its entirety.

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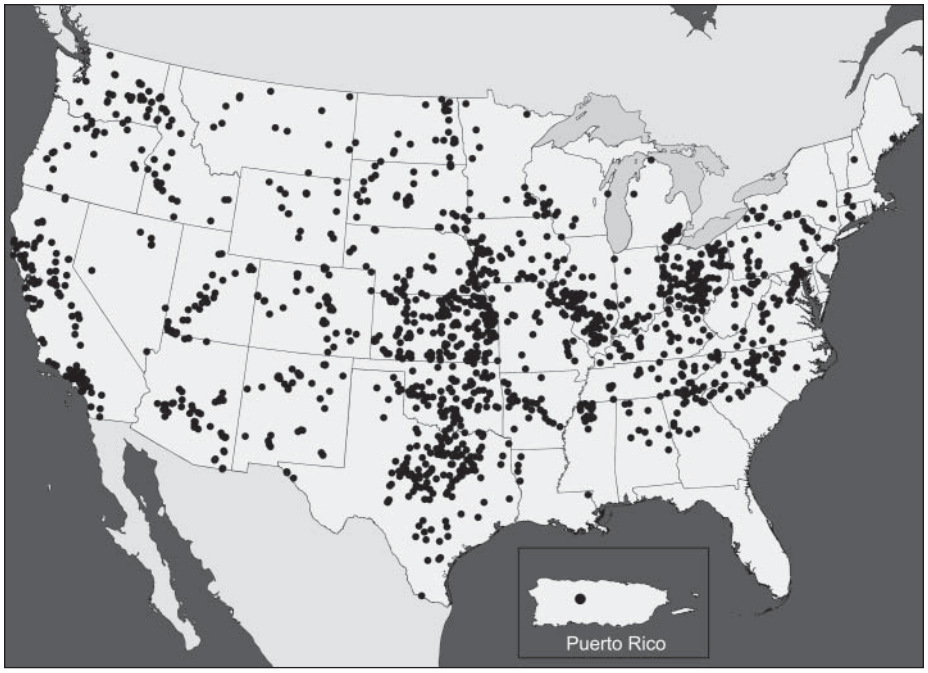

Fig. 1. Map of reservoir locations documented by the Reservoir Sedimentation Survey Database (June 2009).

FORUM

Critical Steps for the Continuing Advancement of Hydrogeophysics

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Special hydrogeophysics issues published by hydrology and geophysics journals, special sessions and workshops at conferences, and an increasing number of short courses demonstrate the growing interest in the use of geophysics for hydrologic investigations. The formation of the hydrogeophysics technical subcommittee of AGU's Hydrology section adds further evidence of the recognized significance of this growing interdisciplinary field. Given the clear value of nondestructive and nonintrusive imaging for subsurface investigations, we believe the advances in the adoption of existing geophysical methods, the development of novel methods, and the merging of geophysical and other data made in hydrogeophysics could be applied to a wide range of geological, environmental, and engineering applications.

During the past year, a group of hydrologists, geophysicists, and applied mathematicians has been discussing how geophysics can be used more quantitatively for hydrologic studies. To promote further discussion of this idea, we propose a set of working definitions and a framework for the integration of geophysics in hydrogeologic investigations.

We refer to the process of integrating geophysical and other data into a hydrologic assessment as hydrogeophysical inversion. Currently, there is significant disagreement regarding the differences among approaches to hydrogeophysical