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# Relationship of USGS and NOS

IT IS A PLEASURE to participate in this salute to the U.S. Geological Survey on the occasion of its 100th birthday.

Since our missions are complementary in many areas, it is natural that we cooperate in fields of common interest. Over the years we have had our differences, debated many points but eventually resolved our problems. We, at the National Ocean Survey, salute the one hundred years of accomplishments of the Geological Survey in its service to the nation.

One of the primary reasons for the existence of both the Geological Survey and the National Ocean Survey is the production of maps and charts to fill a basic need which dates back to the very beginning of our country. In response to the growing demand for better marine navigation charts, President Thomas Jefferson established a civilian survey of the coast which was the beginning of the National Ocean Survey.

With this new agency, the federal government formally recognized its responsibility to develop and disseminate maps and charts to meet public needs.

The only previous federal mapping was by a military cartographic group established in 1777 to produce maps for General Washington's revolutionary campaign. Until the Geological Survey was formed in 1879, the Army played a major role in the production of inland topographic maps. The need for coastal surveys and charts continued to grow and there was a need for information and maps of the country's interior as the people moved inland. Following the War Between the States, a new era of western expansion started. King, Hayden, Powell, and Wheeler made their famous territory surveys to secure geologic and topographic data.

By 1879, the national needs for maps, charts, and surveying had grown to the point that Congress had to determine the role which the federal government and its various agencies should play in meeting these needs. One of the results of this determination was establishment of the Geological Survey.

One of the many episodes in the congressional review of mapping and charting was a study by the National Academy of Sciences. This study recommended that a Geological Survey be established and that it be associated with the Coast Survey. Congress accepted the National Academy of Sciences advice on the formation of the Geological Survey but rejected placing it with the Coast Survey. On March 3, 1879, President Hayes signed a bill creating the Geological Survey as a part of the Department of the Interior. This action ended the five-year debate over civilian versus military control of topographic and resources surveying in favor of a new civilian agency.

As would be expected, there was a strong interface between the new agency and ongoing activities of the Coast Survey. In the beginning and today the same suggestions and criticisms concerning the two agencies have been made. For example, I refer you to testimony taken before a joint congressional hearing during the period from 1884-1886. The congressional committee was called to investigate the organization of "certain" bureaus. One of their prime concerns in 1885 was that the Geological Survey and the Coast Survey were duplicating each other's work.

One of the areas the committee seemed interested in was under what authority the Geological Survey made topographic maps. Fortunately, Major Powell, the United States Geological Survey Director at that time, was able to convince the committee that an accurate topographic map was needed before a geological map could be properly produced. The committee was confused on this point because the enabling legislation (1844) of the Coast Survey included authority for making topographic surveys whereas the charter of the Geological Survey called only for the publication of geological and economic maps.

Production of state geologic maps was given special attention by the congressional committee. When Major Powell was asked "under what authority do you conduct state surveys?" he replied "only the authority that comes from the request of the state commission."



PHOTOGRAMMETRIC ENGINEERING AND REMOTE SENSING,
Vol. 45, No. 12, December 1979, pp. 1625-1627.

At another point, the committee seemed confused about why the Geological Survey was triangulating in the same geographical areas as the Coast Survey. Their fears of duplication were allayed, however, when they were assured that only $15,000 was being spent annually on triangulation and none of the Geological Survey work duplicated the Coast Survey's work.

Our predecessors were men of vision. Major Powell, commenting on our geodetic work, observed that "geodetic work is a work that will extend over a great many years—several generations—and before it is finished will be exceedingly expensive." In relation to the production of state geologic maps, he was asked by Congressman Hale, "You make it a rule, do you not, to get all that you can from the state?" He replied: "Yes, and from everybody else . . . ."

Today, we should also applaud the ambition of your early directors. Major Powell told the congress in 1885 that the mapping of the United States would be completed within 24 years. Of course, our Director, Professor Hilgard, stated that the survey of our Atlantic Coast would only take an additional 5 years.

Perhaps our present reorganizational task force read the 1884 recommendations of the National Academy of Sciences on the formation of a Department of Science because the present recommendation for a Department of Natural Resources resembles the 1884 proposal in many ways.

In spite of our minor differences over the years, or maybe because of them, we have continued a special close relationship with the Geological Survey. An illustration of this occurred at a recent meeting between our agencies. They were discussing the accuracy and adequacy of the contour intervals on a coastal topographic quadrangle map. Someone suggested that they check when the topography was done, by what method, and who did the work. When it was discovered that the work was done in the early 1950's and the chief-of-party was Allen L. Powell, I am very pleased to report that they decided the work was sufficiently accurate.

Perhaps our greatest area of working together over the past 100 years has been among our field crews. These dedicated personnel help each other at every opportunity. They, in fact, tend to lump all of us back here at headquarters into a single special category that is not always complimentary.

The benefits the National Ocean Survey obtains from its association with the United States Geological Survey have increased over the intervening years.

Today there are more than 30 different classes of charts, maps, and photographic products (Figure 1) covering the coastal zone

FIG. 1. This portion of the Fort Pierce, Florida 7½-minute orthophotoquad shows NOS bathymetric data added to USGS orthophotography.

involving some degree of joint effort and data exchange between the Geological Survey and the National Ocean Survey.

We use Geological Survey maps to obtain inshore details for our nautical charts and as base maps for producing our aeronautical charts and flood evacuation maps.

In addition to surveying for mapping and charting control, both agencies have a long history of high accuracy surveying in connection with crustal motion. We have just completed joint projects in the California-Palmdale bulge area and the Houston-Galveston, Texas, area.

There are many additional things that I could cite that demonstrate the cooperation and benefits to our agencies, but I think the most important recent occurrence was the formation of an interagency committee to coordinate related programs and deal with the problems involved.

In addition to checking the congressional testimony, I checked to see what my organization did to celebrate its 100th birthday. I found that, among others, the director of the United States Geological Survey had been asked to speak on the same subject that I was asked to speak on.

I would like to share with you some of the things that were said at that time. Dr. Smith, the United States Geological Survey Director, said "If one survey buys a motor truck the other gets the benefit of the advertising and the curious public remarks: I don't see how the Geological Survey can afford it." He covered in great detail the common fields of endeavor in which each of our agencies worked. He also mentioned the great benefit that each of us has reaped from the relationship and cited some of the projects that demonstrate this cooperation. Dr. Smith ended his speech, and I quote: "And I desire simply to add that this practical cooperation has been so easily accomplished that it is only as we review these several decades of joint work and estimate the value of the reciprocal services rendered that we realize how ideal have been the relations between the two surveys." I wholeheartedly concur with this statement.

In closing, I would like to make one observation about our centennial and this centennial celebration. I was told "You've got ten minutes." In contrast, we allowed Dr. Smith a full hour and he ran over 15 minutes. But in the time allotted me, I hope I have conveyed the National Ocean Survey's admiration and appreciation of the Geological Survey's contribution to the nation.

## Forthcoming Articles

*Harold F. Hennigar*, Quantification of Changes in Coastal Topography Using Simple Parallax Measurements.

*F. R. Honey*, Modifications to Interpretoskop Optics for Stereo Viewing of 70 mm Aerial Photography.

*William G. Howland*, Multispectral Aerial Photography for Wetland Vegetation Mapping.

*Assad Iranpanah* and *Bijan Esfandiari*, Interpretation of Structural Lineaments Using Landsat-1 Images.

*Dr. Robert W. Johnson* and *Dr. Robert C. Harriss*, Remote Sensing for Water Quality and Biological Measurements in Coastal Waters.

*Miltin L. Keene*, ABC's of Problem Solving in Analytical Bridging.

*E. W. LeMaster, J. E. Chance*, and *C. L. Wiegand*, A Seasonal Verification of the Suits Spectral Reflectance Model for Wheat.

*John P. Millard, Robert J. Reginato, Robert C. Goettelman, Sherwood B. Idso, Ray D. Jackson*, and *Mary J. LeRoy*, Experimental Relations between Airborne and Ground Measured Wheat Canopy Temperatures.

*John S. Montuori*, Image Scanner Technology.

*Urho A. Rauhala*, Introduction to Array Algebra.

*Y. E. Shimabukuro, P. Hernandez Filho, N. F. Koffler*, and *S. C. Chen*, Automatic Classification of Reforested Pine and Eucalyptus Using Landsat Data.

*G. William Spann*, Satellite Remote Sensing Markets in the 1980's.

*Fawwaz T. Ulaby, Percy P. Batlivala*, and *Janet E. Bare*, Crop Identification with L-Band Radar.

*R. Welch* and *S. Zupko*, Urbanized Area Energy Utilization Patterns from DMSP Data.