



## REPLY

### Rejoinder to: Sam Smith, A.W., 1994. Reply—Editorial: The Coastal Engineering Literature and the Field Engineer. *Journal of Coastal Research*, 10(2), iii–viii.

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I read with interest the Editorial by SMITH (1994). I have heard the basic contents of his discussion regarding the publication of “pure science” versus the “pragmatic field approach” from other practicing engineers and scientists. The Coastal Engineering Research Center (CERC), U.S. Army Engineer Waterways Experiment Station (WES), is a research and development (R&D) laboratory of the United States Army Corps of Engineers that attempts to conduct research to advance fundamental understanding of processes that affect the coast and at the same time to provide pragmatic guidance for engineers and scientists to plan, design, construct, and maintain coastal projects. It is a challenge for researchers to perform research to advance the state of the art and at the same time to keep in mind that the state of practice should be advanced with new technology transferred to non-researchers.

SMITH (1994) notes that the *Shore Protection Manual* (SPM) has not been updated for a decade. CERC is currently updating the SPM and increasing its scope through development of a replacement to be named the *Coastal Engineering Manual* (CEM). The CEM is scheduled for publication in 1998. CERC is working with academia and field engineers and scientists from around the world to help write and review sections of the CEM. The CEM will be “beta tested” by practicing engineers and scientists at Corps of Engineers field offices before final publication.

CERC publishes information between editions of the SPM in the *Coastal Engineering Technical Notes* (CETN). Since the CETN's are indexed, it

is easy to search for information of particular interest. CETN's also are relatively short and written for field engineers and scientists. One can be on the mailing list for CETN's by contacting the following office:

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SMITH (1994) also notes the wide variety of *Technical Reports* (TR's) published at WES. Since WES conducts R&D and at the same time provides consulting services to field engineers and scientists, the TR's vary from reports on fundamental R&D to very site-specific consulting work that may be of interest only to those working on the specific project. CERC has TR users' manuals for a variety of engineering and mathematical modeling software that it supports. For example, there are manuals for the Automated Coastal Engineering System (ACES), *Generalized Shoreline Modeling System* (GENESIS), Storm-induced *BEACH CHange* (SBEACH), and the Coastal Modeling System (CMS). ACES has over 700 registered users, SBEACH has about 100, and GENESIS and CMS each have over 200 users. CERC software is available at no cost.

SMITH (1994) reports on problems relating to engineering- and mathematical-modeling software. CERC conducts interactive workshops to help transfer its software and other practical information coming from its R&D to field engineers and scientists in the Corps of Engineers. The workshops and the TR users' manuals emphasize limitations of the software and the situations in

which the software can be used properly. It would be advisable for all users of CERC software to attend workshops, but this is not possible. Software certainly can be used incorrectly or applied to circumstances beyond its intended usage. It is important for field engineers and scientists to understand the limitations of models and to be very knowledgeable of actual field processes. Models should be viewed as an aid to practicing engineers and scientists and not a substitute for an intimate knowledge of coastal processes occurring on real beaches.

At CERC we have tried to maintain a balance of laboratory testing, field measurements, and mathematical modeling. Often all three approaches are needed to advance our understanding and solve problems. I agree with SMITH (1994) that the number of papers advancing mathematical modeling with little corresponding laboratory testing or field measurements has increased, and this is unfortunate. The number of journal papers on practical-engineering case studies also has decreased. The *Journal of Waterways, Ports, Coast-*

*al and Ocean Engineering* of the American Society of Civil Engineers has recognized the trend of a decline in good case studies and is encouraging publication of these studies.

I would like to correct the observations by SMITH (1994) on laboratory testing of waves. SMITH (1994) says that solitary waves in the laboratory do not have "orbital kinetic energy." All laboratory waves contain orbital kinetic energy. Actually, most modern laboratories today generate spectral waves in laboratory testing. Velocity fields are as faithfully reproduced in the laboratory as surface forms.

In summary, I agree with many of the observations made in SMITH (1994). Certainly it is important that mathematical models be advanced on a firm foundation of laboratory and field measurements. Researchers also have a responsibility to transfer the knowledge that they develop in a form that allows the knowledge to be used to benefit mankind by aiding rational decisions on how to best use (or in many instances, not use) the coastal zone. The state of the art needs to advance the state of practice.