

along fronts, and deals with their structure, shapes (the double mushroom is my favorite), and the cross-frontal exchange processes that these phenomena allow.

In all, this is a very useful book. The emphasis on Russian work in the Nordic Seas means that we are exposed to the results of a great deal of systematic oceanographic work that is not generally known in the West. On the other hand,

much western work, especially on eddies and other mesoscale structures, is not present. There is no color here; all of the numerous maps are contoured in black and white, which I must admit I find refreshing (and also more informative) after the mass of color-coded maps that now dominate oceanography.

Anyone interested in the subarctic seas of the Atlantic and Pacific will find

this book useful, and it is written at a level that can be understood by the non-specialist, although the style does retain a few signs of its Russian language origin. ☺

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## Surf Science

### *An Introduction to Waves for Surfing*

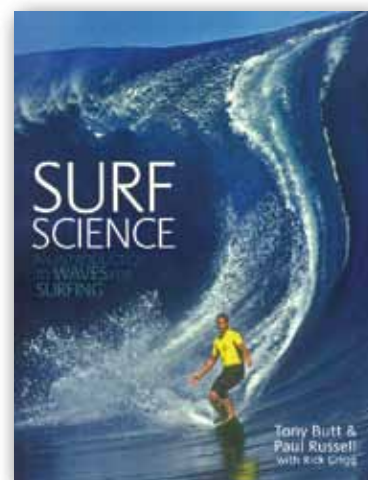
By Tony Butt and Paul Russel with Rick Grigg, The University of Hawaii Press, 2004, 144 pages  
Paperback: ISBN 0824828917, \$32 US

REVIEWED BY DAVID F. NAAR

Reading and reviewing this book is one of my more memorable moments as a scientist and a surfer. I actually read it while flying over the Pacific Ocean and going to sea on the R/V *Atlantis* from Easter Island to Tahiti. I had plenty of opportunities to look at the ocean and relate to the descriptions provided, such as crossing ground swells, short period seas, and capillary waves forming on a calm, glassy sea. As a professor in oceanography and a surfer, I thought I had a pretty good understanding of how swells and waves formed before I read this book. Now I realize that there is much more to know and that details related to the transfer of wind energy to ocean swell energy are still not understood.

This paperback clearly reaches out to both surfers and those interested in the surf, which makes it an ideal introductory textbook. It has great color graphics and color photos. The text is written in a qualitative, but accurate style. There are self-contained boxes with equations, informative diagrams, and a good mix of text and images. The equations are generally followed by sufficient references where the reader can find more detailed information. In addition, there is a nice “Glossary and Further Reading” section. Thus, this book could also serve as a starting base for a more detailed graduate course.

The book is well-written and well-organized into eight self-contained chapters. These chapters describe the formation of a wave from start to finish, including such things as the global wind patterns and changing weather patterns; the book ends by discussing how waves move sediment. The remaining six chapters deal with specifics of certain types of



waves, winds, water temperature, tides, global wave characteristics, and finally, how to forecast waves (along with a useful list of world wide web pages related to surf forecasting).

Another attractive aspect of this book is the historical perspective provided regarding wave research. There is enough qualitative information in the book that surfers who want to have a better understanding about surf forecasting will benefit from this book, but may not appreciate some of the details provided. Those well trained in physics or mathematics will benefit from the real-world examples of the processes defined by the math-

ematics and physics via the color photographs and qualitative descriptions.

According to Wanda A. Adams' September 26, 2004 article in the *Honolulu Advertiser*, Rick Grigg contributed a long list of suggestions that made this second edition clearer and more global than the first. The original version published by Butt and Russell, two academic surfers at the University of Plymouth, UK, was primarily focused on surf forecasting in the Atlantic Ocean. Interestingly, in addition to their oceanographic careers, Russell and Grigg have been surf champions and Butt is a big wave specialist. Together, they have made great improvements to this second edition.

There are a few minor annoyances, which I list here only for the sake of completeness. In Chapter Two, the de-

scription of the Coriolis force might have been clearer if the authors had stressed that the wind "appears to be diverted to the right with respect to the reference frame of the Earth" rather than stating that it is "diverted to the right." A simpler analog would be to show a frictionless coin being pushed across a rotating disc, which would emphasize that the coin actually keeps a straight path, but it appears to curve according to the rotating frame of reference (the rotating disc). In Chapter Four, the authors refer to the pioneering work of Walter Munk in the 1940s but no reference is provided. There is a reference for a Sverdrup and Munk (1946) publication, but it is not clear if it is related to Munk's first mathematical model for wave forecasting or the empirical SMB (Sverdrup, Munk,

and Bretschneider) model described later in Chapter Nine (which also has no reference). I could not find any other minor or major problems.

These minor annoyances do not detract from the usefulness of this book. In fact, I am contemplating using this book as part of an introductory surfing class here in St. Petersburg, Florida, where we are "fetch-limited" and our wide continental shelf tends to ensure that the infrequent waves are ideal for beginners. Our homework will include predicting what day we drive to the beach to get our toes wet and "hang ten." Cowabunga!

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