



みなしご元禄津波

THE Orphan Tsunami OF 1700

親地震は北米西海岸にいた

**JAPANESE CLUES TO
A PARENT EARTHQUAKE
IN NORTH AMERICA**

SECOND EDITION



A PUZZLING TSUNAMI ENTERED JAPANESE history in January 1700. Samurai, merchants, and villagers wrote of minor flooding and damage. Some noted having felt no earthquake; they wondered what had set off the waves but had no way of knowing that the tsunami was spawned during an earthquake along the coast of northwestern North America. This orphan tsunami would not be linked to its parent earthquake until late in the twentieth century, through an extraordinary series of discoveries in both North America and Japan.

The Orphan Tsunami of 1700, now in its second edition, tells this scientific detective story through its North American and Japanese clues. The story underpins many of today's precautions against earthquake and tsunami hazards in the Cascadia region of northwestern North America. The Japanese tsunami of March 2011 called attention to these hazards as a mirror image of the transpacific waves of January 1700.

"The relevance of this history to our present-day situation is underscored. This book about the 'big one' of long ago should be of special interest to all of us right now."

—HISTORY LINK

"A meticulous and comprehensive piece of scholarship that both draws on the authors' groundbreaking research and pulls together hundreds of references on the topic. . . . The text is highly readable and requires no special expertise, only a scientific curiosity and a willingness to participate in the assembly of discovery." —OREGON HISTORICAL QUARTERLY

"Paddling around the salt marshes and tidal flats of Washington State, Atwater discovered evidence of earthquakes and giant waves of a magnitude that seemed, to many, inconceivable—until late last year, when a tsunami of similar power tore across the Indian Ocean killing more than 200,000."

—TIME MAGAZINE, NAMING BRIAN ATWATER ONE OF THE WORLD'S 100 MOST INFLUENTIAL PEOPLE OF 2005

Authors Brian F. ATWATER ブライアン・F・アトウォーター, MUSUMI-ROKKAKU Satoko 六角聰子, SATAKE Kenji 佐竹健治, TSUJI Yoshinobu 都司嘉宣, UEDA Kazue 上田和枝, and David K. YAMAGUCHI デイビッド・K・ヤマグチ pooled their backgrounds in geology, geophysics, forestry, history, and language.

FRONT COVER: The modeled front of the 1700 tsunami spreads from a North American source and reaches Japan in ten hours (pp. 74–75). The front is drawn at hourly intervals (tan), and the tsunami source is approximated by the fault-rupture area of a giant earthquake (red). The tsunami begins flooding the nearest North American shores in the first hour. The recorded arrival time in Japan tells when the earthquake happened (pp. 42–43), and accounts of the flooding and damage in Japan clarify present-day hazards in North America (pp. 98–99). **BACK COVER:** Sailboats skirt a pine-covered spit where Japanese villagers puzzled over a tsunami of remote origin in 1700 (pp. 76–79). At the nearby castle, the word *tsunami* received its earliest known use in 1612 (p. 41). Map, from 1687, courtesy of East Asian Library, University of California, Berkeley. **COVER DESIGN AND ILLUSTRATION:** Thomas Eykemans



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