



Winds, Waves, and Warriors: Battling the Surf at Normandy, Tarawa, and Inchon by Thomas M. Mitchell.

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Oceanographer and US Army Reservist Thomas Mitchell combines his two areas of expertise in this slim new volume on the role of oceanographers and meteorologists in the history of American amphibious warfare. The ability to project power ashore by landing and supporting troops in large numbers was essential to major American military campaigns as far back as the 1840s. It played an especially vital role in both the European and Pacific theaters of World War II. Concentrating on the three amphibious assaults in the book's subtitle, Mitchell describes the efforts of forecasters to understand and predict the environmental factors that contributed to the success or failure of these efforts, including tides, surf, and broader weather events, often using methods developed and conducted on the fly.

Its dustjacket blurb promises that the book will examine "the oceanographic conditions that U.S. military planners considered, or should have considered" in planning these amphibious assaults. That "should have" signals the book's weaknesses rather well. *Winds, Waves, and Warriors* never quite decides what it is trying to be: a popular history of oceanography? A military history? An oceanography text? This lack of direction is reflected in its somewhat haphazard organization.

Mitchell begins with a brief overview of early amphibious warfare, detailing the 1847 assault on Vera Cruz during the US war with Mexico, where weather and beach conditions figured in the campaign's planning and eventual success. He then outlines the development and production of landing craft between the two world wars before turning to his main interest—the efforts to train officers in oceanographic methods and use their new expertise in the preparations for Normandy, Tarawa, and Inchon. But in practice the book's organizing principles are not entirely clear.

A chapter on training oceanographic meteorologists at UCLA and the Scripps Institution of Oceanography leads seamlessly into others on projections for the Normandy invasion and the resupply of troops after D-Day. Occasional excursions clarify, for instance, the geophysical forces behind tides, among many other topics. Also carefully detailed are the effects of shoreline topography and surf formation, with attention to certain Pacific-theater beaches.

Mitchell moves next to the difficulty of forecasting tides at Tarawa, though the assault there took place in the autumn *before* D-Day. He does note that "General Eisenhower's planning staff in London did not have immediate access to the lessons learned at Tarawa" (88), but that does not account for his narrative's break from chronological order.

The remainder of the book concerns the Korean War, especially the landing at Inchon in 1950. It might make sense to include this episode from a conflict that "followed close on the heels of World War II" (109) in order to demonstrate how the lessons of the earlier conflict were applied (or not) in the latter. But, instead, the author describes the efforts of Eugene F. Clark, a Navy lieutenant in the Geographic Branch of General MacArthur's staff, to conduct reconnaissance in and around Inchon before the invasion. While Clark sought information about tidal range and bottom terrain, his is more a story of intrigue and infiltration, not oceanographic calculation. It derives

mostly from a single source—Clark’s own memoir.¹ While Clark’s exploits certainly make for a thrilling tale, they relate only slightly to Mitchell’s broader story of the development of oceanographic expertise in the service of amphibious warfare.

Throughout, Mitchell uses other memoirs, as well as interviews available in print or online, though very few that he himself conducted. These inform his discussion of the period from the training pipeline to Normandy, the most coherent and focused part of the volume. But his secondary sources are hard to evaluate, because the book’s footnotes and bibliography point to websites without scholarly or military affiliations; indeed, some of these sites have already disappeared into the ether in the single year between the book’s publication and this review.

Thomas Mitchell’s episodic style of presentation delivers a series of fascinating stories. And his expertise as an oceanographer makes his asides on geophysical phenomena accessible to lay readers. No small thing. Nonspecialists curious about the relationship between oceanography and war-making should consider *Winds, Waves, and Warriors* an enjoyable place to dip their toes in the water. More advanced students and professionals should turn to the work of, for example, Gary Weir,² Naomi Oreskes and Ronald Rainger,³ and Kristine Harper.⁴

1. *The Secrets of Inchon: The Untold Story of the Most Daring Covert Mission of the Korean War* (NY: Penguin, 2002), written soon after the war.

2. *An Ocean in Common: American Naval Officers, Scientists, and the Ocean Environment* (College Station: Texas A&M U Pr, 2001).

3. “Science and Security before the Atomic Bomb: The Loyalty Case of Harald U. Sverdrup,” *Studies in History and Philosophy of Science Part B: Studies in History and Philosophy of Modern Physics* 31 (2000) 309–69.

4. *Weather by the Numbers: The Genesis of Modern Meteorology* (Cambridge, MA: MIT Pr, 2008).