GEOPHYSICAL MODEL FUNCTION IOR THE SEA STATE BIAS IN SATELLITE ALTIMETRY

Roman E. Glazman, Alexander Greysukh and Victor Zlotnicki

Jet Propulsion Laboratory, California Institute of Technology, 4800 Oak Grove Drive, Pasadena, CA 91109. U.S.A. 'l"cl.: (818)-354-7151, Fax: (818)-393-6720, c-mail: reg@pacific.jpl.nasa.gov

ABSTRACT

investigations of the sea state bias in altimeter measurements of sea surface height have been reported by many authors based on aircraft, sea tower and satellite *borne* observations. A number of algorithms of form SSB = εH (where H is the significant wave height (SW11) and ε is a nondimensional function of sea state parameters) have been proposed. The reported values for corresponding empirical coefficients in these algorithms differ widel y. in the present work, based on the most complete (two years worth of Geosat altimeter data) set of satellite measurements employed in such studies to date, all known algorithms are rated. 1 inear algorithms of form $\varepsilon = a_0 + a_1 U$ are shown to bc successful only under special conditions of poorly and moderately developed seas, while global observations are best characterized by a geophysical model function (GMF) relating ε to the pscmlo-wave-agc ξ. The latter is estimated using altimeter-reported wind U and SWH: $\xi \approx A(gH/U)^{\nu}$ where A and v arc constants. Using a recent l y proposed GMF for altimeter wind U as a function of the radar cross section and SWJ I, wc estimate parameters M ant] rn in the SS11 GMF proposed by Glazman and Srokosz [J. Phys. Oceanogr., 21(11), 1991] (and recently tested by Fu and Glazman [JGR, 96(C1), 1991]): $\varepsilon = M\xi^{-m}$. This model function is shown to be more stable and accurate than other models; hence, it is recommended for use with actual satellite altimeter data, including TOPEX/Poseidon and ERS-1 alt imeters. Brief overview of pertinent notions and physical concepts is also provided.

'1'() be **presented at IGARSS'93, Kogakun University, Tokyo, Japan, August 1** 8-21, **1993.**