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Albert Ai (aai2@wisc.edu), WI, Mihaela Ifrim* (ifrim@wisc.edu), WI, and Daniel Tataru (tataru@berkeley.edu), CA. TWO DIMENSIONAL GRAVITY WAVES AT LOW REGULARITY II: GLOBAL SOLUTIONS.

This article represents the second installment of a series of papers concerned with low regularity solutions for the water wave equations in two space dimensions. Our focus here is on global solutions for small and localized data. Such solutions have been proved to exist earlier in [15, 7, 10, 12] in much higher regularity. Our goal in this paper is to improve these results and prove global well-posedness under minimal regularity and decay assumptions for the initial data. One key ingredient here is represented by the balanced cubic estimates in our first paper. Another is the nonlinear vector field Sobolev inequalities, an idea first introduced by the last two authors in the context of the Benjamin-Ono equations (Received August 10, 2021)