

Peer Review Plan

Date: 1/26/2021

Source Center: U.S. Geological Survey (USGS)
Pacific Coastal and Marine Science Center
2885 Mission Street
Santa Cruz, CA 95060

Title: Drivers of extreme water levels in a large, urban, high-energy coastal estuary – a case study of the San Francisco Bay and Delta.

Subject and Purpose: This paper provides long-term hindcast data of water levels in the San Francisco Bay and Delta and quantifies the return period, cause, and values of extreme water levels. Process-based numerical modeling has proven an essential tool for providing the temporal and spatial coverage needed for different extreme value analysis methods to inform design decisions on a local flood control district level. This report describes a process-based numerical model (Delft3D Flexible Mesh) and its application to a large, urban, high-energy coastal estuary (the extreme water levels San Francisco Bay and Delta). The unstructured grid with 1D/2DH model elements allows for efficient model simulations, and therefore, it was possible to brute force the model over 70 years from 1950 to 2019. Results indicate significant skill in reproducing observations for the entire modeled time period with an average root-mean-square error of 8.0 cm. A process-based modeling approach allows for the exclusion of different contributions to quantify their importance to the extreme water levels. This product target journal is the Coastal Engineering Journal, however, no guarantees that it will be released there.

Impact of Dissemination: This product is considered by the USGS to be Influential Scientific Information.

Timing of Review (Including Deferrals): January - February 2021. Deferrals are not anticipated at this time.

Manner of Review, Selection of Reviewers, and Nomination Process: Peer review will be by individual letters. USGS will select the peer reviewers in accordance with the requirements found in [Survey Manual chapter 502.3—Fundamental Science Practices: Peer Review](#).

Expected Number of Reviewers: Five reviewers are anticipated.

Requisite Expertise: Hydrodynamics modeling and compound flooding.

Opportunity for Public Comment: No opportunity for public comment is formally incorporated by the USGS for this product.

Agency Contact: peer_review_agenda@usgs.gov.