Figure S1 - Validating modelled surges using ERA5 (red dashed) and Holland Model using IBTrACS (red dotted) wind and pressure fields against measured data (blue): Typhoon Sally surge at tide gauge 5: Zhapo, China (inset or see Figure 1 for location), located closest to Zhapo station in the early hours of 9th September 1996 (green vertical line). Firstly (a) comparing total sea levels, and then (b) comparing surge-only water levels.
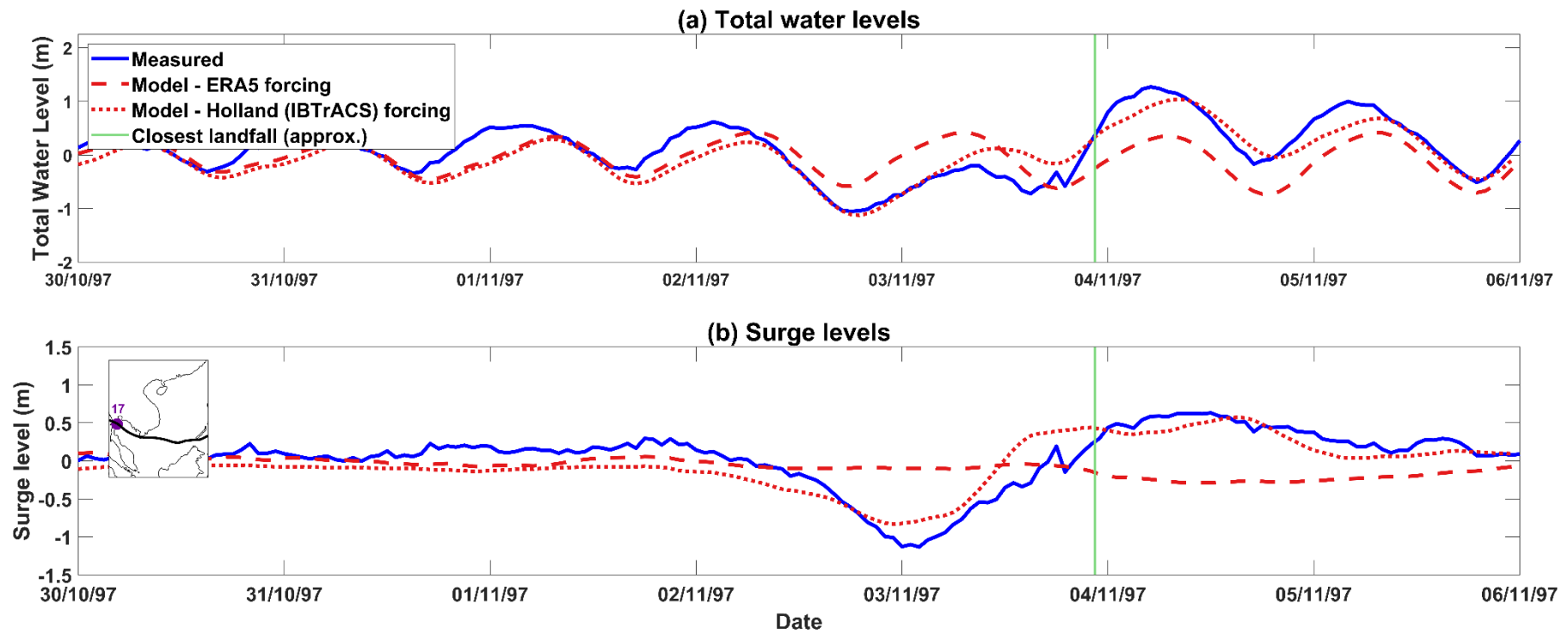
Figure S2 - Validating modelled surges using ERA5 (red dashed) and Holland Model using IBTrACS (red dotted) wind and pressure fields against measured data (blue): tropical storm Linda storm surge at tide gauge 17: Ko Lak, Thailand (inset or see Figure 1 for location) which made landfall late on 3rd November 1997 (green vertical line). Firstly (a) comparing total sea levels, and then (b) comparing surge-only water levels.
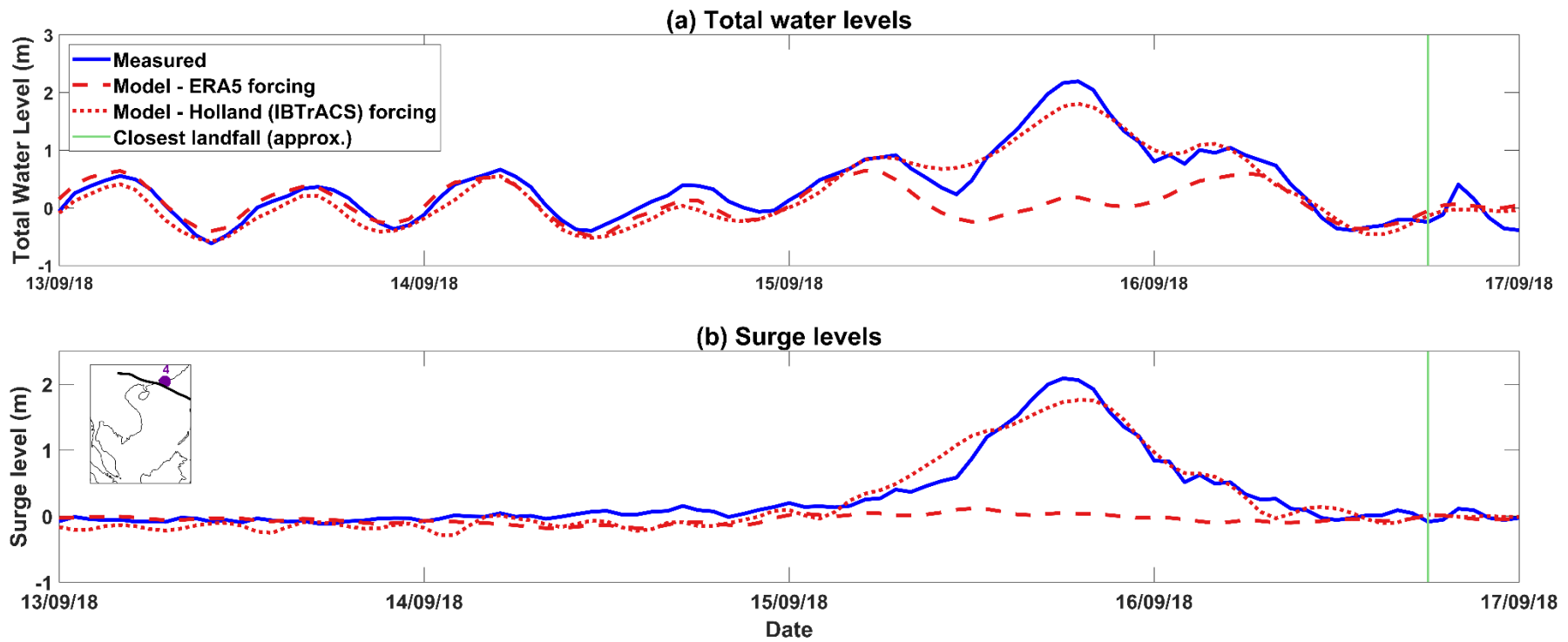
Figure S3 - Validating modelled surges using ERA5 (red dashed) and Holland Model using IBTrACS (red dotted) wind and pressure fields against measured data (blue): Typhoon Mangkhut storm surge at tide gauge 4: Hong Kong, China (inset or see Figure 1 for location). Firstly (a) comparing total sea levels, and then (b) comparing surge-only water levels. Mangkhut made landfall west of Hong Kong in the evening of 16th September 2018 (green vertical line).

(b) Bathymetry and Export Points
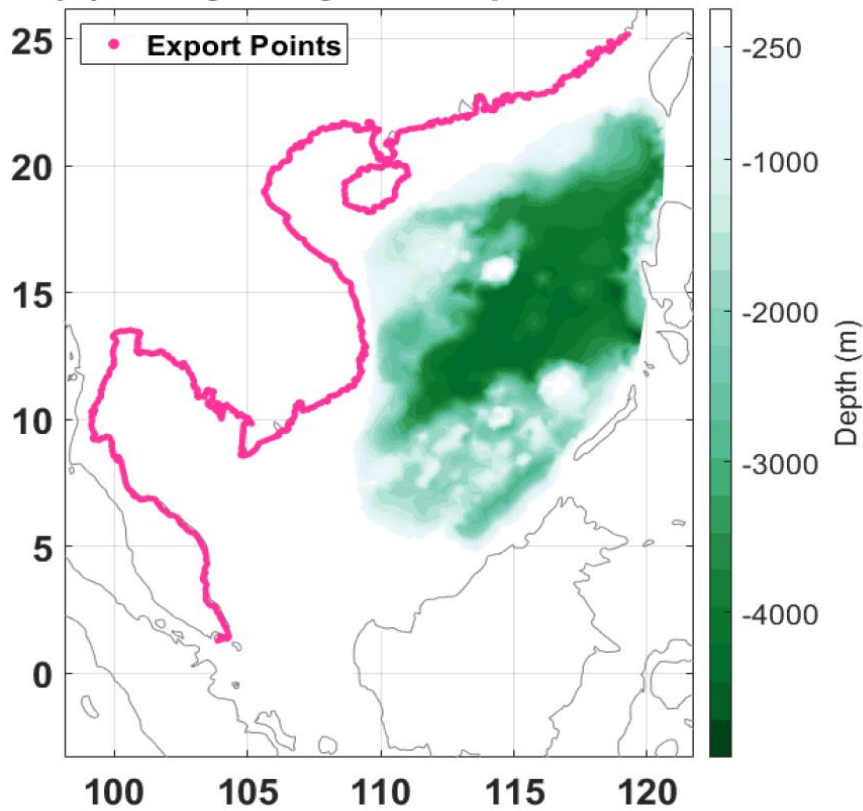
(b) Nearshore bathymetry
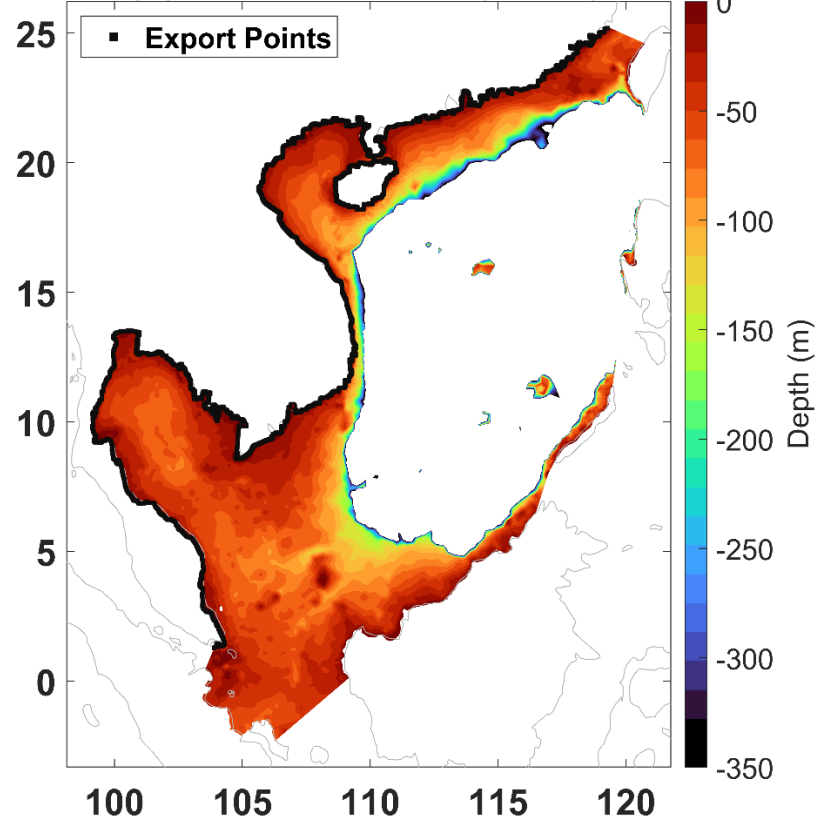
Comparison of Figure 2b- Left is original, Right is updated bathymetry and colorbar. [this is SRTM15+ ocean bathymetry for nearshore in our South China Sea domain, showing down to 250 m depth only, and the specific Output Coastline Points (black) exported from the model.]