

Supplementary Material to

**“Wave energy attenuation in fields of colliding ice floes.
Part B: A laboratory case study”**

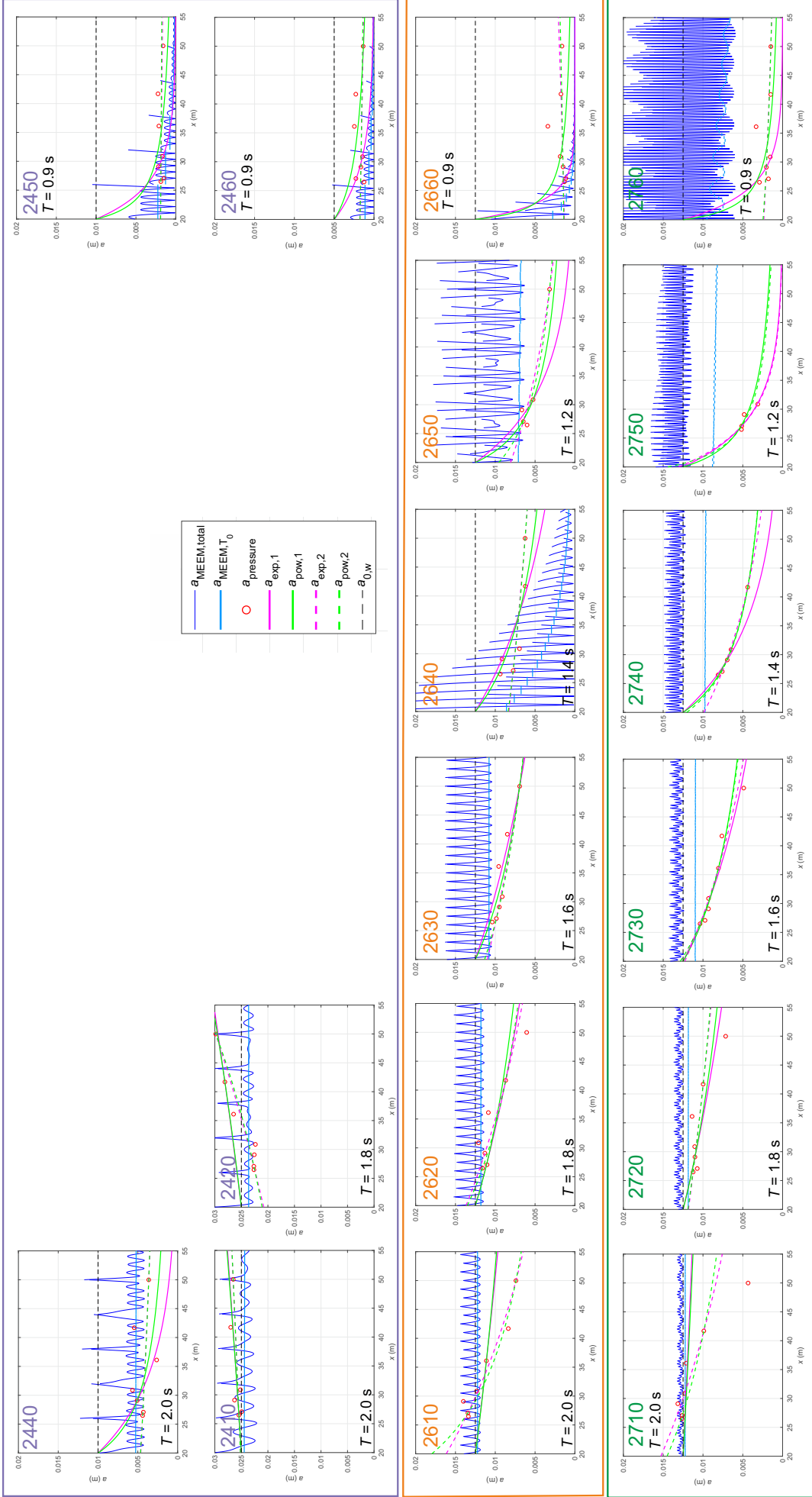
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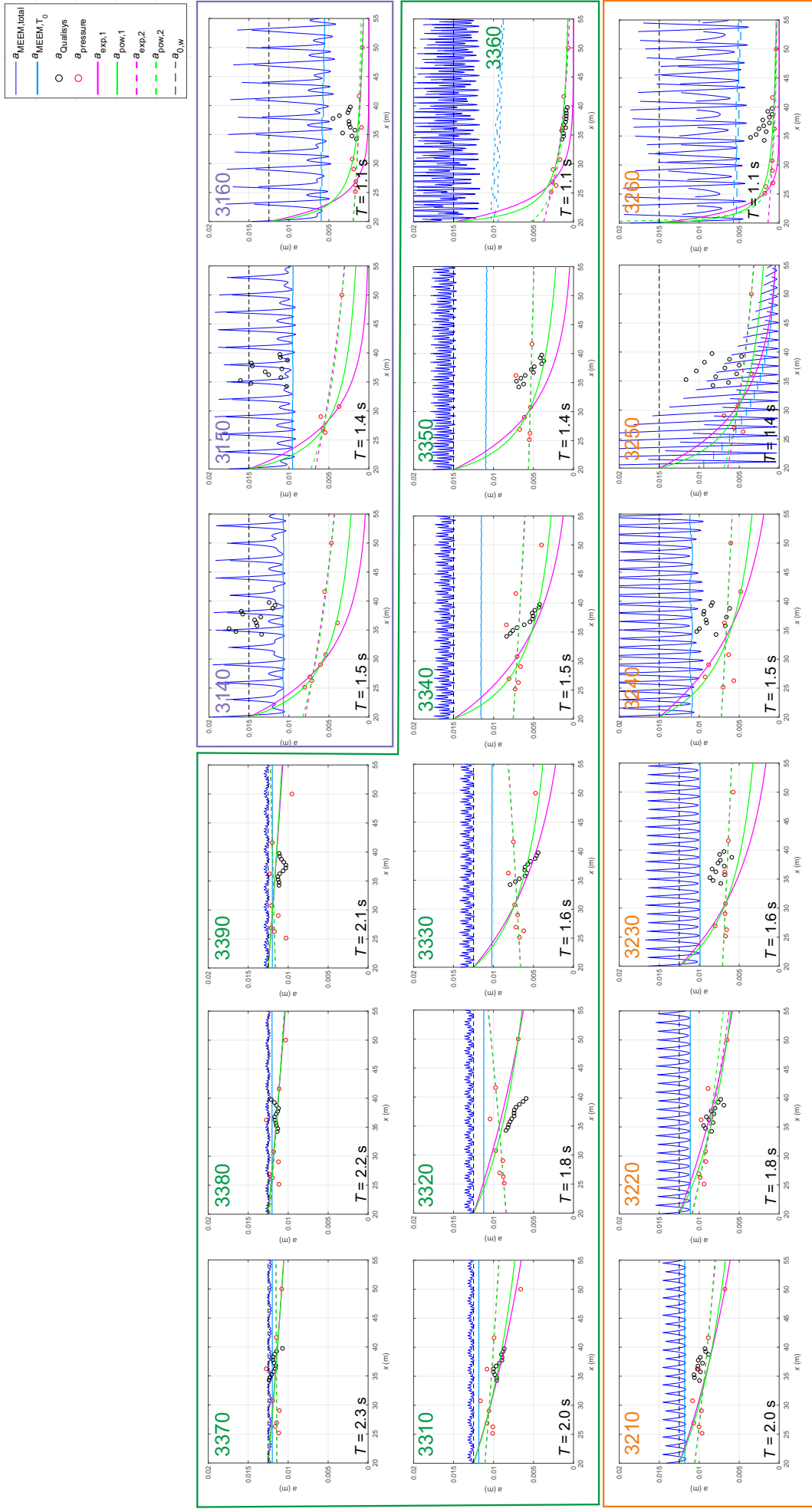
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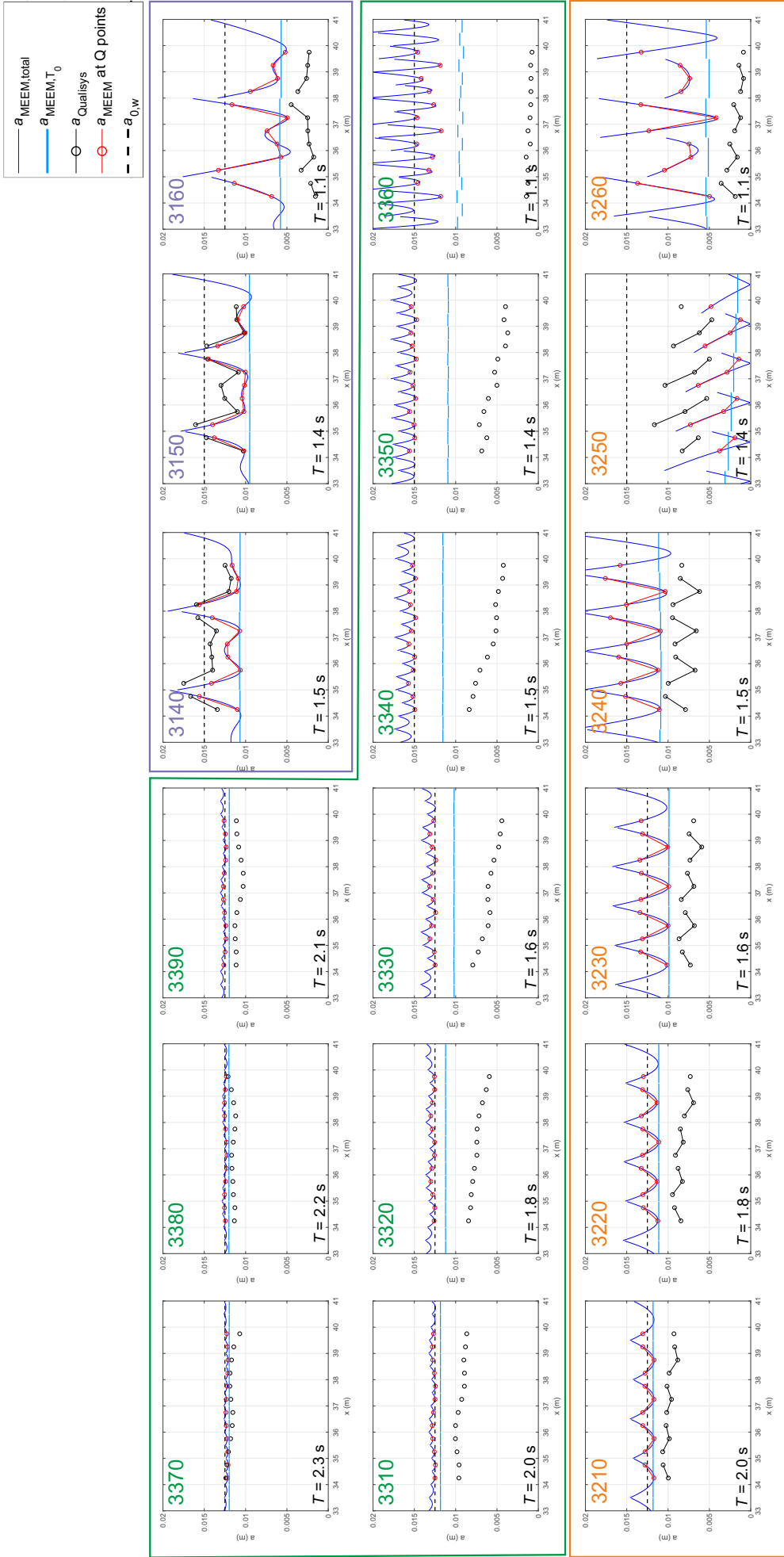
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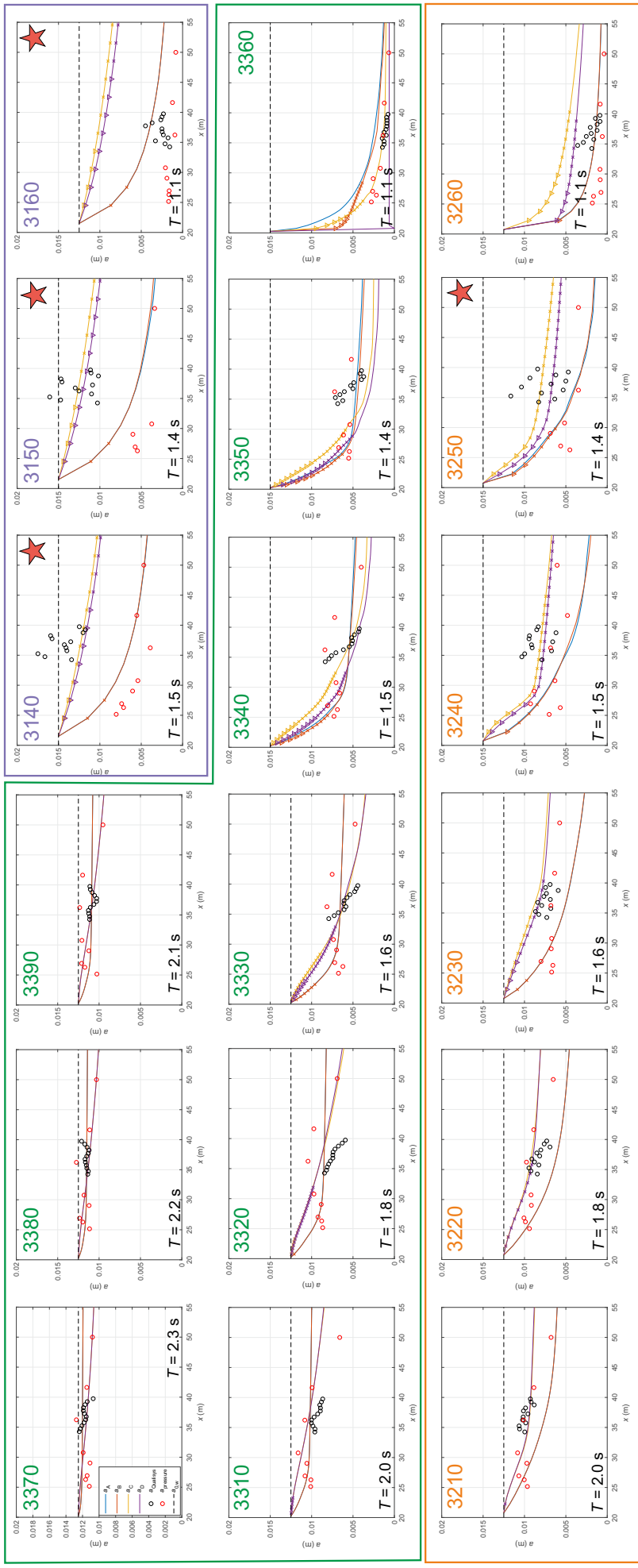
Supplementary Figure 1: Amplitude of the vertical ice deflection along the tank in tests from series 2000. The measured amplitude is shown with red (pressure sensors) and black (Qualisys) circles. Thin blue lines show the total amplitude from the MEEM model; the corresponding amplitudes of the transmitted propagating mode (T_0) are shown with thick light blue lines. The black dashed line shows the wavemaker amplitude $a_{0,w}$. Green and magenta lines are least-square fits of the pressure sensor data to the exponential and power-law model, respectively (continuous lines: prescribed a_0 , dashed lines: fitted a_0). Tests are grouped in the colour frames according to the floe size: 6 m (violet), 1.5 m (orange) and 0.5 m (green). See main text for details.



Supplementary Figure 2: As in Supplementary Fig. 1, but for tests from series 3000. Tests are grouped in the colour frames according to the floe size: 3 m (violet), 1.5 m (orange) and 0.5 m (green). See main text for details.



Supplementary Figure 3: Amplitude of the vertical ice deflection along the tank, around the location of the Qualisys markers, in tests from series 3000. Thin blue lines show the total amplitude from the MEEM model; the corresponding amplitudes of the transmitted propagating mode (T_0) are shown with thick light blue lines. The black dashed line shows the wavemaker amplitude $a_{0,w}$. Black circles show amplitudes from Qualisys, and red circles show the corresponding MEEM amplitudes (markers located on the same floes are connected with lines). Tests are grouped in the colour frames according to the floe size: 3 m (violet), 1.5 m (orange) and 0.5 m (green). See main text for details.



Supplementary Figure 4: Amplitude of the vertical ice deflection along the tank in tests from series 3000. The measured amplitude is shown with red (pressure sensors) and black (Qualisys) circles. The black dashed line shows the wavemaker amplitude $a_{0,w}$. Continuous lines show results of the DEM model obtained with setups A-D (see Table 2 in the main text). Locations with overwash are marked with crosses, and those where the change of wave amplitude due to overwash from one floe to the next exceeds 1 mm – with triangles. Tests excluded from the statistical analysis of the results are marked with red stars.