

The Cryosphere Discuss., community comment CC1  
<https://doi.org/10.5194/tc-2021-273-CC1>, 2022  
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## Comment on tc-2021-273

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Community comment on "A probabilistic seabed-ice keel interaction model" by Frédéric Dupont et al., The Cryosphere Discuss., <https://doi.org/10.5194/tc-2021-273-CC1>, 2022

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I stumbled upon this scheme in the CICE manual. Given that I have a project with the goal to improve the landfast ice in a pan-Arctic model, I was quite interested. In attempting to bring the algorithm into the SIS2 model, the developer of that model insists on the code passing unit scaling tests.

This equation is problematic:

$$\mu_i = \log(m_i/\sqrt{1.0 + v_i/m_i^{**2}})$$

with  $m_i$  having units of meters per unit area and  $\mu_i$  being dimensionless. It is used here:

$$x_{kmax} = \exp(\mu_i + \sqrt{2.0*\sigma_i})*1.9430)$$

where  $x_{kmax}$  is again in units of meters. I think there need to be some scaling constants mixed in, right?