

## ***Interactive comment on “Sea ice inertial oscillation magnitudes in the Arctic basin” by F. Gimbert et al.***

**Anonymous Referee #2**

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A typical feature of sea ice dynamics is that the inertial oscillation are evident in pack ice of low concentration, but those oscillations are damped in a compact pack ice regions due to the floe-floe interaction. This manuscript present an interesting method to determine magnitude of inertial oscillation based on ice trajectories, motivated by the assumption that existence of inertial oscillation is also an indicator of internal stress of pack ice. The method used in this manuscript is new, it is feasible and interest for a scientific community and the text reads well. This manuscript deserve to be published in the TC after minor revision.

Specific comments

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1) p2181, l27. Equation (1) is not necessary. You can introduce  $f$ -parameter together with the momentum balance equation (2).

2) p2182, l16. Equation (2) is erroneous. Typo in the Coriolis force notation, instead of logical operator there should be a cross product operator. You should express that term as  $f\mathbf{k} \times \mathbf{U}_i$  and introduce  $f$  later in the text. Also note that the first term in right hand side should include  $\frac{1}{h_i}$  term.

3) p2189, l8. Please, specify explicitly width of time window and number of data points used in fft-calculations.

4) Equations (6) and (7) are not necessary, you could describe selection of data point used in the analysis without any formalism.

5) p2190, l12. Does this mean that you  $f_o$  is varying ?, i.e. it depends on the latitude of buoy.

6) p2190, equation (10). Where the constant value 1.27 comes from ? I don't understand reason for that, if  $\bar{W}_{cur}$  term in the denominator is substituted in the equation (10) then the constant value 1.27 is eliminated.

7) Most of the text reads well, but there are some needs to improve linguistic form of the manuscript. For example, terms like "pluri-annual", "adimensional" , "intimate link between", "highly cohesive ice cover" and "assembly of floes" are better to express terms like "long term", "nondimensional", "strong interaction between", "compact ice cover" and "floe field".

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Interactive comment on The Cryosphere Discuss., 6, 2179, 2012.

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