Reply on comment from Anonymous Referee No. 2 from 16 January 2012

Dear Reviewer,

thank you for your positive feedback and your helpful comments and remarks. Below, I give statements regarding to your mentioned issues.

1) Regarding Figure 11):

The coefficient of determination is poor (R^2=0.28) and the MODIS melt pond values are in a majority of cases higher than the NSIDC values. The comparison with HOTRAX or MELTEX data shows, that this is only a problem with the NSIDC data. I compare the mean of melt pond fraction of a 10x10 km scene from NSIDC with a 12.5x12.5 km grid cell of the MODIS melt pond fraction. Here, I use weekly data sets for validation instead of daily data sets. From the daily data sets we have noticed, that a poor coverage of valid pixels in the validation area exists, whereas the weekly data sets provide more cloud free pixels. However, this leads to the problem, that the according pixels in the MODIS data are probably from a different date than (within one week) the NSIDC data. This may be a reason for the higher values of the MODIS fractions in this case.

2) Regarding Figure 6):

We need to distinguish between melt pond fraction per grid cell, relative melt pond fraction and total melt pond area. See also comment from E. Hunke (SC C1346: 'Comments', Elizabeth Hunke, 16 Nov 2011) In this publication, Figure 6 and 7, as well as the values described in Section 4.2 are unscaled melt pond fractions per grid cell. I need to clarify this in the text. To obtain relative melt pond fractions on sea ice, equation (5) needs to be applied. The result is shown below in Figure A. The sea ice concentration has a steep decrease in this time period, caused by a strong breakup of the sea ice surface. Thus can induce additionally a flooding of the breaking floes. Flooded areas on sea ice or other wet surfaces cannot be distinguished from melt ponds and are also classified as ponds [Markus, 2003]. This effects can cause this second maximum in the melt pond fraction per grid cell.