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Title: *Wave conditions in the Arctic Ocean: modeling study and data analysis*

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Satellite observations and the third generation wave model WAM were used to produce high quality wave analysis. Cross-validated satellite observations were used for the analysis of wave conditions in the Arctic during the years 1993-2011. We found approximately a 0.020m/year increase of SWH for the SE Chukchi Sea and a 0.025m/year increase for the Pacific-Arctic, which agrees well with gradual ice retreat observed in the Arctic during the last two decades. For more recent satellite observations, Envisat was compared to recent in situ observations where a perfect correlation (0.97) between satellite and in situ observations for the offshore region with uniform topography was found. The third-generation wave model WAM was also used to produce high quality wave analysis which was also validated by in situ measurements. North American Regional Renanalysis (NARR) winds were used to generate WAM output. The upcoming result to be shown will be a three-dimensional wave spectra comparison between WAM and the in situ field measurements.