Wind wave climate of west Spitsbergen - seasonal variability and extreme events

K. Wojtysiak[1], A. Herman[2] and M. Moskalik[1]

[1] *Institute of Geophysics, Polish Academy of Sciences - Centre for Polar Studies KNOW (Leading National Research Centre), ul. Księcia Janusza 64, 01-452 Warszawa, POLAND*

[2] *Institute of Oceanography, University of Gdańsk, Department of Physical Oceanography, al. Marszałka Piłsudskiego 46, 81 - 378 Gdynia, POLAND*

The ocean of western shore of Spitsbergen Island, Svalbard archipelago, is a subject of numerous research considering current, temperature or salinity patterns, but little to none of scientists attention was given to **wind wave climate** of the region. Direct off shore measurements of wave action have not been published so far, and sattelite altimetry observations are sparse, lacking proper frequency needed in analysis of fenomenon as dynamic as wind waves.

Earth is facing the climate change, which is observable in variety of studies. Changes in ocean or atmospheric circulation and also quantity of sea and shore ice have direct influence on wave environment and vice versa. Intensification of wave action influence on coastal zones poses a threat to man made structures (e.g. shipping infrastructure, housing and also scientific installations) positioned in close proximity of the sea shore.

What we propose is wave environment analysis based on NOAA Wave Watch 3 (NWW3) and Wave Prediction Model (WAM) hindcast data. With information about common wave patterns, wave action intensity and frequency of extreme events occurrence we expect to deliver reliable boundary conditions for future marine and coast-related research of western Spitsbergen.