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Value of targeting observations

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The value of targeted observations over The North Pacific and North Atlantic is assessed for summer and winter season. In particular, for the North Atlantic ocean the value of targeting in the summer season is assessed for different meteorological flow regimes. It is shown that during tropical cyclone activity and particularly during tropical cyclone transition phase, removing observations in sensitive regions, indicated by singular vectors optimized on the 2-day forecast over Europe, degrades the skill of a given forecast more than excluding observations in randomly selected regions. The maximum downstream degradation computed in terms of spatially and temporally averaged root mean square error of 500-hPa geopotential height is about 13%, a value which is 6 times larger than when removing observation in randomly selected areas. The forecast impact found by degrading the observational coverage in sensitive areas, for these selected periods, is similar to the impact found (elsewhere in other weather forecast systems) for the observational targeting campaigns carried out over the last years, and it is larger than the average impact obtained by considering a larger set of cases covering various seasons.