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Consideration of long-period atmospheric oscillations in the mesosphere and lower thermosphere involving winds determined by meteor and mf radars at 69°N.

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Radar systems measure continuously information about the atmospheric dynamics in the mesosphere and lower thermosphere. In this study we present a comparison of winds, which are derived by two radar systems on the one hand to quantify potential biases between these observations in order to get a combined wind with an altitudinal coverage between 65-110 km and on the other hand the long time series of both radars are investigated with regard to solar cycle effects and long periodic atmospheric oscillations as e.g. El Nino and Quasi-biennial oscillation (QBO). We analysed data from the MF SAURA and the Andenes meteor radar (MR) at northern Norway(69°N, 16°E) since the year 2004. By the use of both radars we receive an altitudinal overlap between 78 and 100 km, so that it is possible to determine potential altitude dependent differences. It is well known that MF radar wind measurements decrease in accuracy with increasing altitudes due to increasing background electron density. Our results shows a strong altitudinal dependency comparing the wind magnitude and direction between both radars. We reach the highest correlation for altitudes between 80-88km with values of 0.60-0.70. Above 88km the correlation decreases rapidly and above 98km any correlation vanished. Further we investigate the influence of the solar cycle by using the available combined winds of the more than 10-year-long observation period and to study the effects on El Nino and the QBO.