User oriented verification of wind speed and wind direction

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During MesoVICT the verification of 2D- surface wind fields will receive special attention. Vector fields like wind are more complex to verify than scalar quantities. It is common approach to verify the single scalar components u and v or just wind speed with traditional verification measures. This makes an overall and easy to understand interpretation of wind speed and direction verification difficult. Alternatively only wind speed is verified, which is useful for evaluating wind storms or estimating wind energy. Wind direction is rarely verified. Although it is an important quantity for e.g. the correct frontal position, in the case of forest fires or for air traffic during departure and landing procedures.

It is the intension of this work to provide a simple, easy to interpret and user friendly verification method of both wind speed and direction. It is a grid-point based scheme but can be applied for spatial, for temporal as well as for ensemble forecast evaluations. In a first step differences of forecasts and observations of wind speed and direction are calculated and are filled in a polar plot. The radius describes the wind speed differences. Direction differences from 0 to 180 degree are counted clockwise, differences from 0 to -180 degrees are counted counter-clockwise in the diagram.

The radius and the direction difference from the mean value including e.g. 25%, 50% and 75% of all data points represent two parameters which can be deduced from the polar plot. Different ways of using and interpreting these parameters will be presented at the conference.