

## **Advantages of high resolved time series (WRF - 3 km, 10 min) over global reanalysis data (MERRA2 - 50 km, 3h)**

- Significantly higher resolution of mesoscale wind systems (deep convective clouds, mountain-valley winds, topographical impact, etc.)
  - Consistent, high resolved data set
  
- The simulation of the diurnal cycle is significantly improved
  - Important for Market Value Atlas and Revenue Reports since spot prices, which are combined with the wind field, exhibit a strong diurnal cycle. The diurnal cycle is also important for energy yield loss calculations due to environmental restrictions such as bat flight, noise immission, etc.
  
- Higher spatial resolution of the wind field
  - Higher spatial variation of the wind field, advantages become apparent in complex terrain
  - Important for site-specific analyses such as initial estimations of the energy yield or of the site quality
  
- Higher temporal resolution of the wind field
  - The 10-minute resolution allows for a precise consideration of restriction conditions for loss calculations. It also grants a higher accuracy for long-term correlation and SCADA data analyses.
  
- Improved accuracy of absolute values of wind speed and energy yield. However, the correlation only shows a slight improvement compared to reanalysis data, which are used as input data.
  - High resolved time series more accurately reproduce the stochastic behaviour of the wind. As a result, the correlation can become slightly better or worse compared to the smooth reanalysis data, depending on the site.