Satellite remote sensing from active and passive microwave instruments is used to estimate the offshore wind resource in the Northern European Seas in the EU-Norsewind project. The satellite data include 8 years of Envisat ASAR, 10 years of QuikSCAT, and 23 years of SSM/I. The satellite observations are compared to selected offshore meteorological masts in the Baltic Sea and North Sea. The overall aim of the Norsewind project is a state-of-the-art wind atlas at 100 m height. The satellite winds are all valid at 10 m above sea level. Extrapolation to higher heights is a challenge. Mesoscale modeling of the winds at hub height will be compared to data from wind lidars observing at 100 m above sea level. Plans are also to compare mesoscale model results and satellite-based estimates of the offshore wind resource.