



Quantitative variability of renewable energy resources in Norway

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Based on European Union (EU) targets for 2030, the share of renewable energy (RE) consumption should be increased at 27%. RE resources such as hydropower, wind, wave power and solar power are strongly depending on the chaotic behavior of the weather conditions and climate. Due to this dependency, the prediction of the spatiotemporal variability of the RE resources is more crucial factor than in other energy resources (i.e. carbon based energy). The fluctuation of the RE resources can affect the development of the RE technologies, the energy grid, supply and prices. This study investigates the variability of the potential RE resources in Norway. More specifically, hydropower, wind, wave, and solar power are quantitatively analyzed and correlated with respect to various spatial and temporal scales. In order to analyze the diversities and their interrelationships, reanalysis and observational data of wind, precipitation, wave, and solar radiation are used for a quantitative assessment. The results indicate a high variability of marine RE resources in the North Sea and the Norwegian Sea.