



Seasonal Assessment of Wave Energy Potential along the Norwegian coastline

Konstantinos Christakos (1,2), George Varlas (3), and Ioannis Cheliotis (4)

(1) Norwegian Meteorological Institute, Bergen, Norway (konstantinosc@met.no), (2) Geophysical Institute, University of Bergen, Bergen, Norway, (3) Harokopio University of Athens, Athens, Greece, (4) Laboratoire de Physico-Chimie de l'Atmosphère, Université du Littoral Côte d'Opale, Dunkerque, France

The necessity of CO₂ emissions reduction due to climate change and the increase of energy demands worldwide insist the rise of renewable energy sector e.g. wave power. Countries with long coastline such as Norway can exploit large amount of ocean wave energy. The wave energy potential is dependent on weather conditions and climatic variability. The complex physical processes and the atmosphere-wave synergetic effects make the investigation of seasonal wave energy variability a challenging issue. In this way, the present work envisages the seasonal assessment of wave energy potential along the Norwegian coastline. For this study, NORA10 hindcast consisting of swell and wind-generated wave data for the period 1957-2016 (59 years) have been used for the assessment. NORA10 is a high-resolution hindcast of wind and waves that covers the North Sea, the Norwegian Sea and the Barents Sea. The preliminary results indicate a high seasonal variability of wave energy potential along the coast. It is noteworthy that during the 59-year period, a positive trend in wave energy potential is observed especially for swell-induced energy during winter season.