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Evaluation of planetary boundary layer simulations for wind resource study in east of Iran

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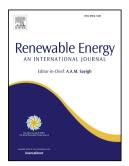
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## **Evaluation of Planetary Boundary Layer Simulations for** Wind Resource Study in East of Iran

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7	Abstract
8	The usual way to collect wind data for wind resource assessment is installing wind masts, which
9	might not be feasible due to the cost or time constraints. Conducting qualified long term
10	numerical simulations is classified as a new method for this purpose. In this study, WRF model
11	experiments are evaluated for simulating wind field over east of Iran. Planetary Boundary Layer
12	(PBL) physical parameterization plays an important role in the structure of simulated low level
13	wind field. Evaluation of PBL schemes over the study area could be an essential issue for
14	reduction of simulated wind errors. The ACM2, MYJ, MYNN2.5, QNSE and YSU PBL schemes
15	are evaluated during July and December 2007. The MYJ PBL scheme showed the best
16	performance for Fadeshk area. We then carried out one-year simulations for the whole of 2007
17	and simulated wind field and wind energy productions compared to the measurement wind data.
18	Wind distribution during 2007 was simulated well with this PBL scheme, although it showed
19	overestimations over 3 AM - 8 PM of day and underestimation over 8 PM -3 AM. Relative errors
20	for shape parameter, scale parameter, mean of Weibull distribution and wind power are
21	estimated equal to 13.2%, 5.54%, 4.85% and -0.47% respectively. Overall, model has good
22	performance in simulation of wind energy parameters in this area.

23 **Keywords:** Wind power; PBL parameterization; WRF; Weibull distribution; Iran

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