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Characterization of wind, solar and combined resource in Europe

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Wind resource at 80 m hub height has been developed for Europe using boundary layer flux parameters from the Modern Era Retrospective-analysis for Research and Applications (MERRA) dataset. Similarly, the solar resource for the region is also derived from the MERRA dataset. Both resources are described using metrics that measure their abundance, availability, persistence and intermittency. Since wind and solar energies coexist simultaneously at any place, their combined resource will be estimated. Since the timescale of intermittency of wind and solar resources are different, it is expected that the combined power resource will be steady. This premise is also tested. This construction is expected to lead to investigations of simultaneous harnessing of wind and solar resources as a combined hybrid power source. The study is also expected to bring out the regions amenable for hybrid renewable power generation.