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O B A V I J E S T

Dana **3.6.2014. (utorak!) u 15^{15}** sati će se održati u okviru seminara i kolokvija na Geofizičkom odsjeku PMF-a sljedeće izlaganje:

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Probabilistic wind and power predictions and wind resource assessment with an analog ensemble

ABSTRACT: The analog of a forecast for a given location and time is defined as the observation that verified when a past prediction matching selected features of the current forecast was valid. The best analogs form the analog ensemble (AnEn). First AnEn skill is analyzed for predictions of 10-m wind speed and 2-m temperature. The analogs are generated from a Numerical Weather Prediction (NWP) model and observations from hundreds of surface stations over the continental U.S. and a 15-month period. Attributes of the probabilistic prediction generated with AnEn are estimated, including reliability, sharpness, resolution, and spread-error consistency. We show that AnEn produces accurate predictions and a reliable quantification of their uncertainty with similar or superior skill compared to well-established cutting-edge methods, while requiring considerably less computational resources.

Second, results for power predictions are presented, for a wind farm over Sicily, Italy, and an 18-month verification period. Preliminary results confirm AnEn performance obtained for meteorological variables: AnEn power predictions are more accurate and provide a better uncertainty quantification than power predictions based on wind predictions from leading operational centers as the European Centre for Medium-Range Weather Forecasts (ECMWF) Ensemble Prediction System (EPS).

Third, AnEn is implemented for wind resource assessment. We downscale the National Aeronautics and Space Administration (NASA) Modern Era Retrospective-analysis for Research and Applications (MERRA) reanalysis at several locations over the U.S. We show that by using one year of overlapping MERRA data and on-site tall tower measurements to find analogs, AnEn significantly reduces the systematic and random errors in the downscaled estimates, and simultaneously improves correlation between the downscaled time series and the measurements, over what is provided by MERRA alone. AnEn also provides a reliable quantification of uncertainties in the estimate, thereby permitting decision makers to objectively define confidence intervals to the estimated long-term energy yield. We conclude with a discussion of the implementation of AnEn in data-sparse regions, where in that case AnEn can be used as a technique to drastically reduce the computational cost of NWP-based dynamical downscaling.

Pozivaju se studenti, apsolventi i svi zainteresirani da prisustvuju predavanju, koje će se održati u predavaoni br. 2 Geofizičkog odsjeka PMF-a, Horvatovac 95, Zagreb. Studentima 2. godine diplomskog sveučilišnog studija fizika - geofizika je prisustvovanje predavanjima u sklopu Geofizičkog seminara <u>obavezno</u>.