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Tracking Cloud Motion and Deformation for Short-Term Photovoltaic Power Forecasting

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With the increasing role of photovoltaic power production, the need to accurately forecast and anticipate weather-driven elements like cloud cover has become ever more important. Of particular concern is forecasting on the short-term (up to several hours), for which the most recent full weather simulation may no longer provide the most accurate information in light of real-time satellite measurements. We discuss the application of the image correlation velocimetry technique described by Tokumaru & Dimotakis (1995) (for calculating flow fields from images) to measure deformations of various orders based on recent satellite imagery, with the goal of not only more accurately forecasting the advection of cloud structures, but their continued deformation as well.