

Climatologies of POD with the coupled system WRF-APM.

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The Weather Research and Forecasting (WRF) model was applied to dynamically downscale global analyses from the Climate Forecast System Reanalysis over a 200kmx200km domain centered on Toulon, France; on the East coast of the occidental Mediterranean, for the month of February and June over the past 10 years (2001-2010). To insure accuracy, observational data from the NCAR ADP historical database were used in combination with the Four-Dimensional Data Assimilation (FDDA) techniques to constantly nudge the model analysis toward observations. The horizontal grid increment was 3.3km and the first 6 model vertical levels were in the first 60m layer (2, 6, 10, 18, 36 and 58m AGL).

The output of the model were compared to the observations taken during the PREDEM campaign (Juin 2005 and February 2006) when the duct elevation is directly computed from the WRF model high vertical resolution levels and when the PIRAM bulk model is applied near the surface of the WRF model. Results are presented and the pro and cons of the two methods are discussed.

Climatologies of modified refractivity profiles at 3.3km horizontal increment from WRF hourly output were used as input of the Advanced Propagation Model (APM) to generate hourly maps of propagation factors and propagation losses along radials off the coast. Cartographies of the diurnal cycle for the climatological month of February (10 years x 30 days) of probabilities of detection have been computed and are presented.