



Detection and thermal description of medicanes from numerical simulations

M.A. Picornell, J. Campins, and A. Jansa

AEMET, DELEGACION TERRITORIAL EN ILLES BALEARS, PALMA DE MALLORCA, Spain (mpicornella@aemet.es)

Tropical-like cyclones rarely affect the Mediterranean region and they can produce extremely strong winds. These warm-core cyclones, called MEDICANES (MEDIterranean hurriCANES) are small size, develop over the sea and are infrequent. For these reasons, the detection and forecast of medicanes are a difficult task and much effort have been devoted to identifying them.

The goals of this work are to contribute to a better understanding of these structures and to develop some criteria to identify medicanes from numerical model outputs. To do that, a method for detecting and tracking of the Mediterranean mesocyclones has been adapted to small-scale intense cyclonic perturbations. First, the algorithm has been modified to properly describe these small cyclones. Next, the parameters that define the Hart's cyclone phase diagram are calculated to examine their thermal structure. Five well-known medicane events have been described from numerical simulation outputs of the ECMWF operational model (T1279L91Cy36r1, grid length ~15km). The predicted cyclones and their evolution have been validated against available observational data and numerical analyses from literature.