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Vince: a case study

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The development of hurricanes strongly depends on latent and sensible heat fluxes from the ocean (Reale and Atlas, 2001). Therefore, sea surface temperature (SST) values above 26.5ºC (in a 50 meter layer) are considered a favourable condition to the hurricane formation. However, Reale and Atlas (2001) and Bosart and Bartlo (1991) have shown that tropical cyclones may form in unfavourable oceanic environment, if upper-level troughs or lows and other factors occur.

A hurricane, named Vince, developed northwest of the Madeira Island on 9 October 2005, north of 30ºN over ocean waters with SST around 23-24ºC. Consequently, Vince formed in unfavourable oceanic environment. This fact and its trajectory towards the Iberian Peninsula gave Vince the status of an unusual hurricane.

The genesis of Vince was strongly related to a depression located north of the Cape Verde Islands on 30 September, that moved northwest towards the Azores Islands. This depression interacted with a mid-latitude cyclone in vicinity of the Azores Islands, on 4-5 October, leading to the formation of a single depression.

After 6 October, this depression moved southeast towards the Canary Islands halting west of the Madeira Island on 8 October and reaching in the next day the stage of hurricane. During its path towards the Iberian Peninsula, Vince lost intensity and became a tropical depression, offshore the southern Portuguese coast on 11 October.

The data used in this study are mainly from ECMWF, ALADIN (*Radnóti, et al. 1995*) numerical weather forecast models and MAR3G (Oliveira Pires, 1993) wave forecast model. In addition, satellite images from MSG, QuikSCAT and radar products were

analysed.

References

Bosart e Bartlo, 1991: Tropical Storm Formation in a baroclinic environment. *Mon. Wea. Rev.*, **119**, 1979-2013.

Oliveira Pires, H., 1993: Modelação Numérica das Ondas Geradas pelo Vento, 222pp.

Radnóti, G., R. Ajjaji, R. Bubnová, M. Caian, E. Cordoneanu, K. von der Emde, J.-D. Gril, J. Hoffman, A. Horányi, S. Issara, V. Ivanovici, M. Janousek, A. Joly, P. LeMoigne, and S. Malardel, 1995: The spectral limited area model ARPEGE-ALADIN. *PWPR Rep. Series*, **7**, *WMO TD*, **699**, 111-118.

Reale e Atlas, 2001: Tropical Cyclone-Like Vortices in the Extratropics: Observational Evidence and Synoptic Analysis. *Wea. Forecasting*, **16**, 7-34.