



## **Explosive cyclogenesis over the Aegean Sea.**

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The dynamical and physical processes that produced an explosive cyclogenesis over the Eastern Aegean Sea are studied by means of observations and model results. Indeed the very deep low which affected the Aegean sea was emanating from a low centre which on 1200 UTC 21 January 2004 was centred over Sidra Gulf, with 999 hPa central pressure. 24-hours later the low-pressure system has reached its minimum pressure of 976 hPa. This pressure fall in the 24-h central pressure of  $\sim 23$  hPa corresponds to 1.4 Bergeron a deepening rate that is considered as strong “bomb”. The electrification of the storm is studied through inspection of the lightning activity during the entire life-time of the event based on the UK METOFFICE ATD lightning sensors. The characteristics of the clouds associated with the storm are also studied based on METEOSAT but also on TRMM (brightness temperature, precipitation radar) data. The model results are based on simulations performed by the non-hydrostatic MM5 model. The upper-level forcing with the creation of a negatively tilted trough that generated cyclonic vorticity and therefore maximised the vorticity advection in the area seems to have been decisive in the formation of the “bomb”.