



## **Balance and Imbalance in Heat Lows**

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Heat Lows are an important synoptic feature of dry subtropical regions, where they have a significant effect on the local weather and climate. Previous studies on heat low dynamics in quiescent and simple background flows have focused mostly on the structure and diurnal variation of the low-level cyclonic circulation, which is found to be highly ageostrophic.

In this study we describe some idealized numerical model calculations designed to investigate other dynamical features of these systems with special emphasis on the balanced and unbalanced components of the flow. The model employs a new representation of radiative effects. We show that the upper-level anticyclone is a significant part of the overall system and that unlike the lower cyclonic part of the circulation, which has a strong diurnal cycle, it is quasi-stationary. A balance analysis sheds light on the differences in the vertical structure of the balanced flow in the heat low.