



DOCUMENT
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METEOROLOGY FOR AUSTRALIA

CHAPTER 22 – LOW LEVEL JET STREAM

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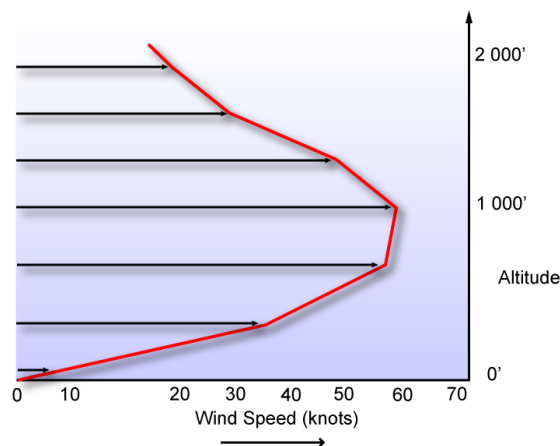
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LOW LEVEL JETSTREAMS

OVERVIEW

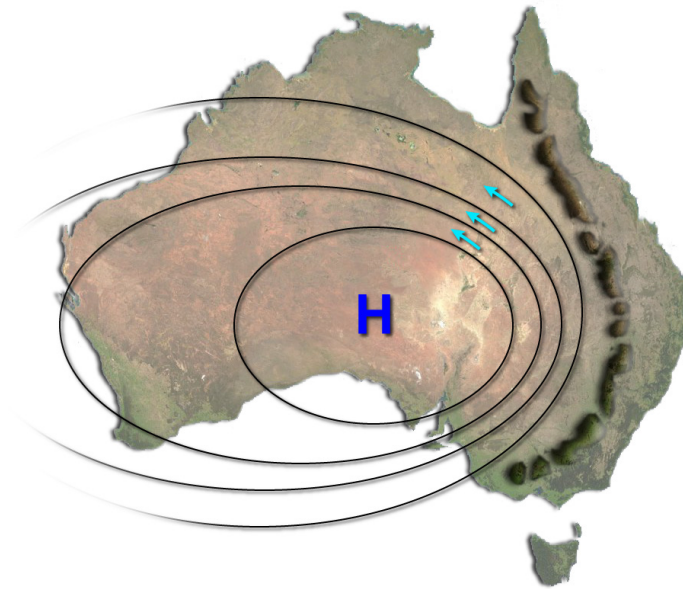
These are high speed, low level winds formed by the large scale interaction of airflow around anticyclones, and mountain barriers. They may extend over several hundred kilometres where the wind speed is highly super-geostrophic. This wind is concentrated into a maximum, both horizontally and vertically, so that very large shears are produced with its associated turbulence.

On a cold winter morning, a strong surface inversion forms. The cold dense air does not rise over the mountain range and the isobars converge, causing the wind speed to increase. The effect of surface friction on the wind is shielded by the inversion. The jet usually dissipates when solar heating breaks the inversion.



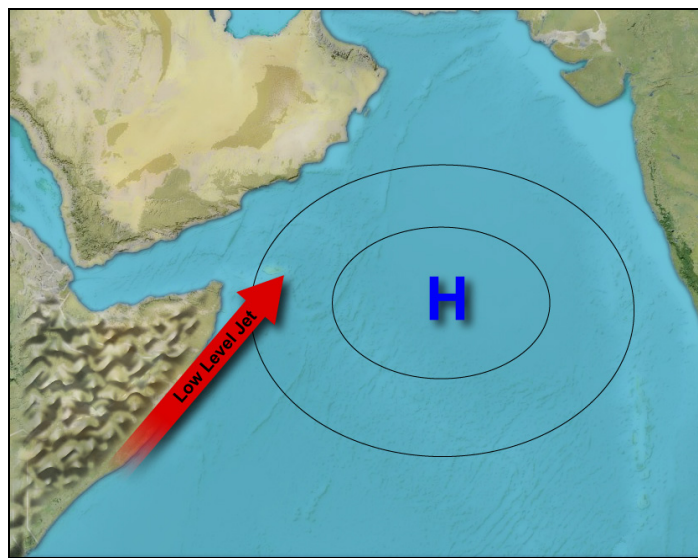
Low Level Jet Stream Shear

In Australia, they occur in southern Queensland and in the Northern Territory on winter mornings.

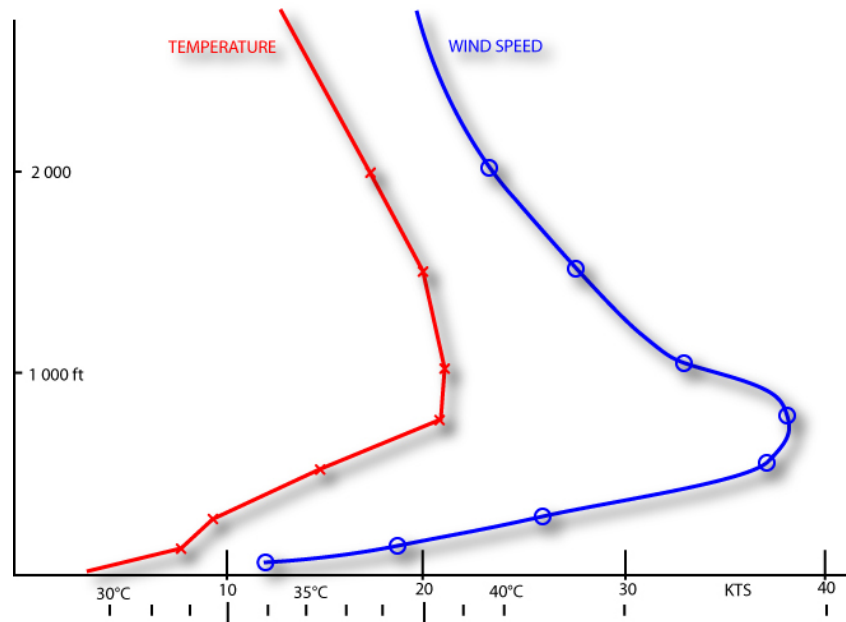


Low Level Jet Stream in Australia

East African low level jet streams are more frequent in summer, because of the influence of monsoonal wind flow.



Low Level Jet Stream in East Africa



Low Level Jet Stream in Bahrain

For several years, departing and arriving aircraft at Bahrain were asked to transmit data on upper temperatures and wind speed during times of early morning inversions. Note how this actual information corresponds with the previous theoretical information. Although not a well-known region for mountains, the Arabian Peninsular does feature ground which is sufficiently high to produce the conditions for a low-level jet. The Low-Level Jet and the 40-Day Shamal in the UAE is another example.