BAROTROPIC AND BAROCLINIC CONDITION

Semester – III
CC5: Climatology
Unit II: Atmospheric Phenomena
Climatic Classification

Study Material Prepared by:
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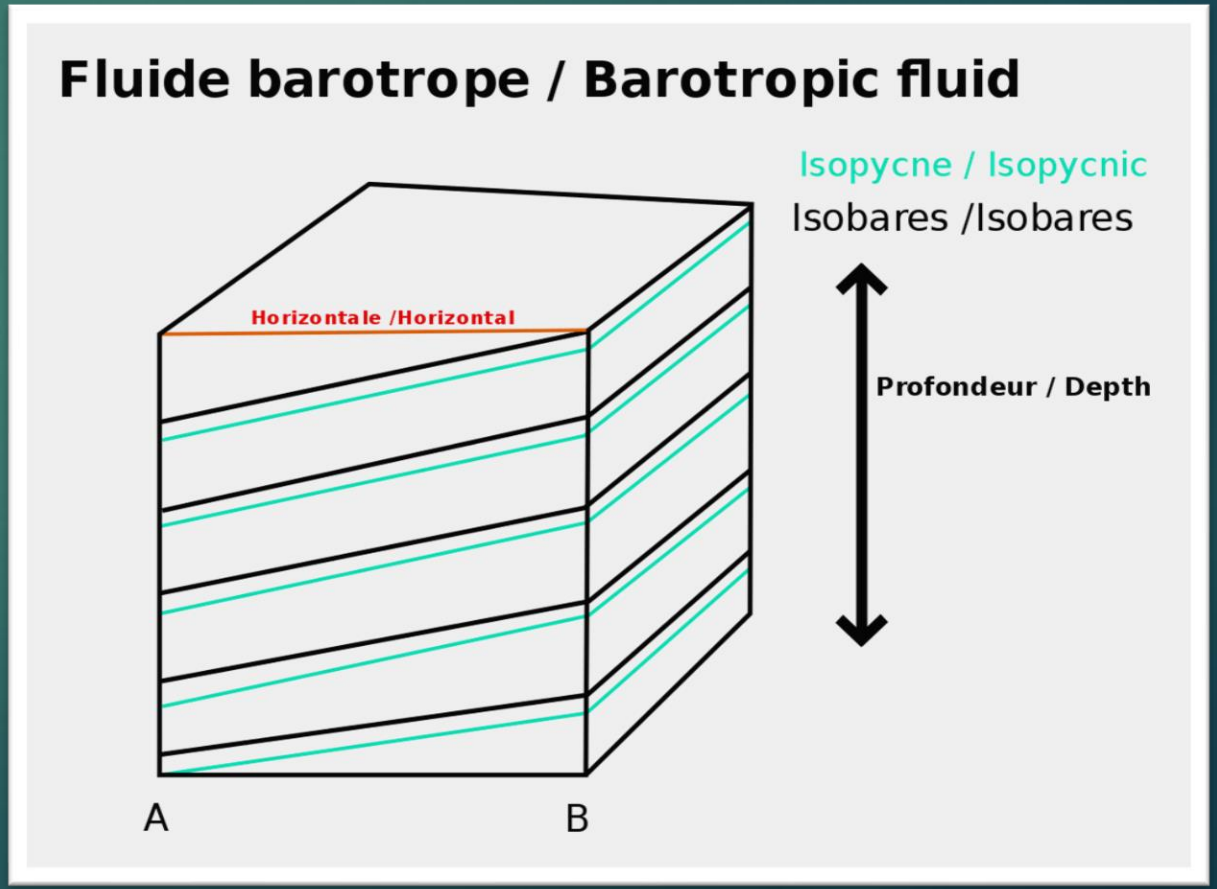
BAROTROPIC

- **The regions in which density does not vary along the surfaces of constant pressure are called barotropic (isotherms and isobars are parallel to each other), i.e., instability associated with rising warm air.**



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BAROTROPIC EXAMPLE

- **A perfect example of a barotropic environment is the southeast U.S. in the summer or the tropics. Everyday being about the same (hot and humid with no cold fronts to cool things off) would be a barotropic type atmosphere. Part of the word barotropic is tropic. The tropical latitudes are barotropic. There are no fronts in the tropics.**

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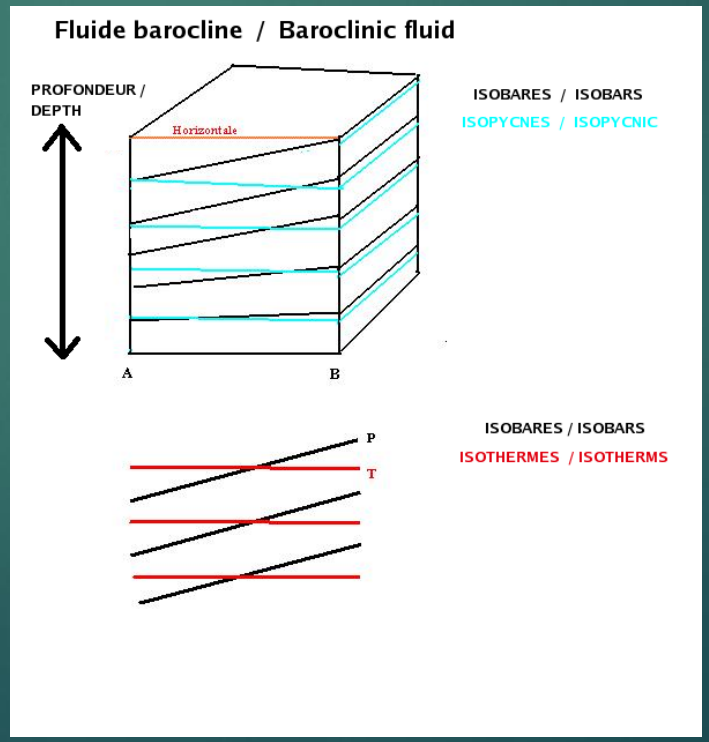
BAROCLINIC

- **Potential energy is available whenever there is variation of temperature in the horizontal, or in other words, whenever the density varies in surfaces of constant pressure. Regions in which such a variation are present are called baroclinic (isobars and isotherms intersect each other)**



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BAROCLINIC EXAMPLE

- In a synoptic scale baroclinic environment you will find the polar jet in the vicinity, troughs of low pressure (mid-latitude cyclones) and frontal boundaries. There are clear density gradients in a baroclinic environment caused by the fronts. Any time you are near a mid-latitude cyclone you are in a baroclinic environment.

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