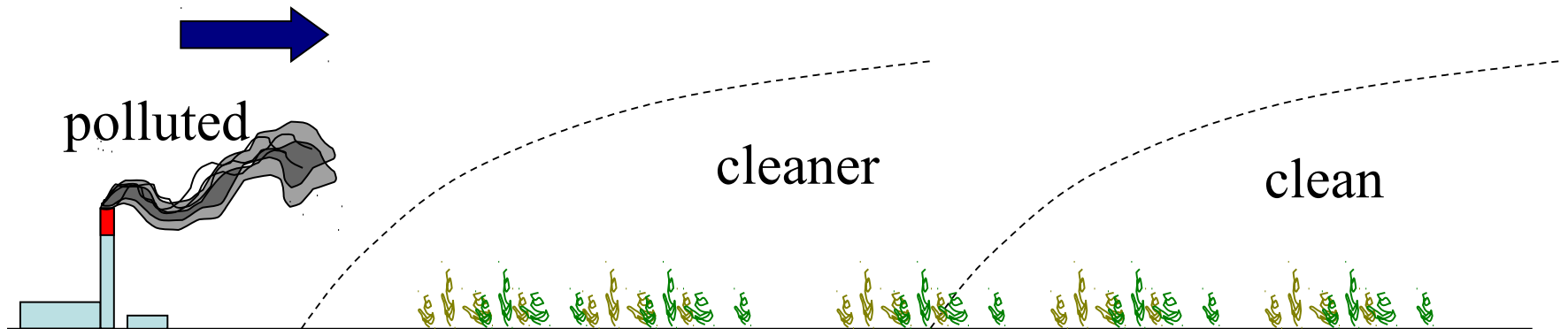


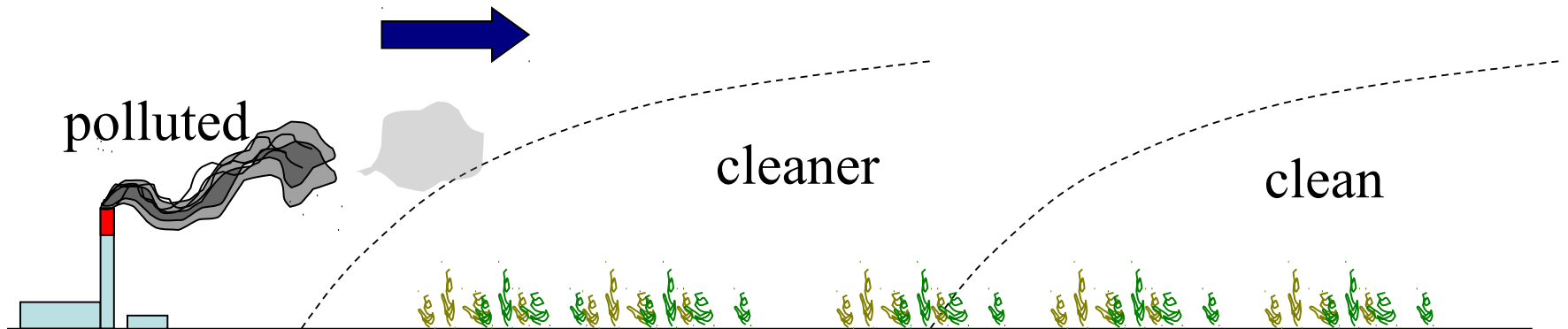
Advection

- net horizontal transport (of heat, humidity, pollutants,...) by the wind due to a horizontal gradient in the transported quantity



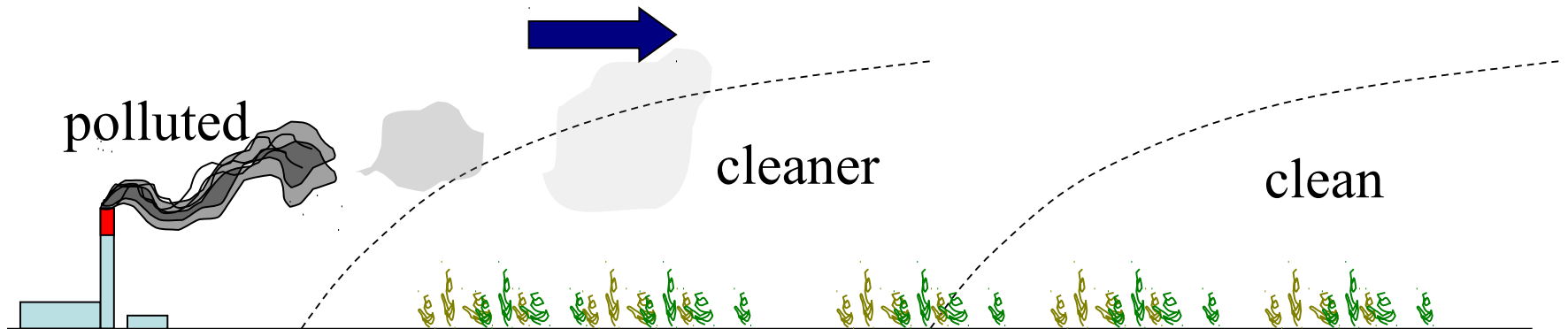
Advection

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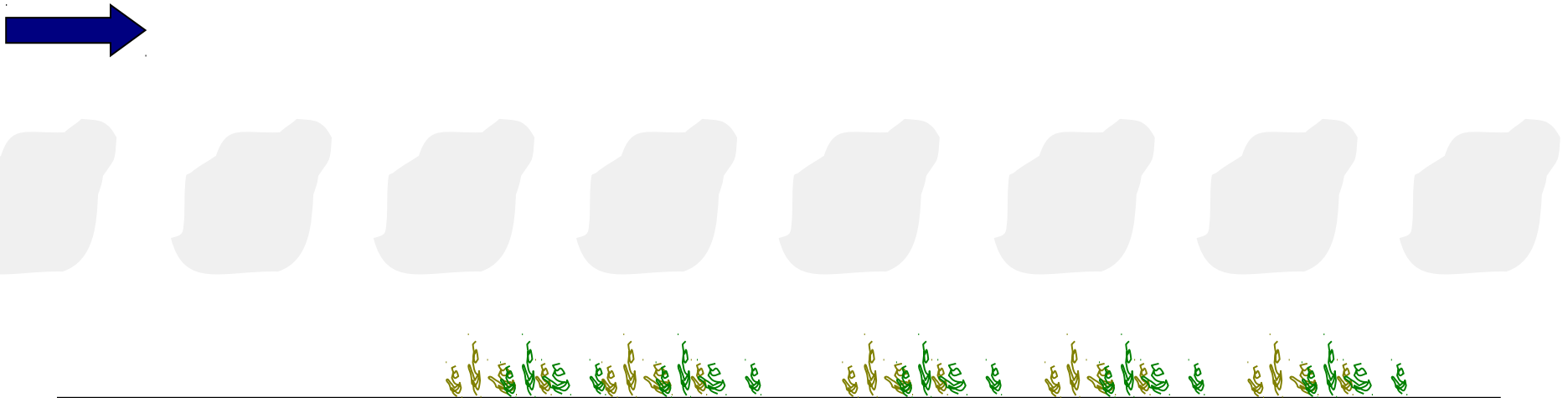
Advection

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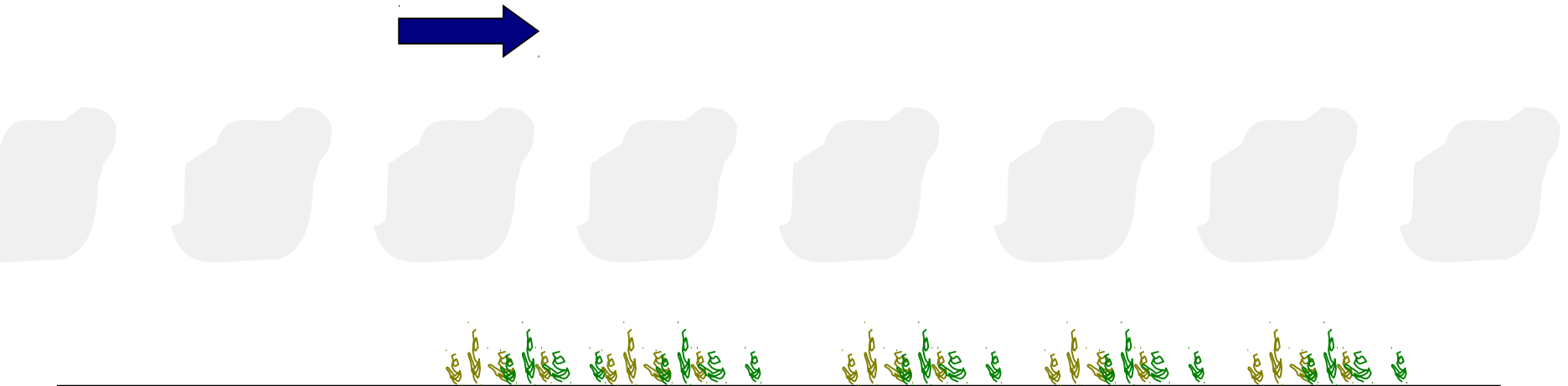
Advection

- determined by coexistence of wind plus horizontal gradient
- in the scenario shown below, there is no advection



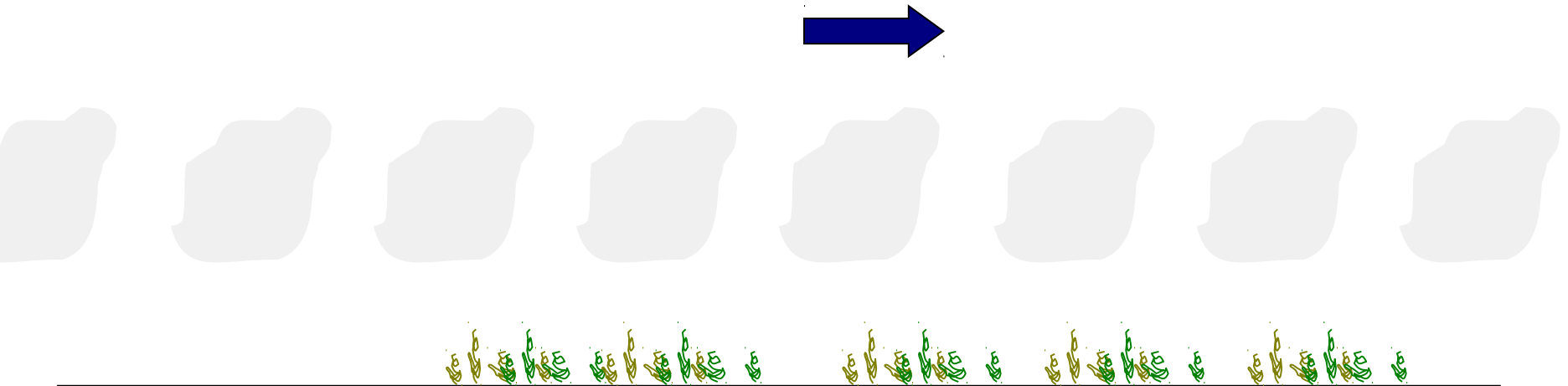
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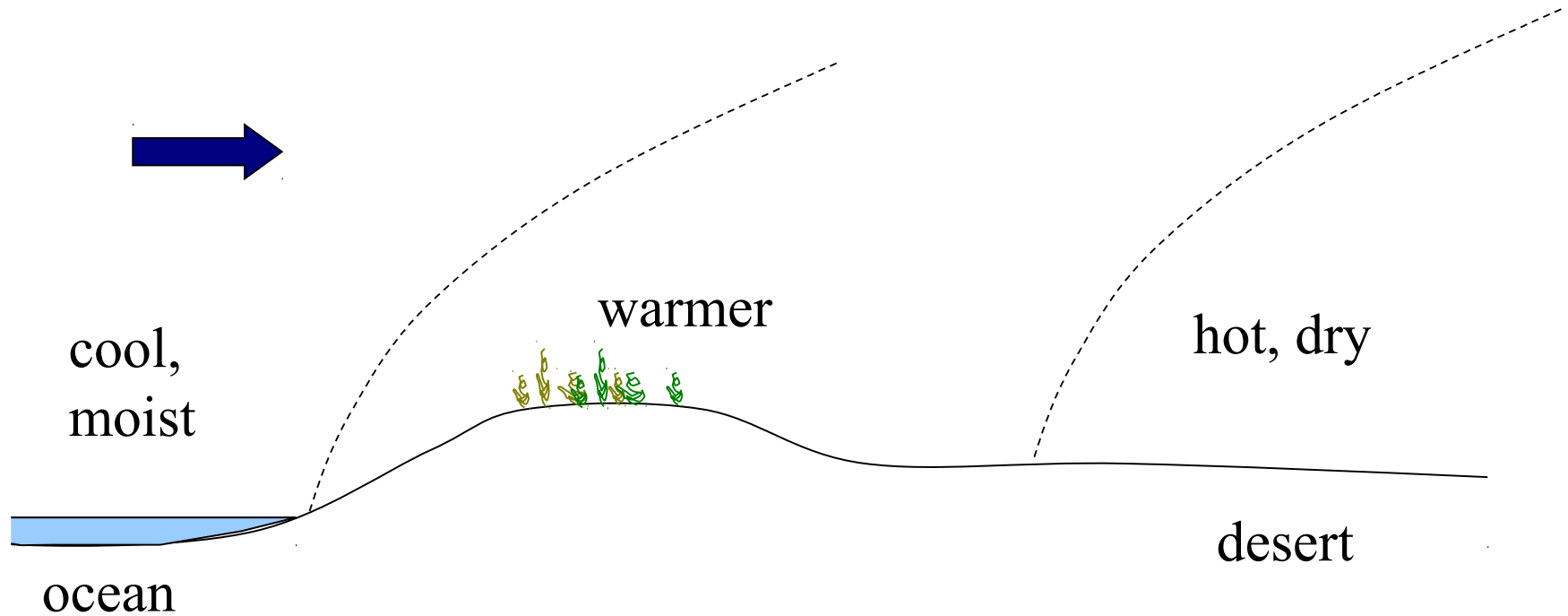
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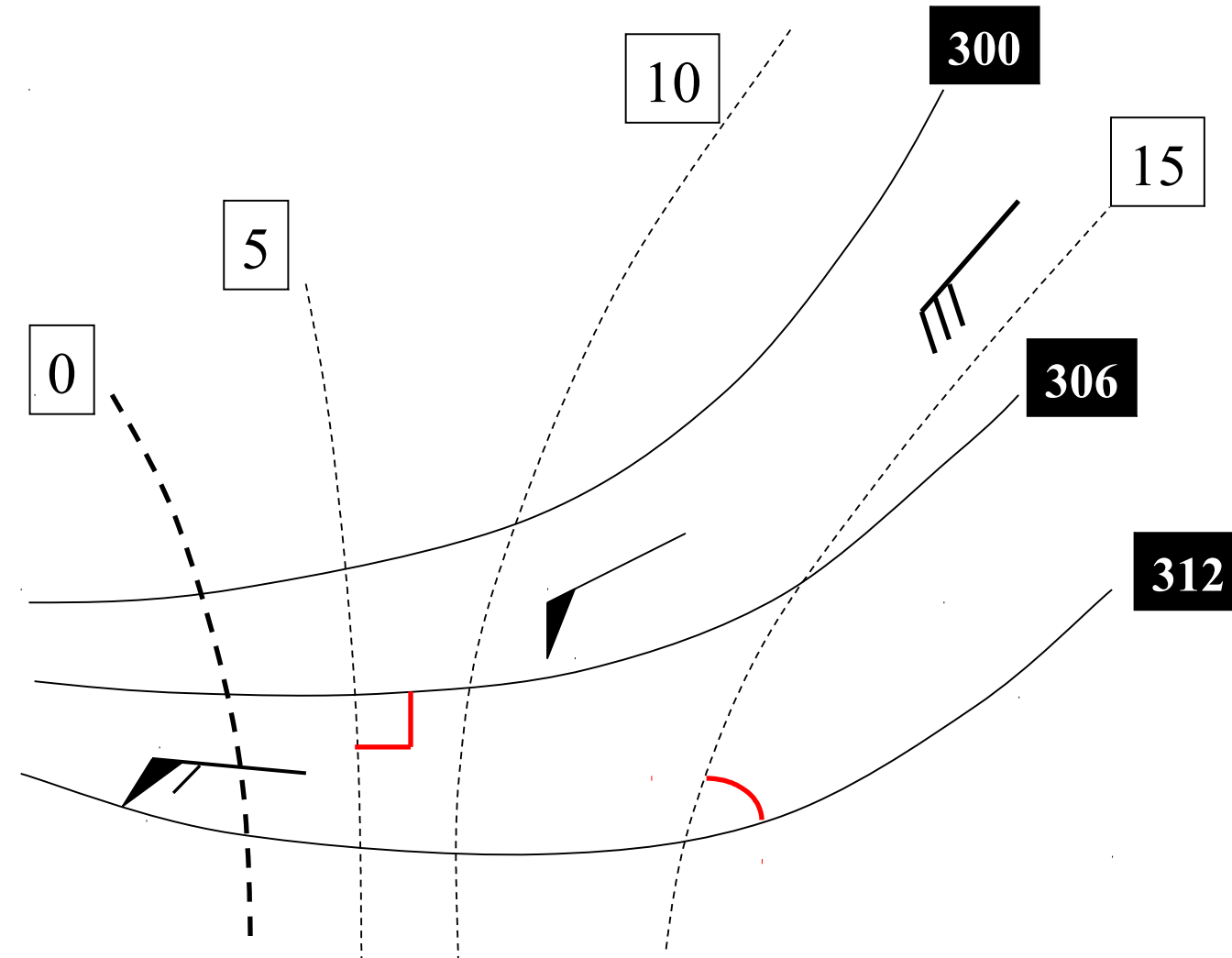
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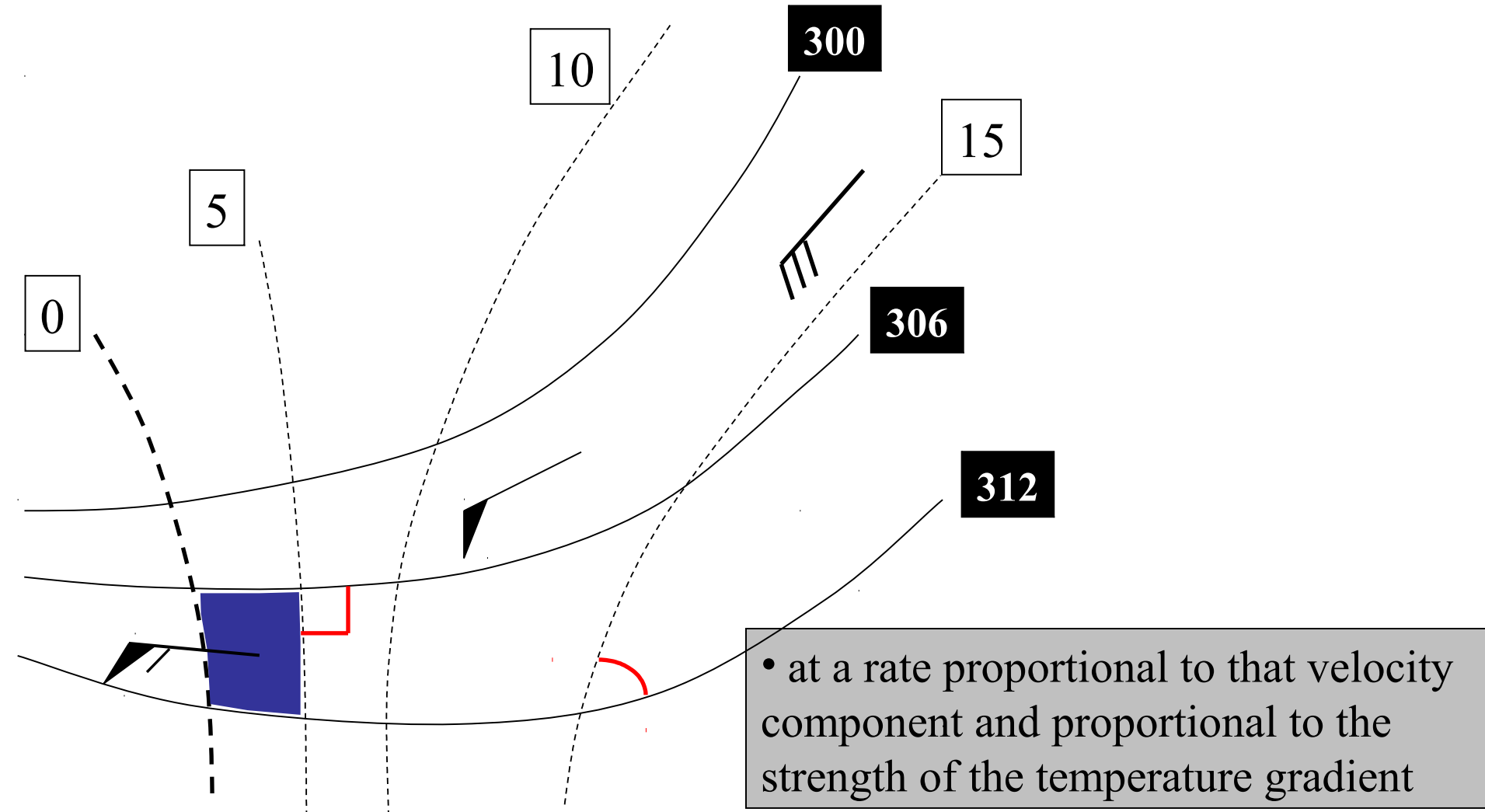
Advection – recognizing on the analyses

- temperature advection is accomplished by the velocity component that is perpendicular to the isotherms



Advection – recognizing on the analyses

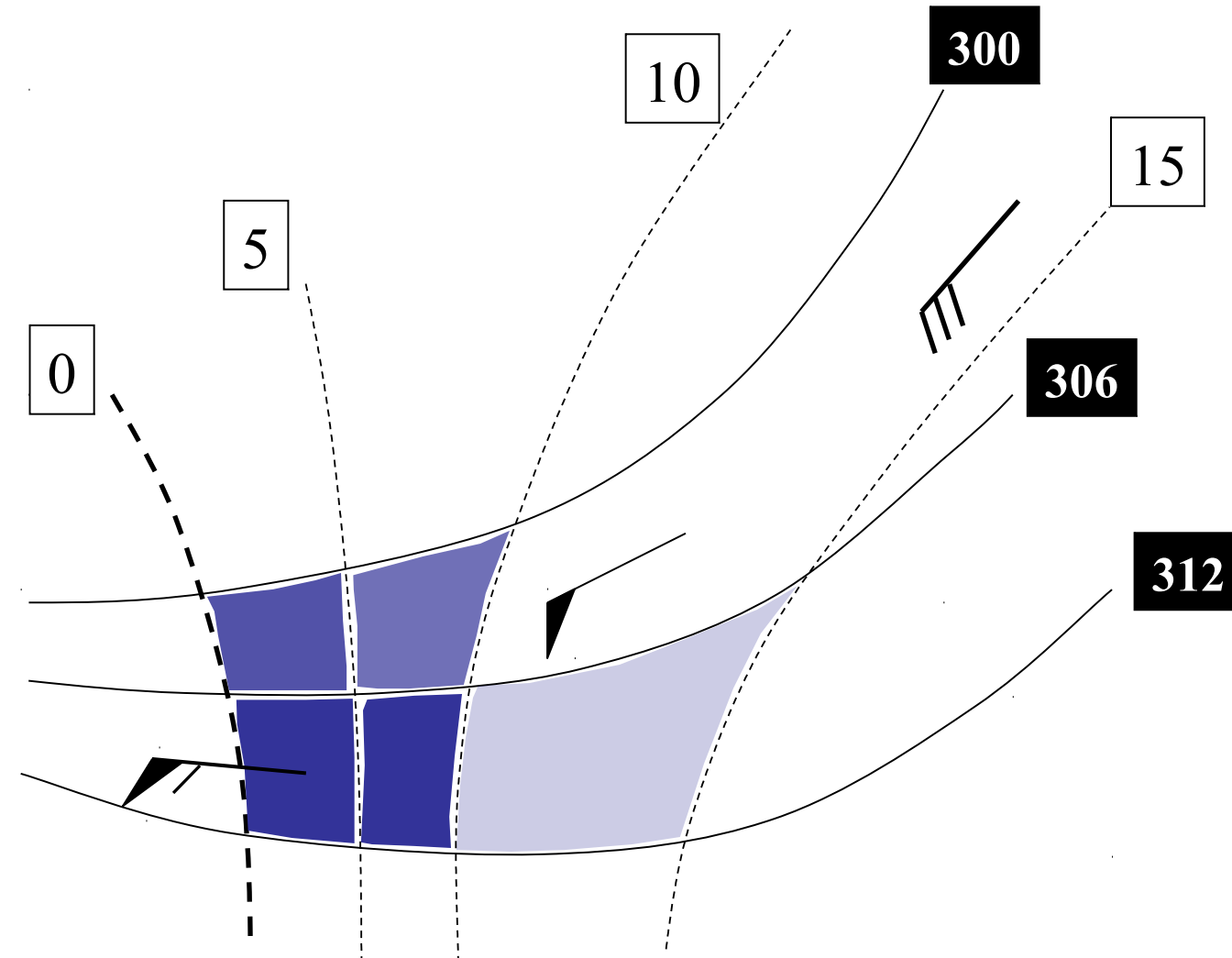
- temperature advection is accomplished by the velocity component that is perpendicular to the isotherms



- at a rate proportional to that velocity component and proportional to the strength of the temperature gradient

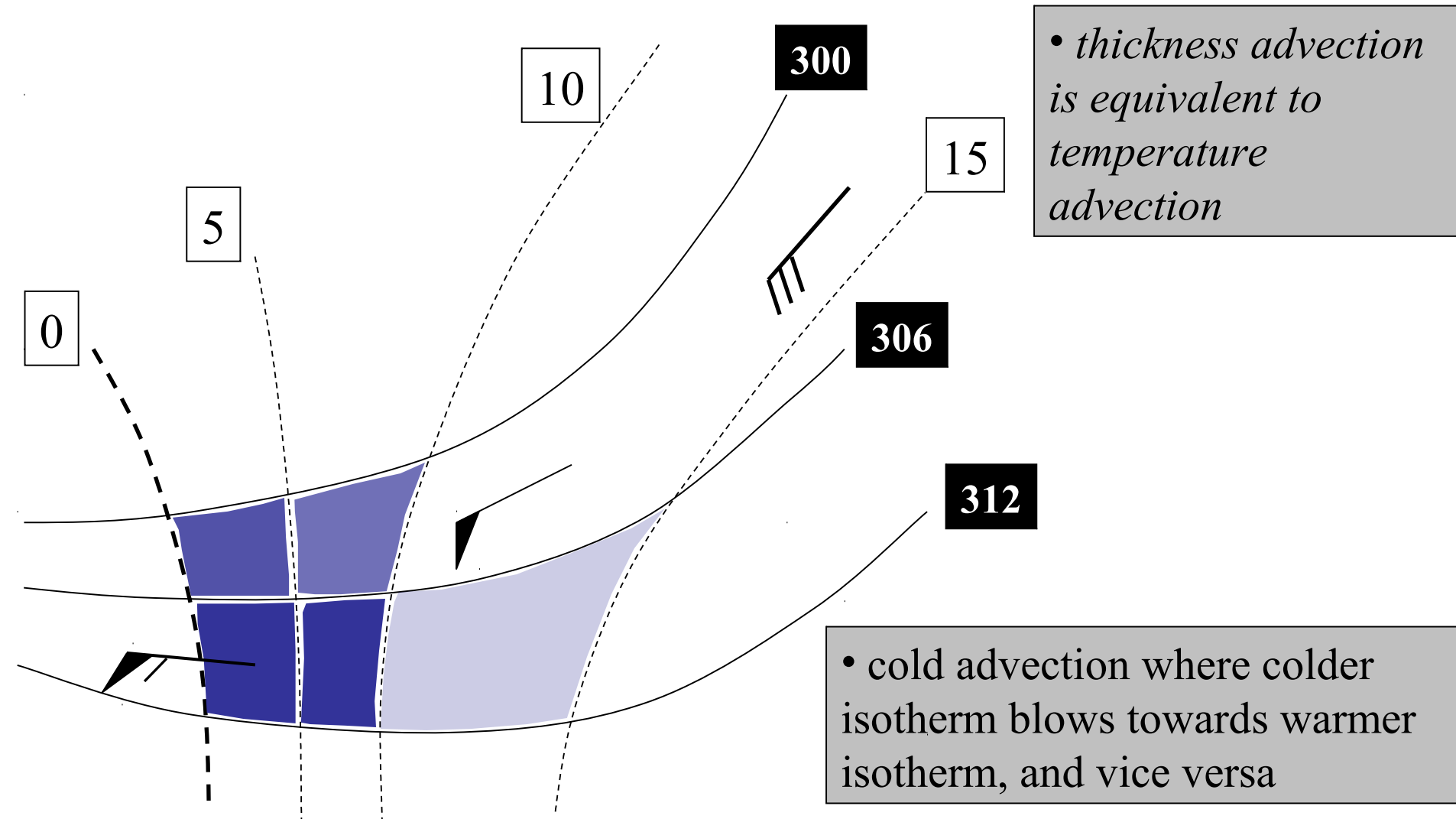
Advection – recognizing on the analyses

- thus the smallest rectangles with corner angles closest to 90° are zones of strongest advection



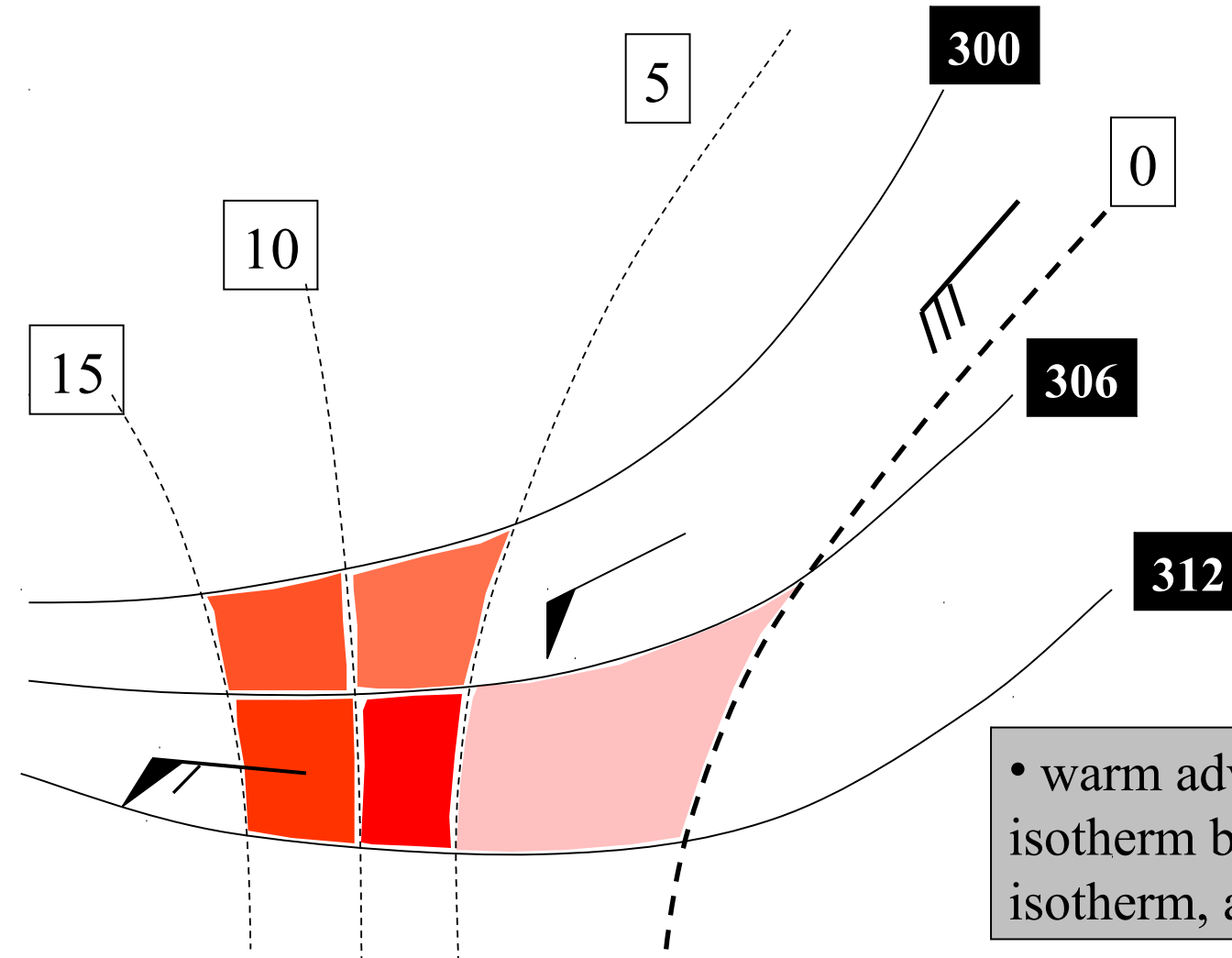
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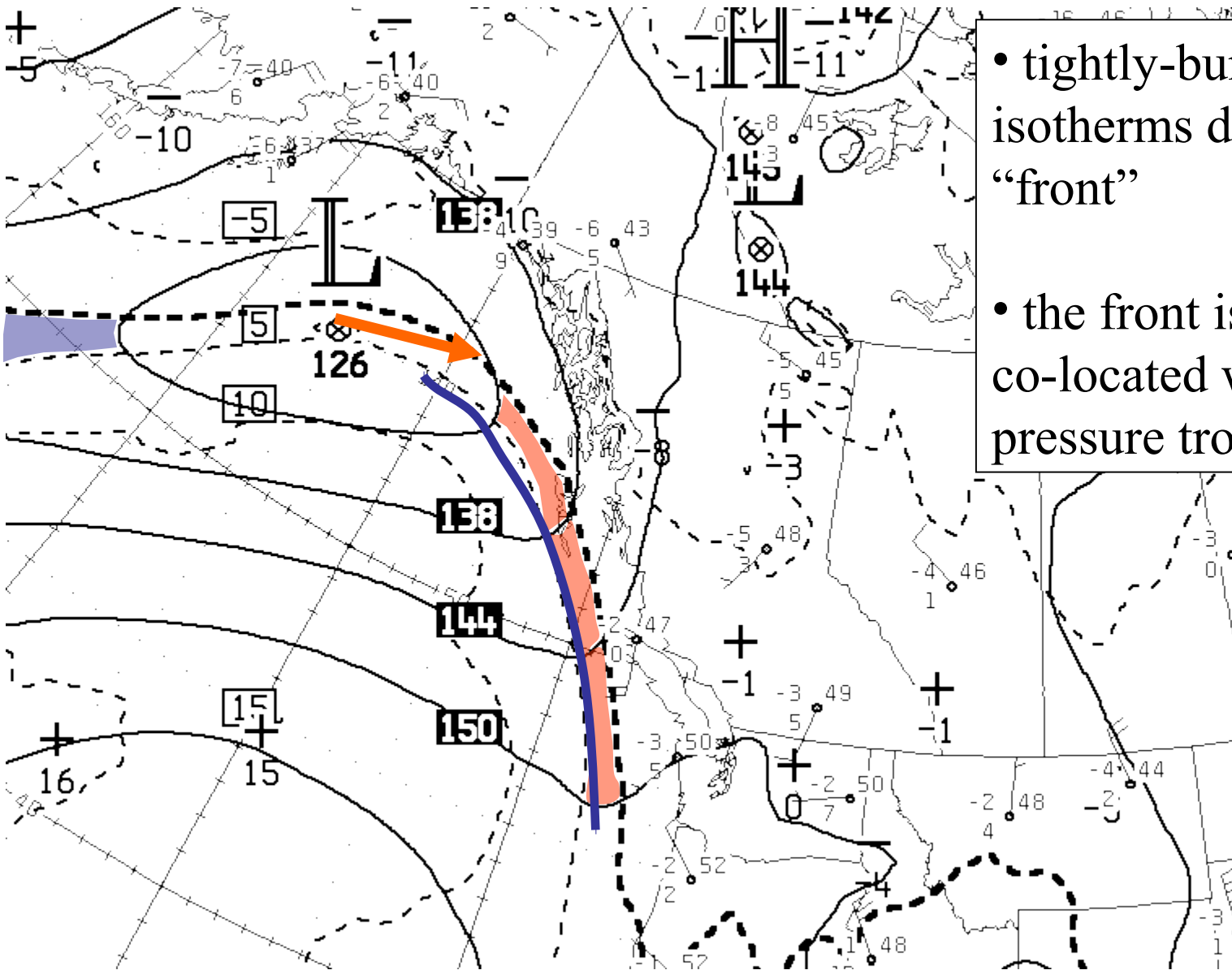


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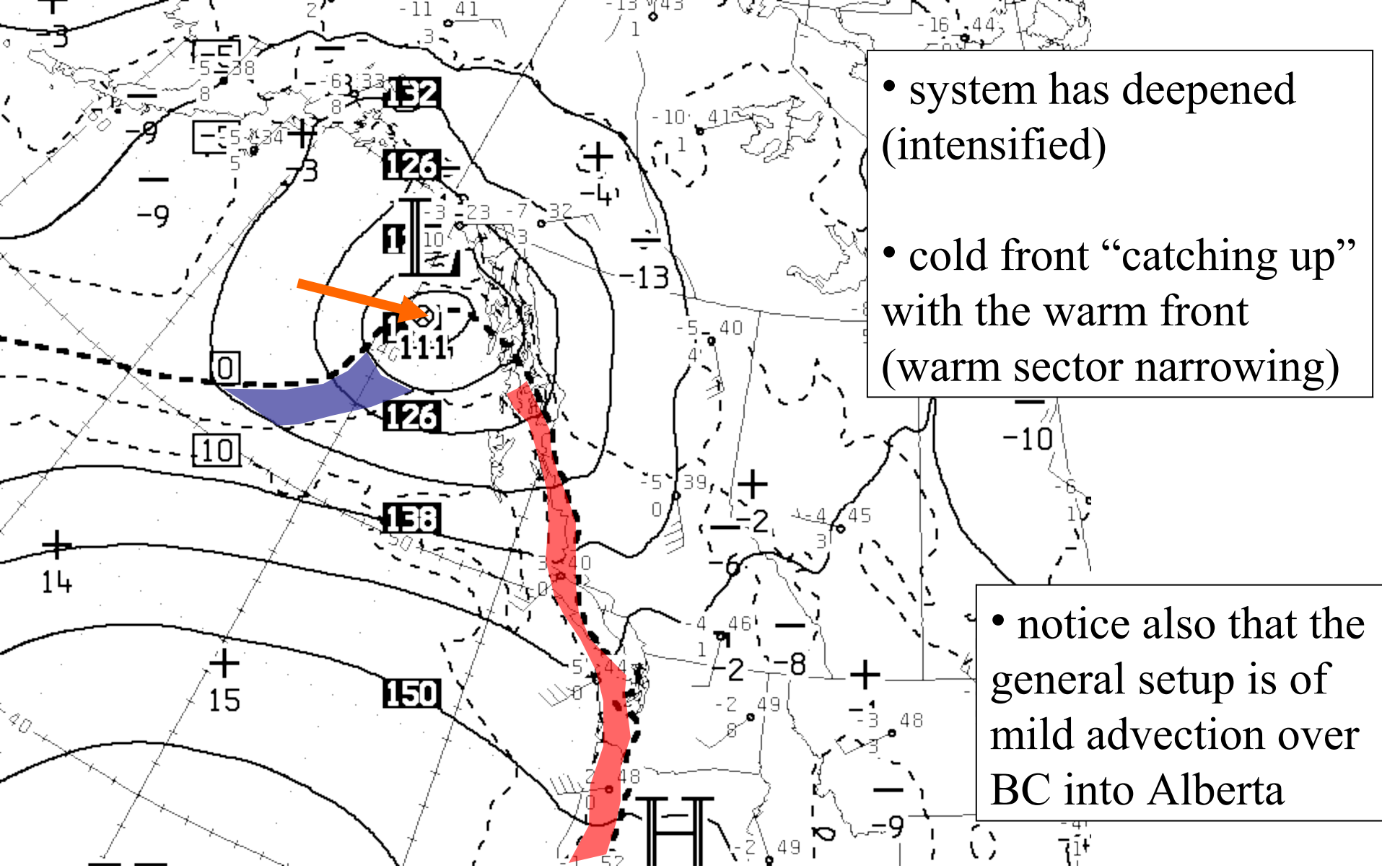


- warm advection where warmer isotherm blows towards colder isotherm, and vice versa

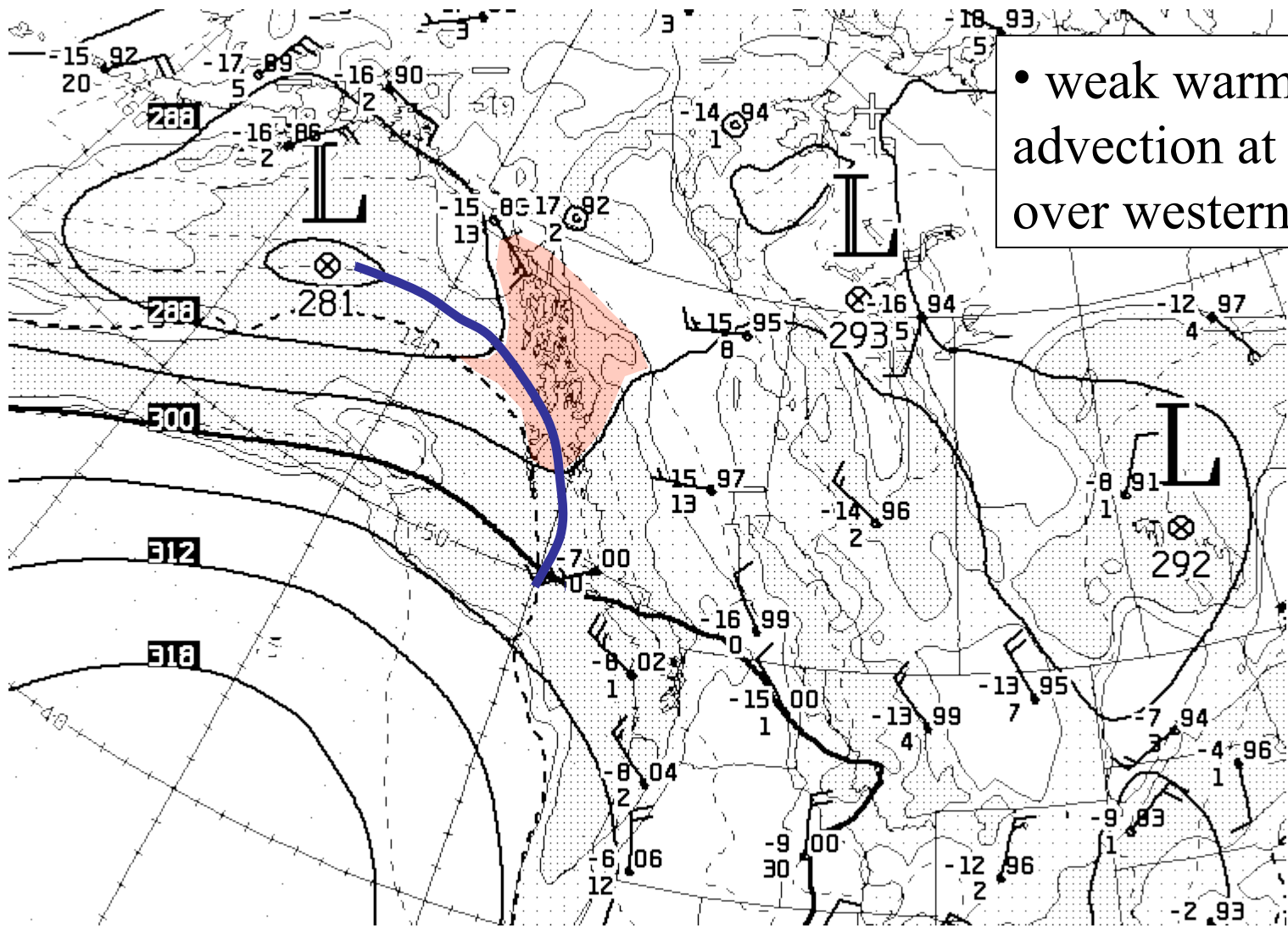


- tightly-bunched isotherms demarcate a “front”
- the front is associated/ co-located with a pressure trough

CMC 850 hPa analysis 00Z Thurs 29 Oct. 2009



CMC 850 hPa analysis 12Z Thurs 29 Oct. 2009



- weak warm thermal advection at 700 hPa over western B.C.

CMC 700 hPa analysis 00Z Thurs 29 Oct. 2009