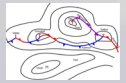
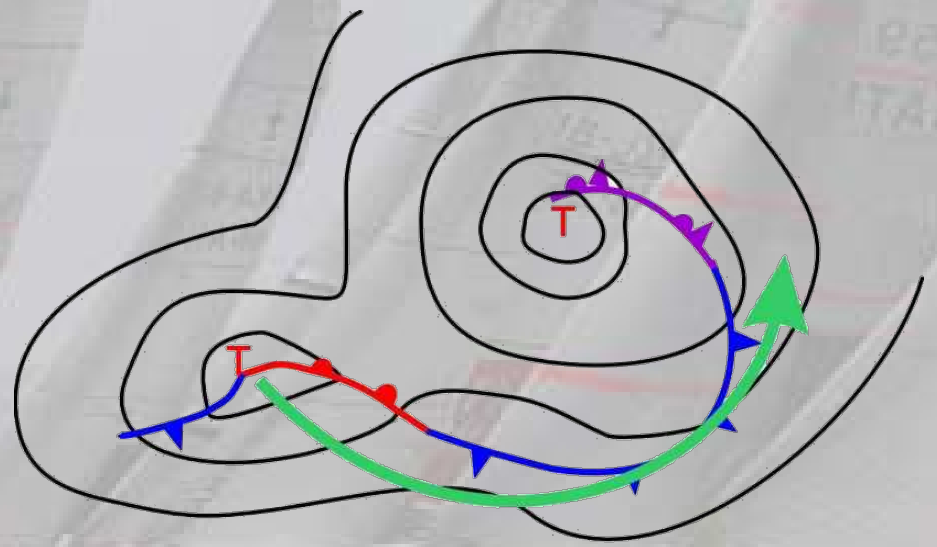


Other pressure patterns

- Secondary low, Cyclone family
- Trough
- Cut-off Process, Cold air pool
- Dynamic / thermal Lows / Highs
- Warm / cold Lows / Highs

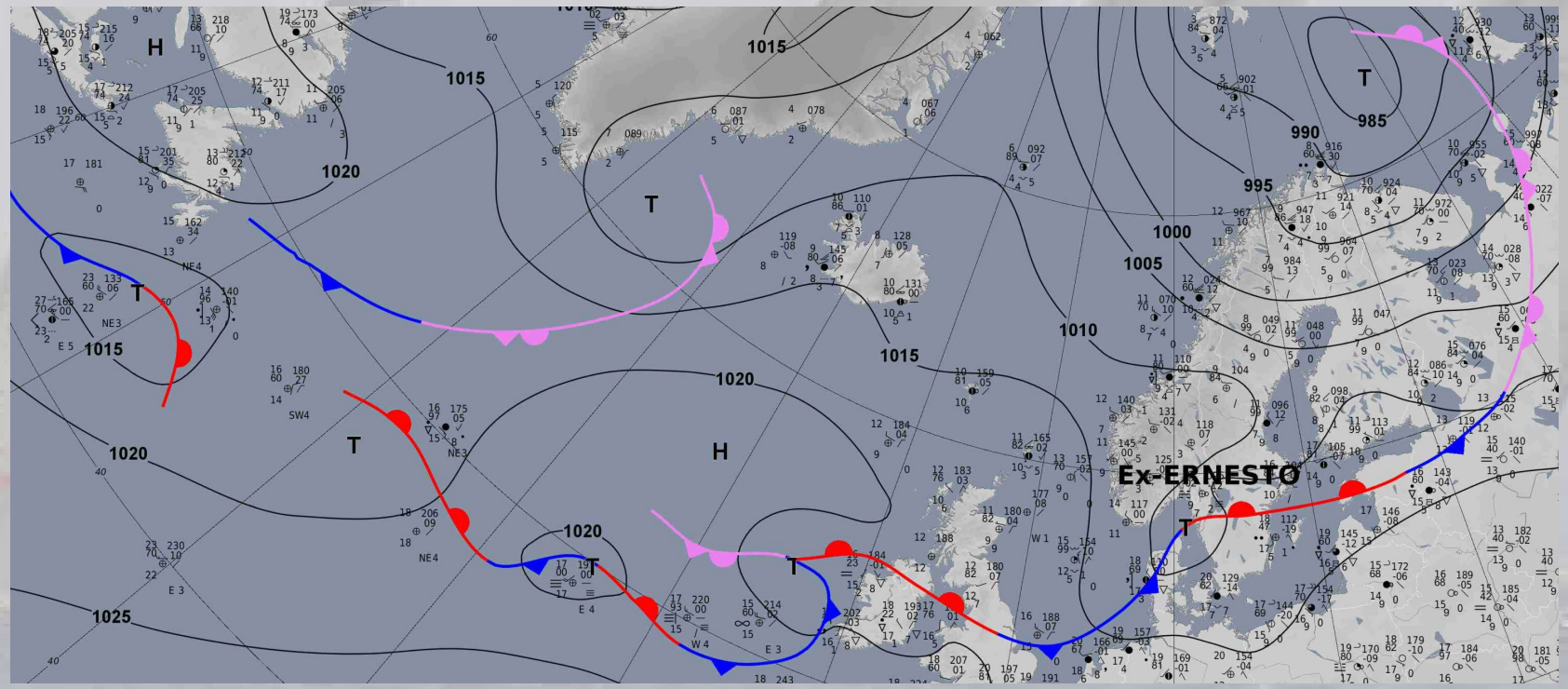
SECONDARY LOW

- Wave development along the coldfront of an extensive low
- Wave development in area of low pressure gradients, four pattern pressure field
- Intensification of wave development, if cold air advection behind a coldfront intensifies a wave development
- Trajectory of secondary low around the central low towards its center



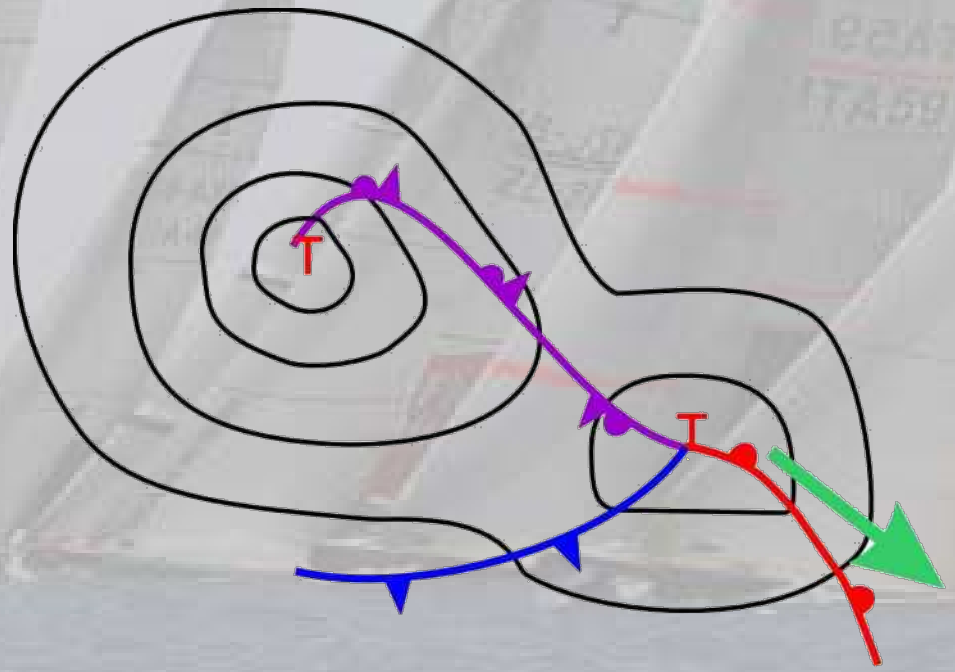
FAMILY OF CYCLONES

- The west-east extending coldfront with secondary low development seperates warm air in the south from cold air in the north
- This situation is characterized by strong meridional (N/S) temperature gradients (baroclinic)
- This area offers excellent thermodynamic conditions for little wave disturbances to intensify forming series of lows



SECONDARY LOW

- Along the frontal system in the area of the occlusion point intensifying pressure fall with heavy precipitation, later forming of a seperatew low center as secondary low.
- Long extending okklusion with intensifying trough is a favourable condition for this type of secondary low.
- This type of secondary low does move towards the center of the central low, but veers out to ESE thus moving away from the centrals low.



TROUGH

- Development behind the coldfront of an intense, mature and only slow moving low.
- The older the cyclone, the more the frontal system departs from the trough
- Distance of trough behind just recently occluded low: 6 – 12 hours
- Distance of trough behind old and stationary lows: up to two days
- Typical indications for trough development:

  After coldfront passage: no pressure rise
  no veering of the wind to NW

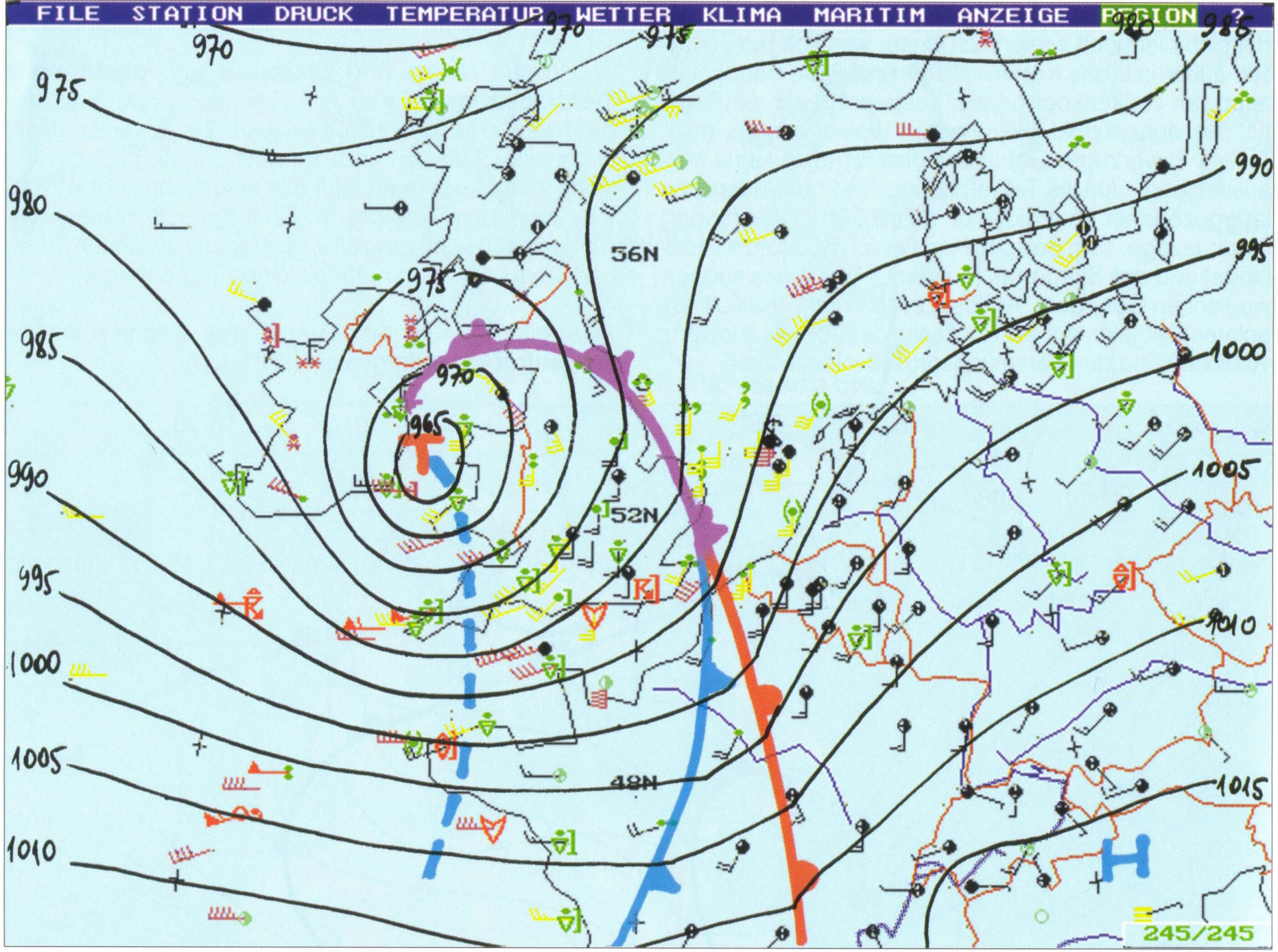
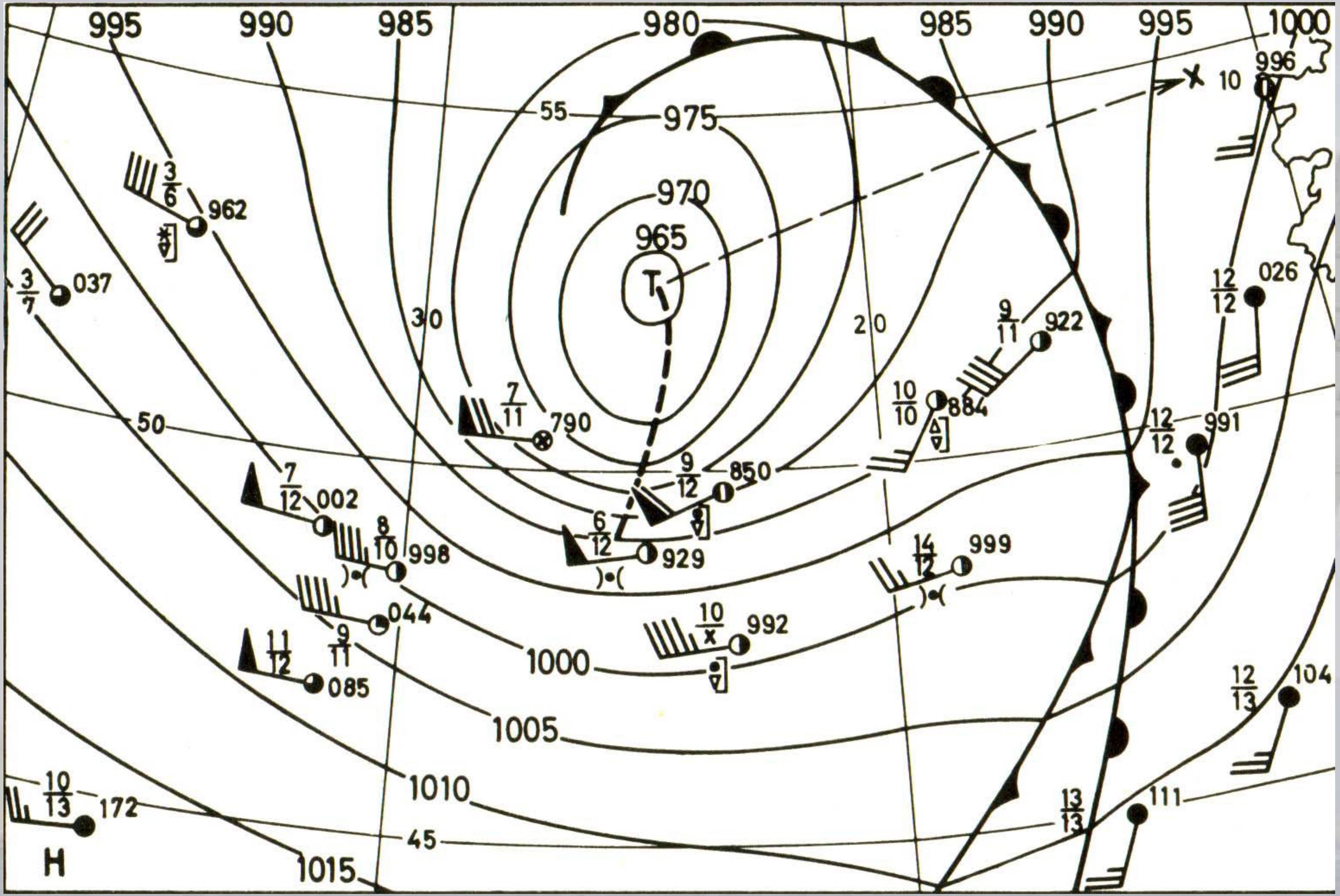


Abb. 13.6 Detailausschnitt Wetterlage vom 04.01.1998, 12.00 UTC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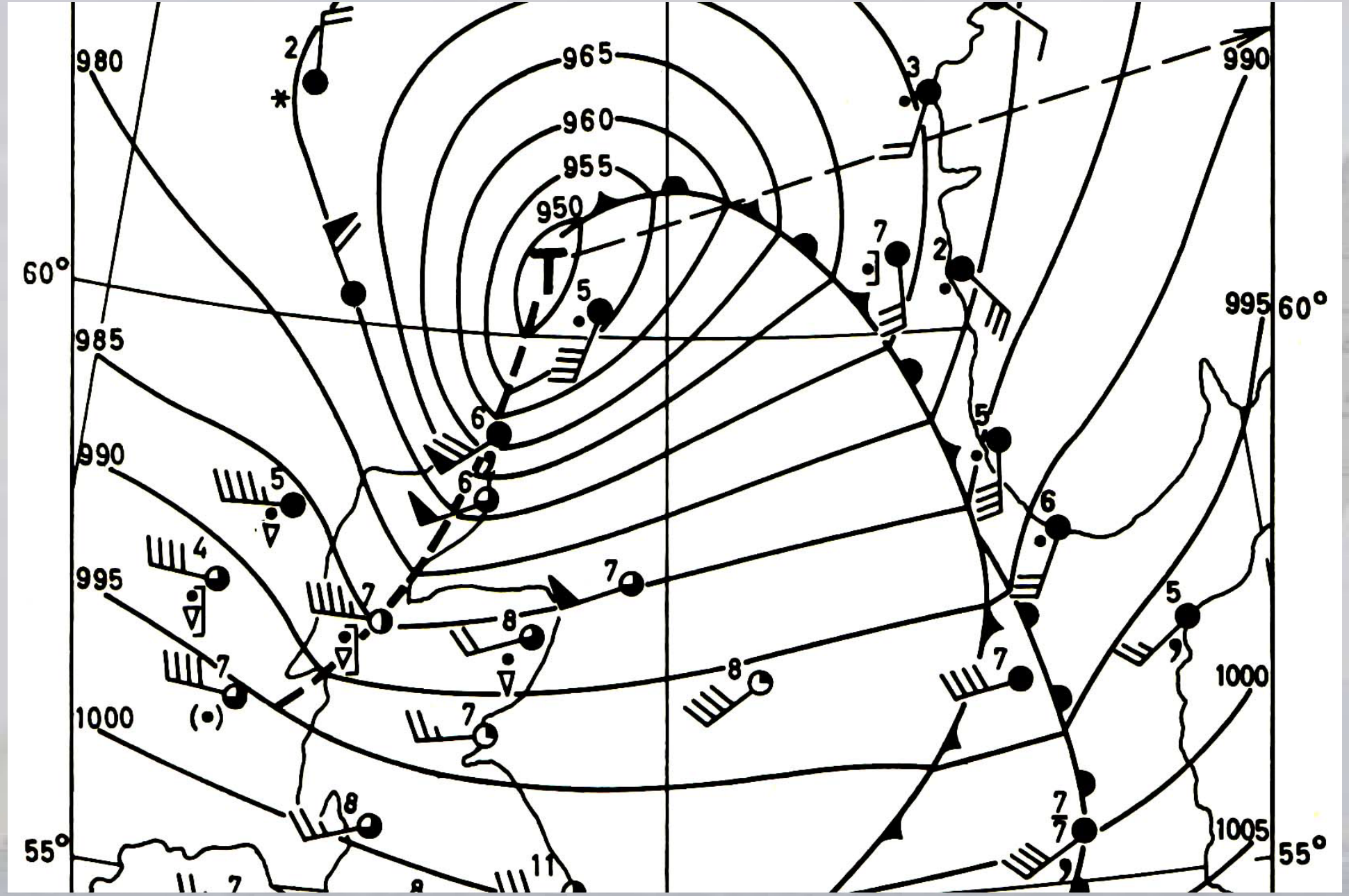
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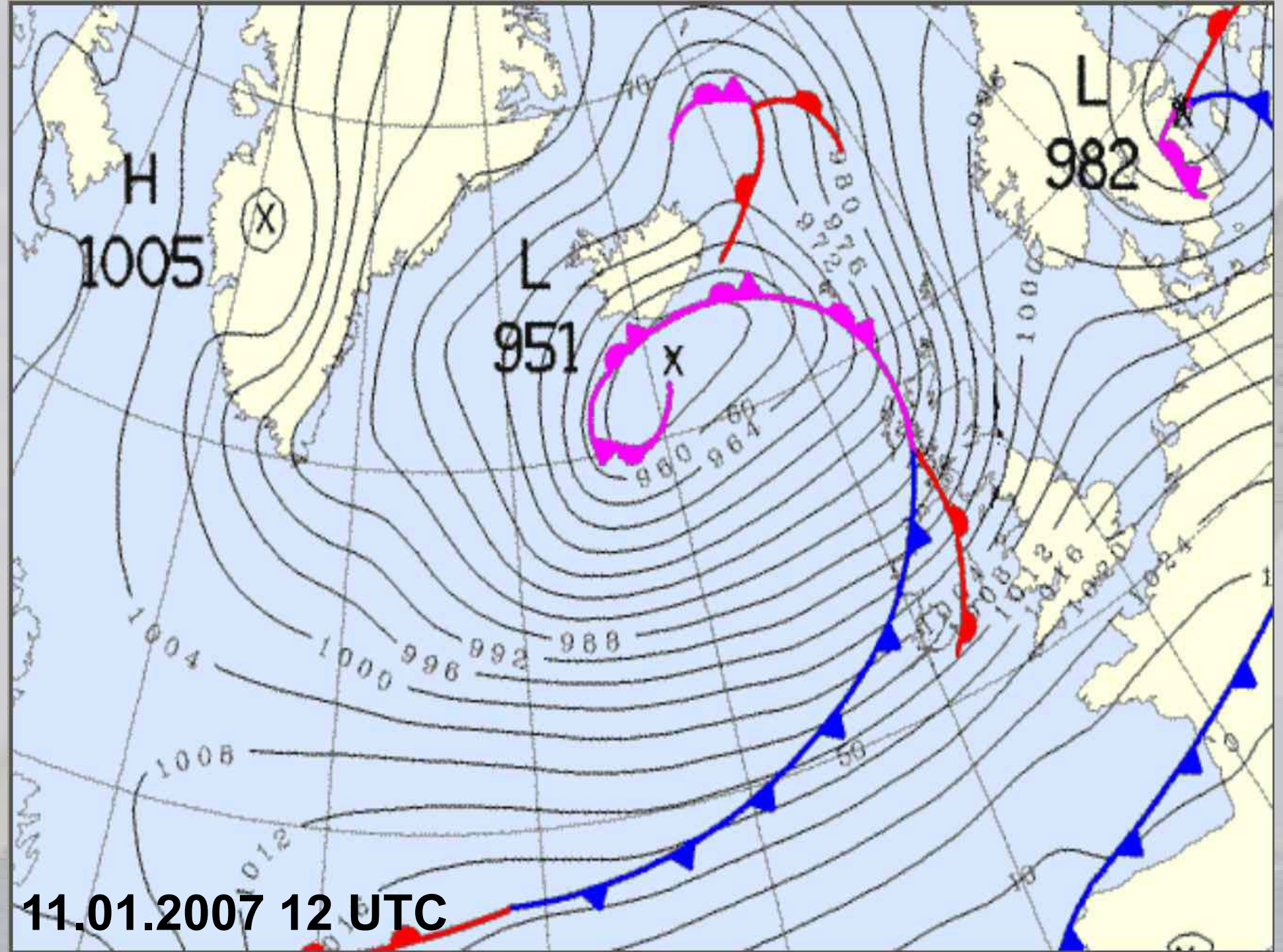
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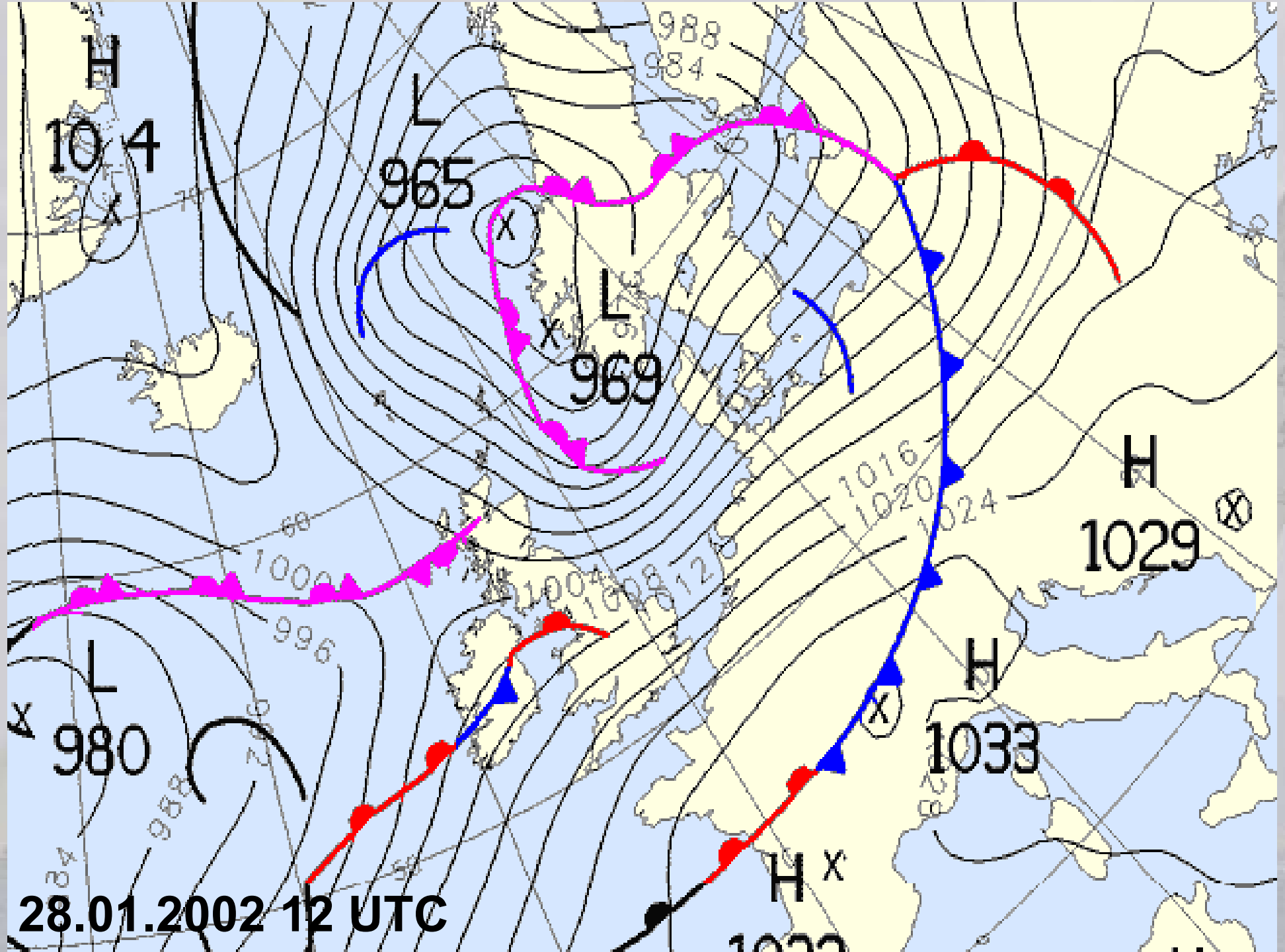
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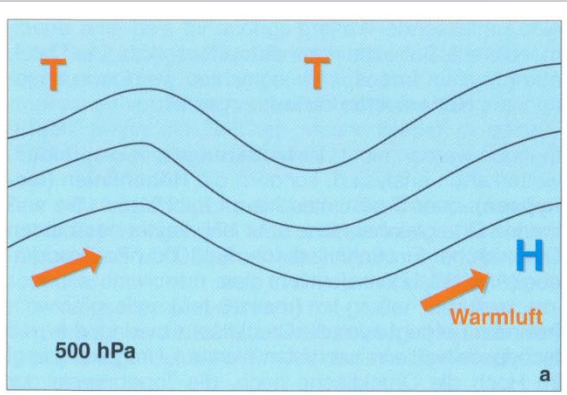
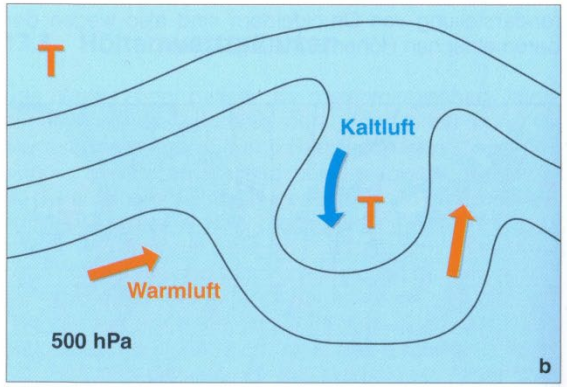
COLD AIR POOL





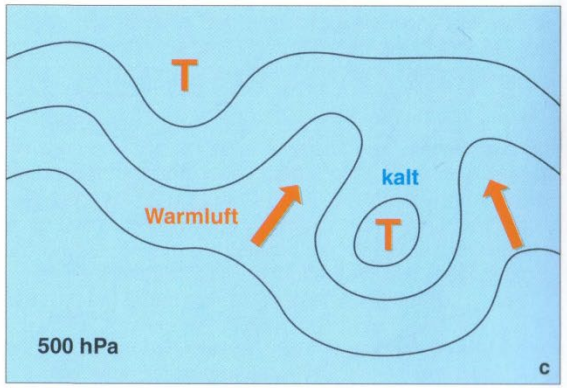


Abb. 17.14a–c Bildung eines Kaltlufttropfens aus einem flachen Höhentrog (a), Abschnürung (b) und Cut–off (c)

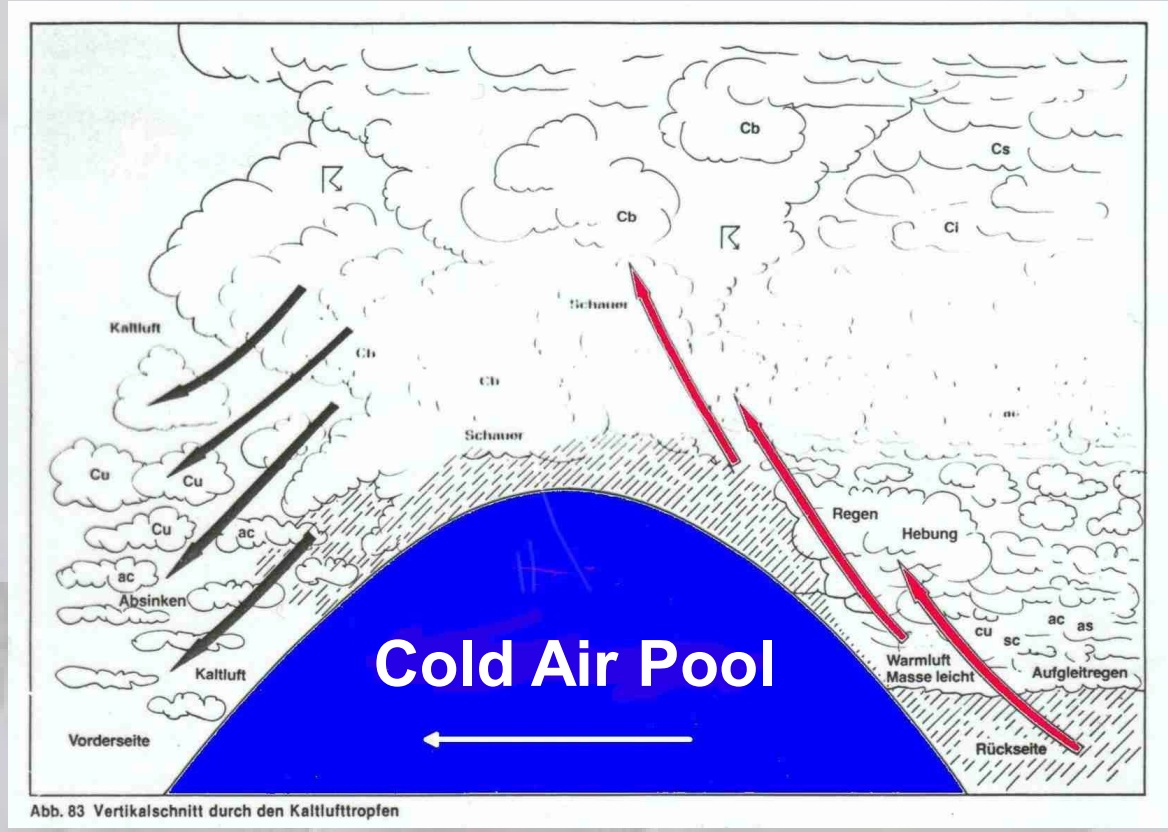


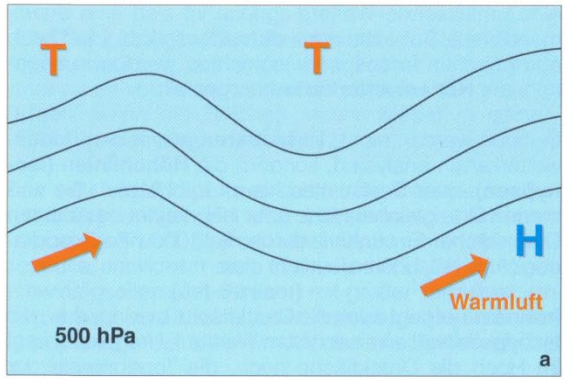
Abb. 83 Vertikalschnitt durch den Kaltlufttropfen

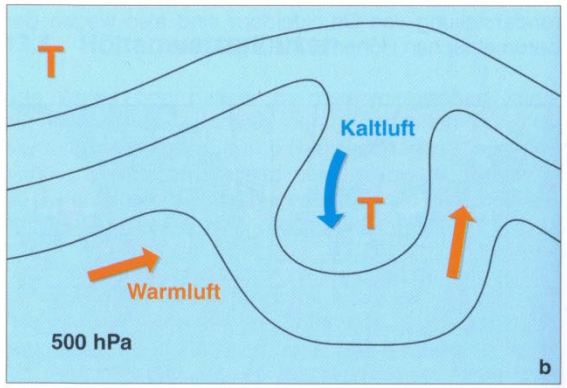
Development at 500 hPa level

In front of	Subsidence –	sunny periods
Centre	convection	- shower, thunderstorm
behind	uplift	- rain, showers

movement with 80% of surface wind, but …

COLD AIR POOL TRACK 19 OCT 2015





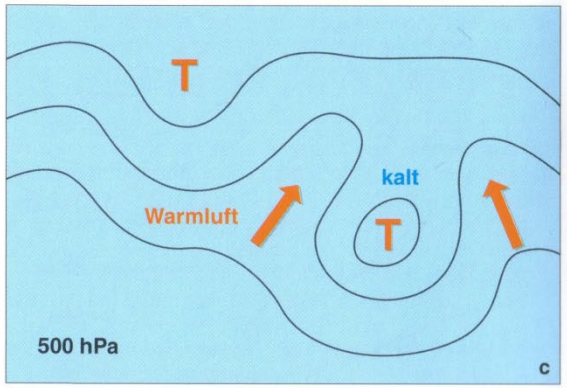
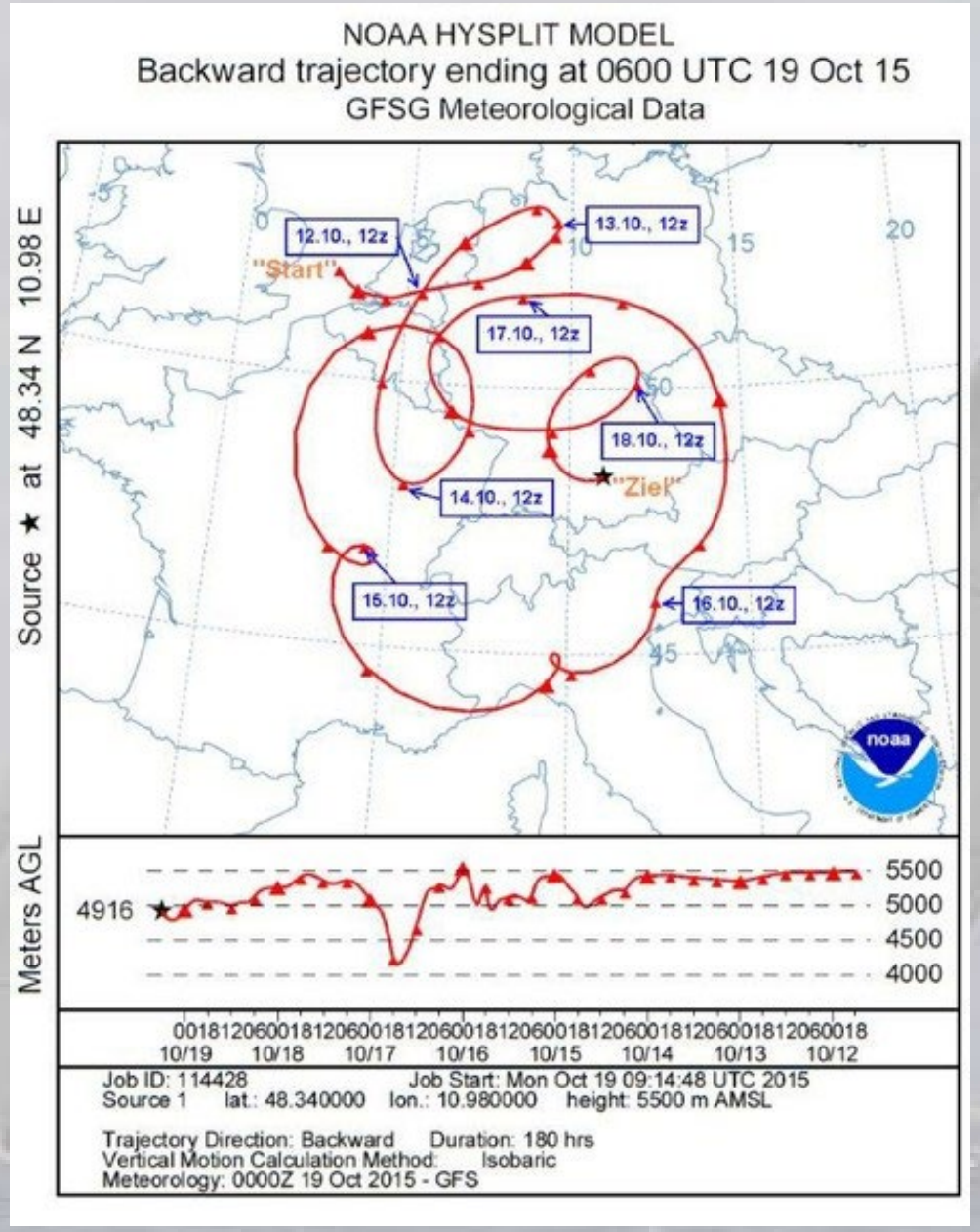
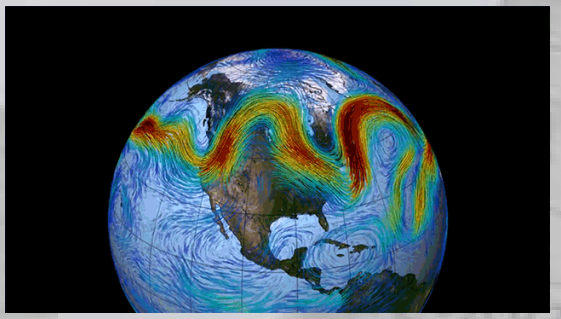


Abb. 17.14a–c Bildung eines Kaltlufttropfens aus einem flachen Höhentrog (a), Abschnürung (b) und Cut–off (c)



DYNAMIC / THERMAL LOWS

Dynamic low develop …



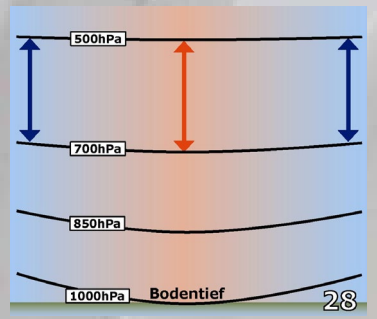
… due to the global circulation

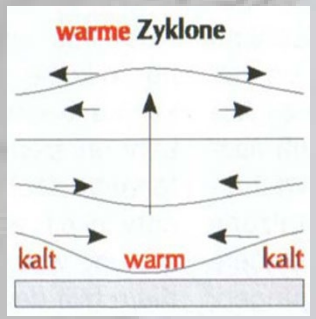
- in the area of the polar frontal zone
- associated with trough-/ridge development (jetstream)
- Surface convergence and upper air divergence

Thermal low develop …

… near surface :

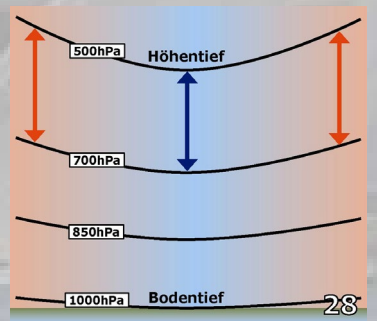
- due to extreme heating
- ‘heat low‘ Spain





… upper air:

- ‘Cut-Off-Process‘
- Cold air pool

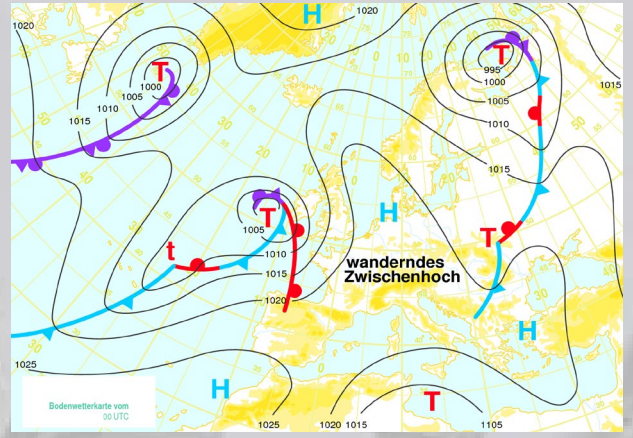


Dynamic Highs

Dynamic Highs develop …

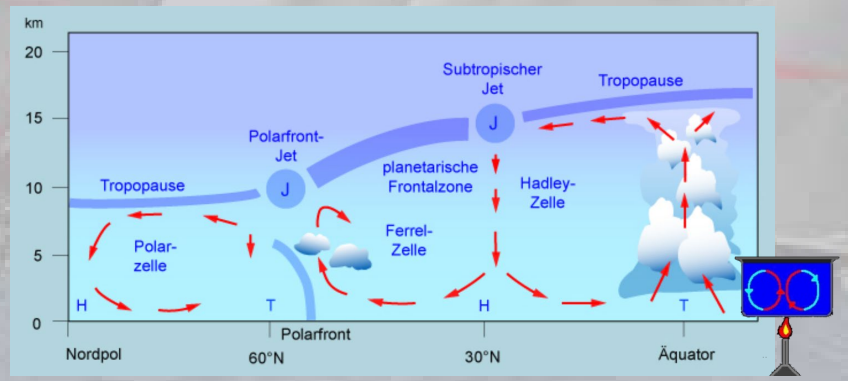
… triggered by patterns of the global circulation

- Subsidence downstream of a ridge
- Movement in mid latitudes



… without active driving

Ferrel cell (subtropical anticyclone) is a ‘thermal indirect circulation ‘




RA-57