# *PV Budget*

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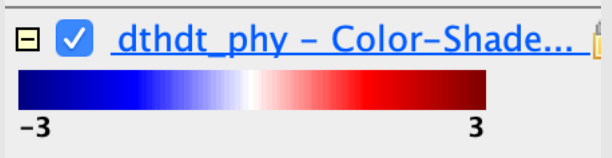
Questions done on paper

# *Global View: Part 1*

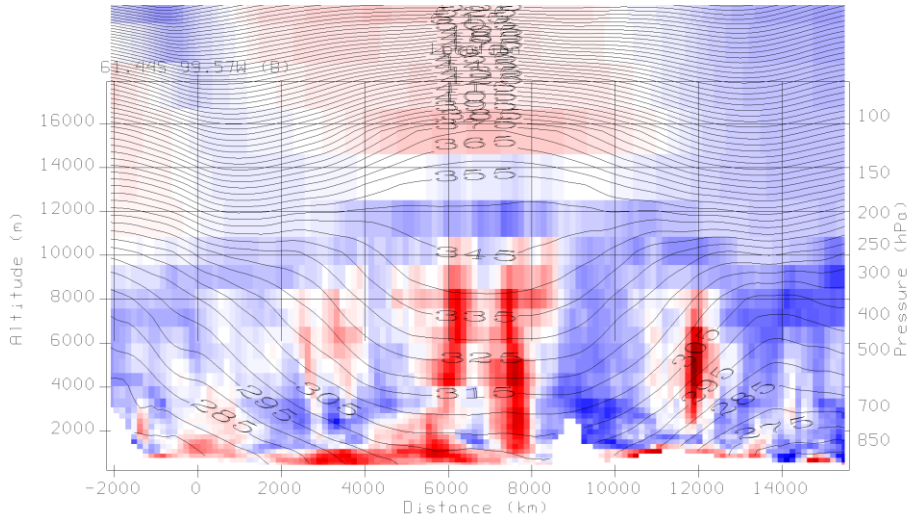
**What time of year is it? How can you see that?**

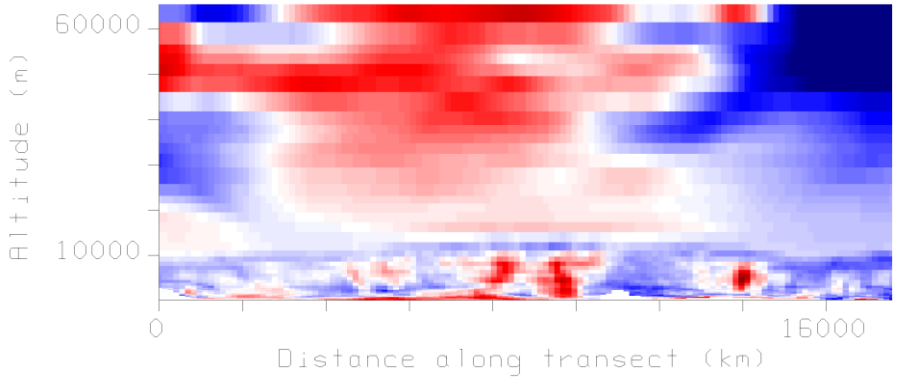
- You can see it by:
- Edit → Properties → Times
- **Date:** 1998/11/10



## Where is the south pole, the north pole?

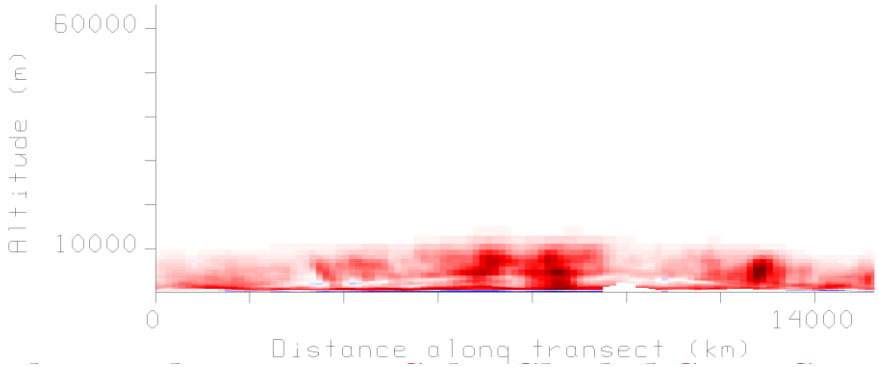
- The color range goes from:
- -5e(-5) to 5e(-5) K/day (blue → red)
- When air hits a mountain, it is forced to move upwards, so it rises but cools (less atmospheric pressure, it expands). After the mountain in sinks, compresses and becomes warmer.
- The north is on the 1400 km, and the south is on the 0 km.

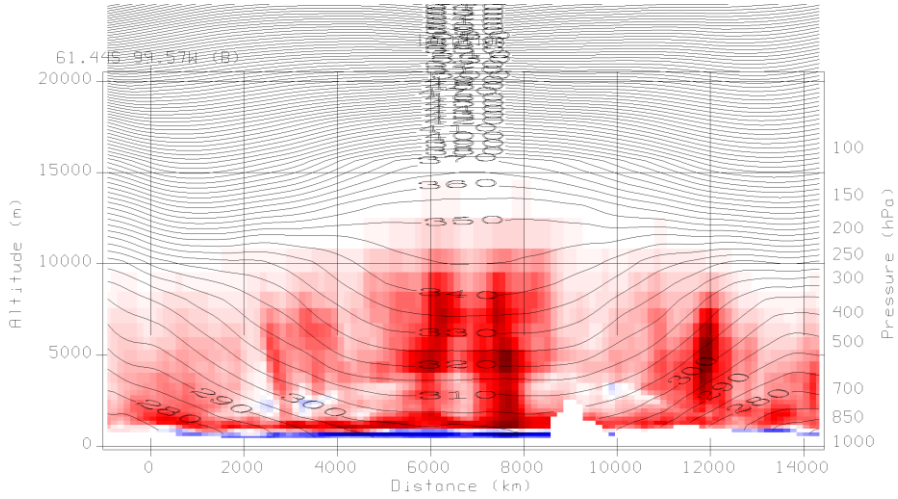


# *Moist Heating*

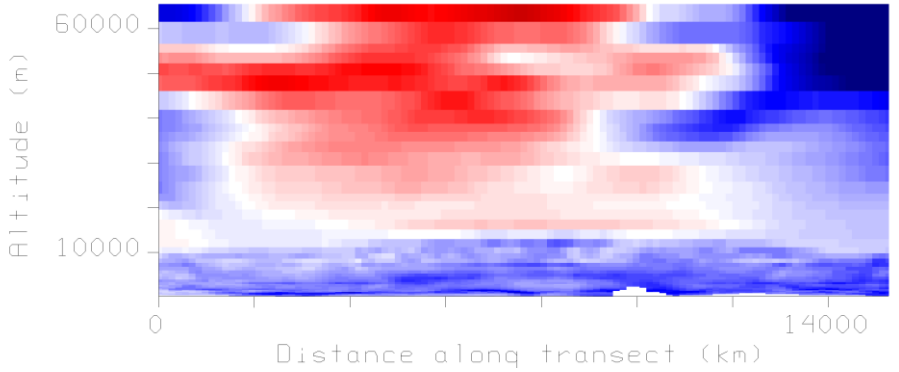
- The middle strong moist parcels are clearly present on the total adiabatic heating
- The south moist heating as well

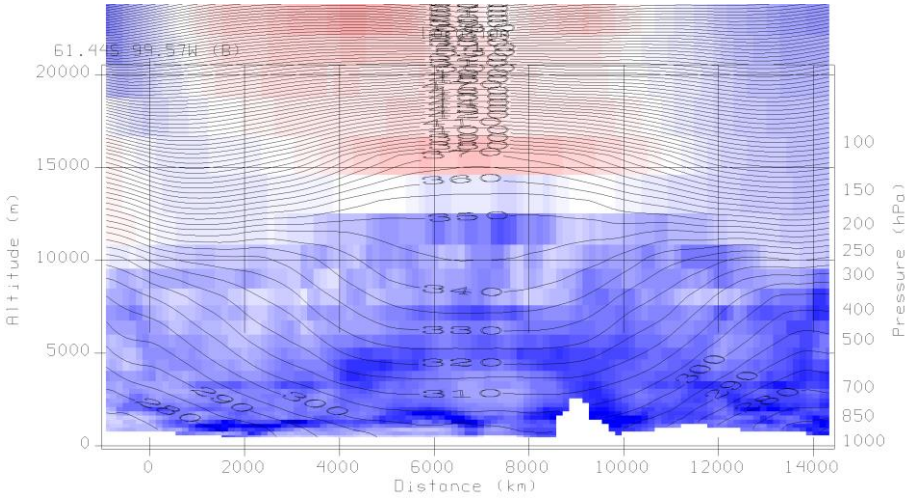


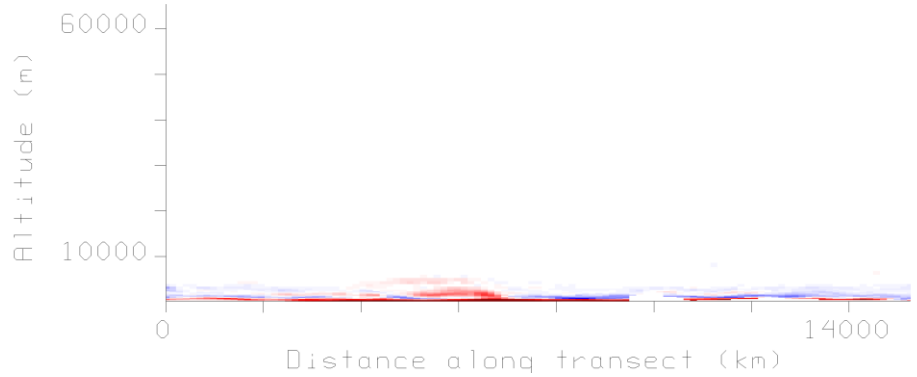



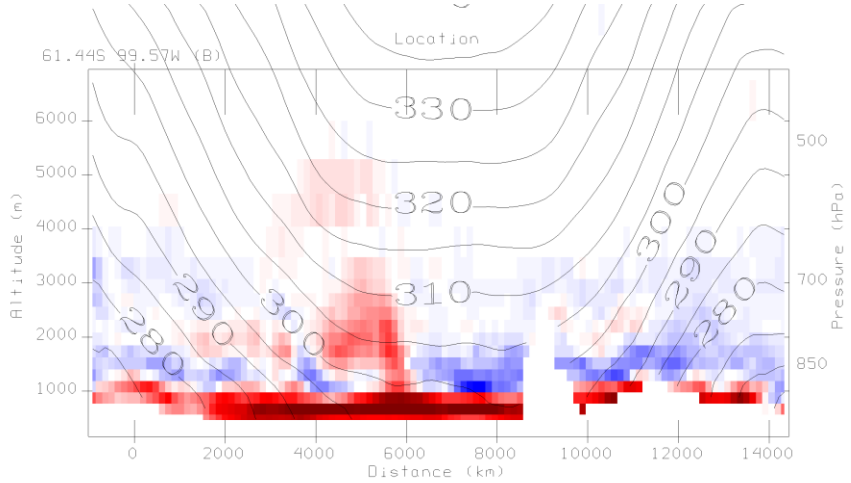
# *Radiative Heating*

- The Radiative heating does not have any much influence in the Surface, it's a lot cooler
- However, in the atmosphere it has a great value, in fact it represents most of the adiatic heating section.



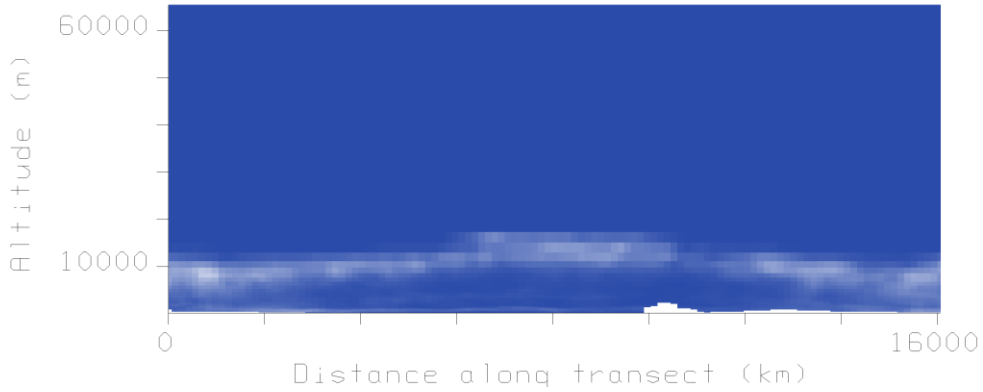



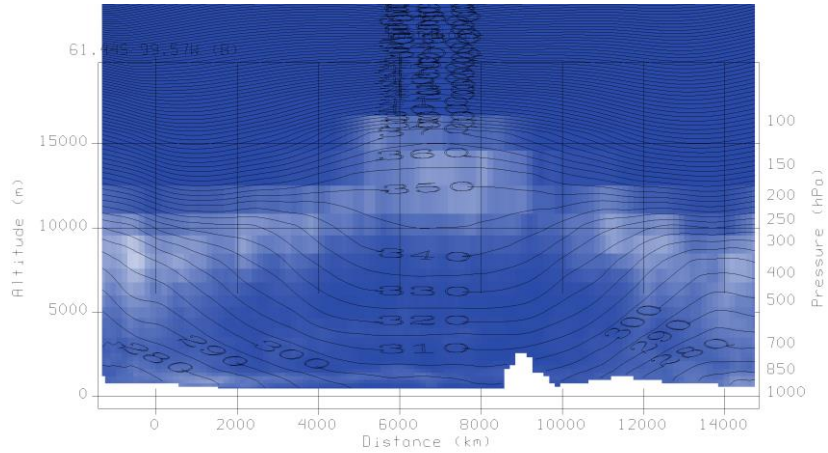



# *Turbulence Heating*

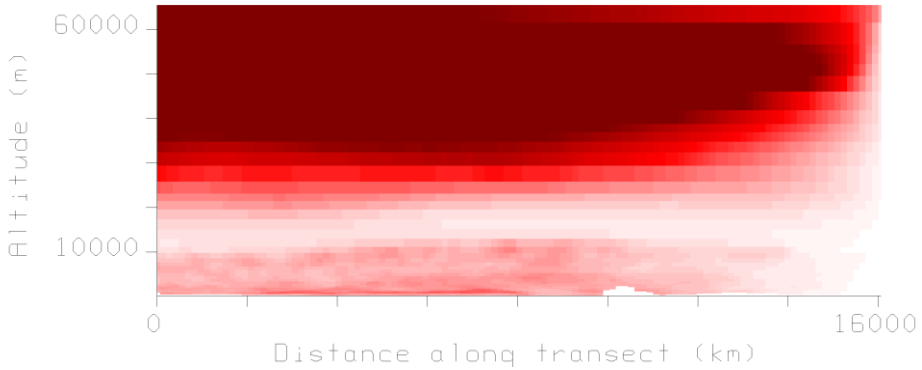
The turbulence heating has a greater influence in the Surface tan in the atmosphere

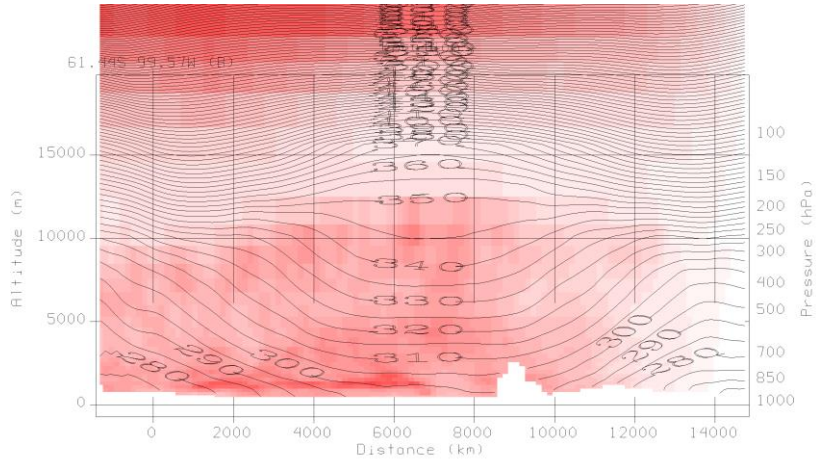



# *Cloud Fraction*

Everything seems to have a negative feedback except for the White line on the bottom. Considering the atmosphere layers this represents the Stratosphere, more specific, the ozone layer



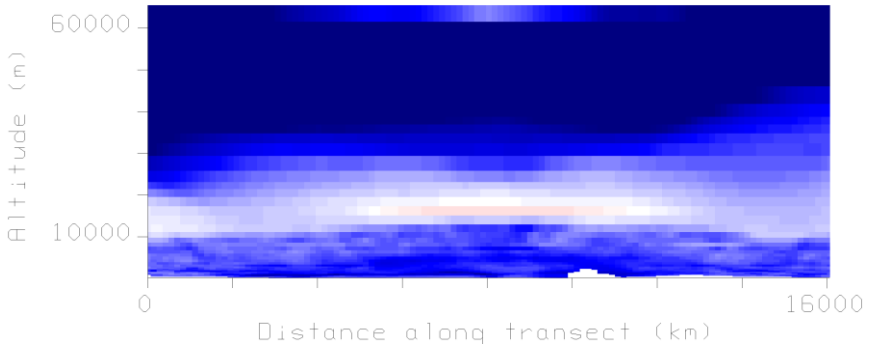



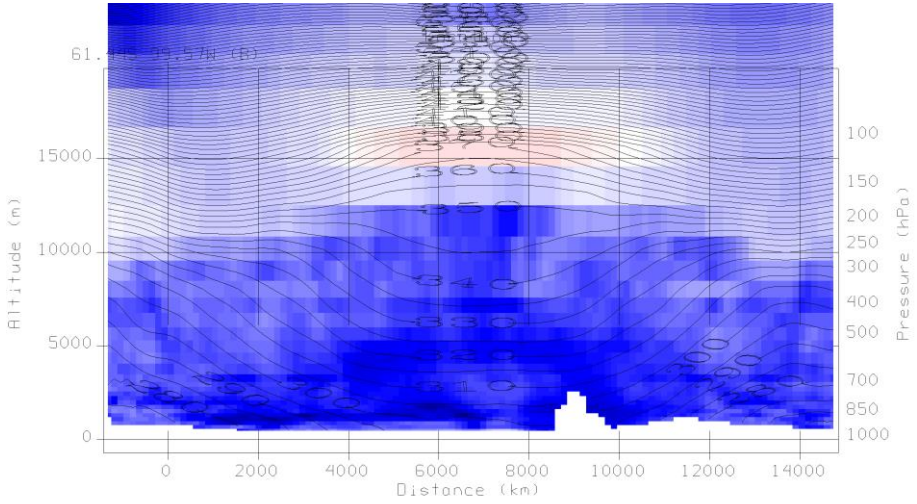

# *Solar Heating*

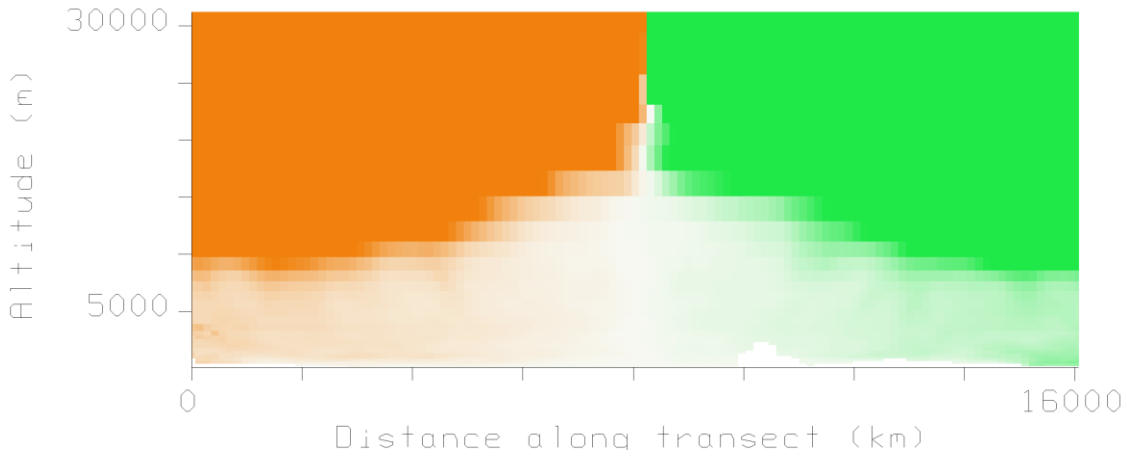
- A clear positive feedback
- The deeper in the atmosphere the more heating (makes sense)
- The while line stands out once again.

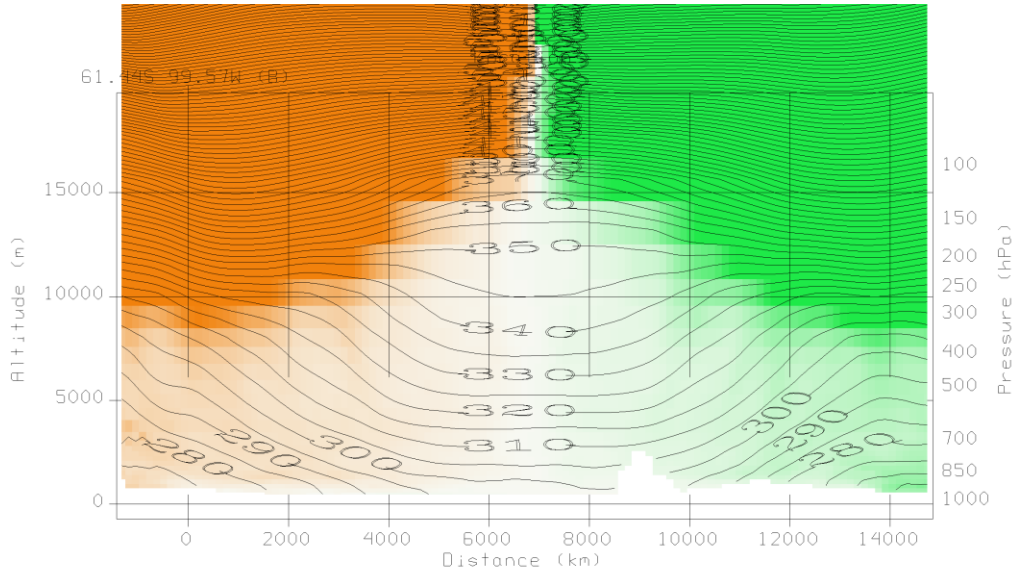
# *Longwave Radiation*

- There is a positive feedback circle around 15 km in altitude.
- In the total diavatic heating the circle can be seen ☺



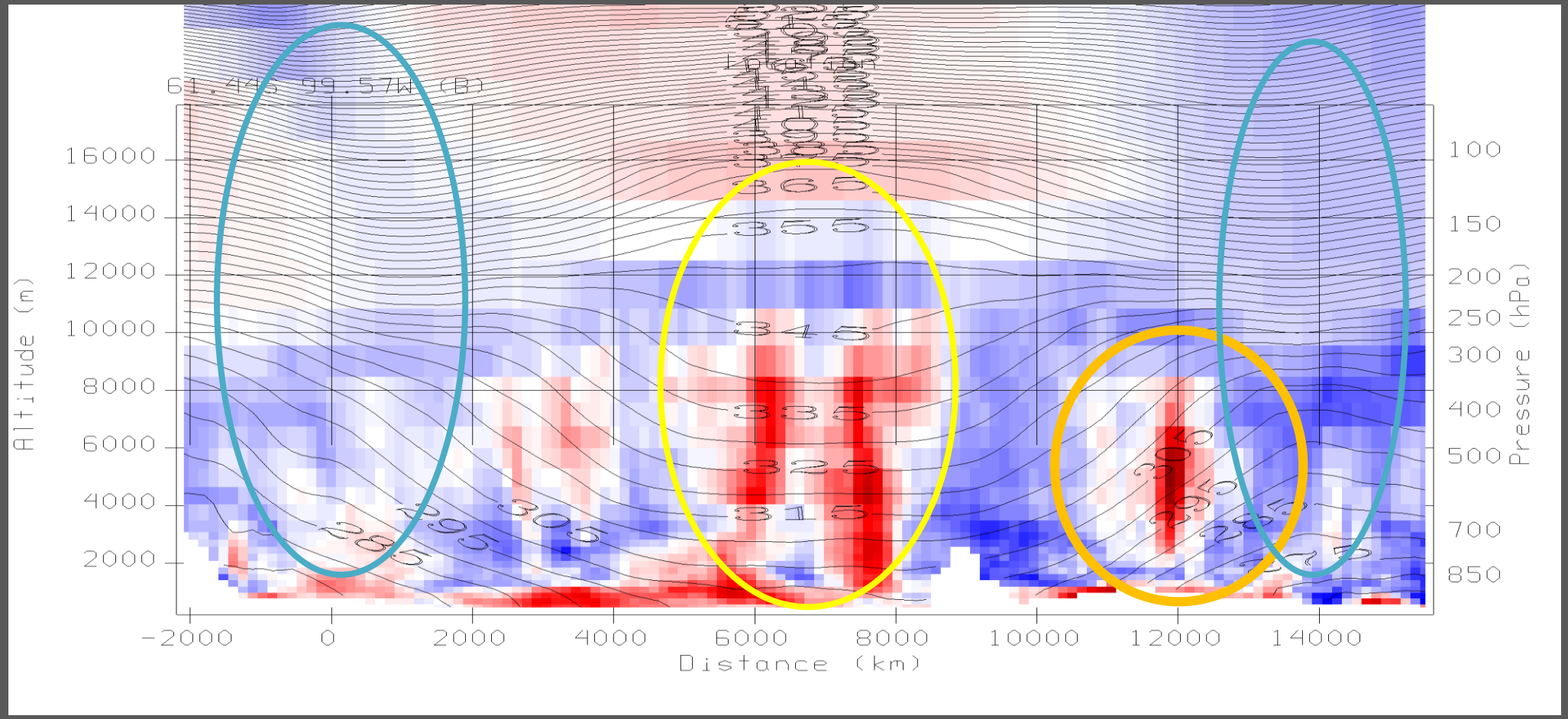






# *Potential Vorticity*

# PV Tendency

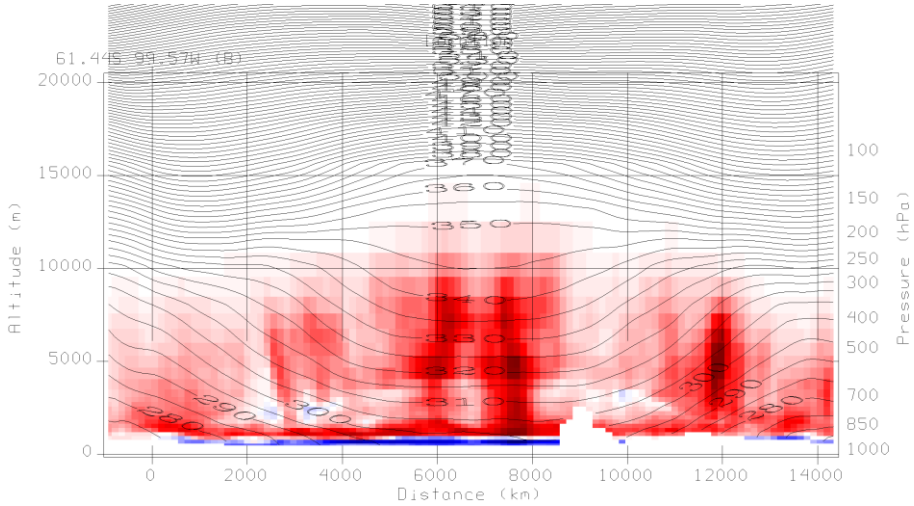


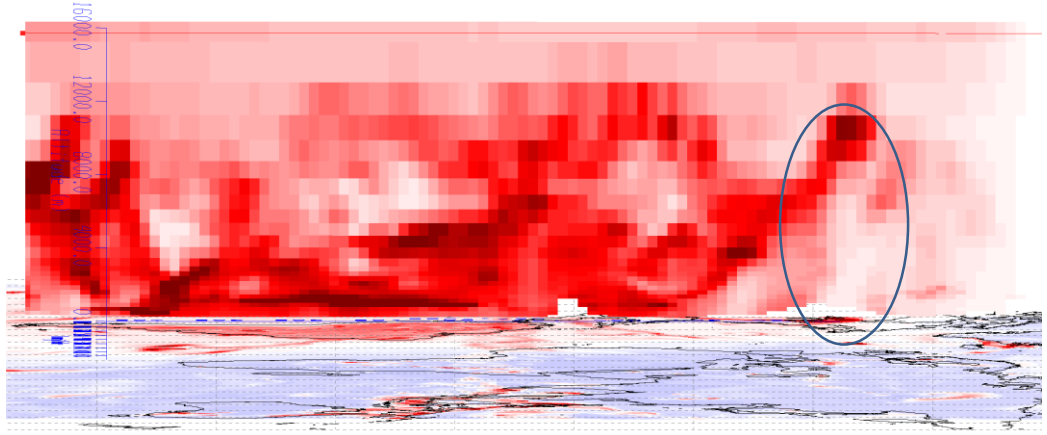

- Light blue: negative PV (anticyclone)
- Yellow: positive PV (cyclone)
- Orange, it seems to be a strong positive PV, but only for a small distance
- It seems to be more into the vorticity term. It changes where clear cyclones or anticyclones are represented

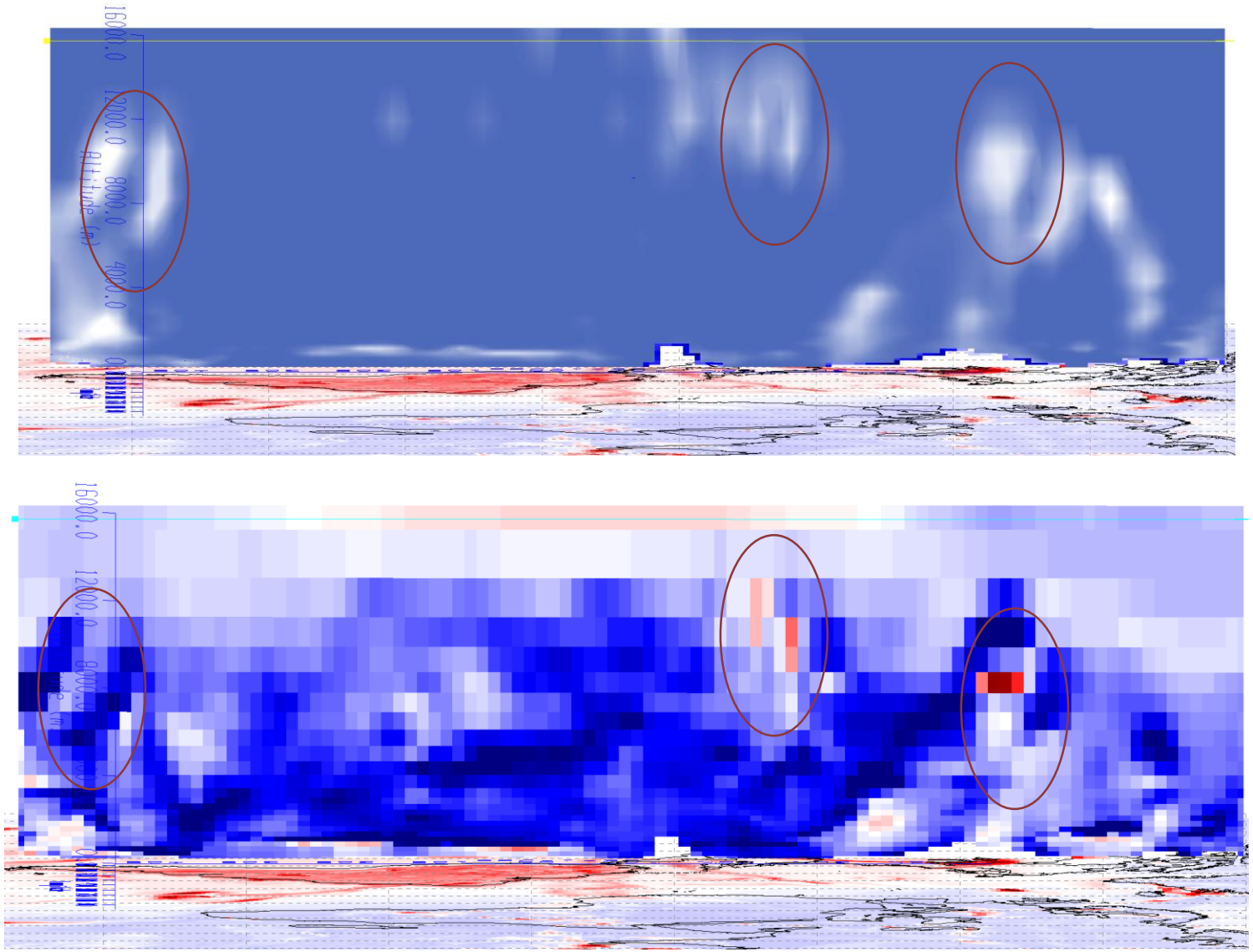
**1. Does the moist heating (condensation related processes) correspond to the high cloudiness you infer from the OLR display?**

**2. Does its vertical gradient imply large PV sources in any places relevant to storm-scale PV budgets?**

- Yes it does
- It actually seems to be almost the same behaviour between one and the other
- Circle: large PV?





1. LW radiation can be understood as water vapor cooling, cloud top cooling, and cloud base warming. Use cloudiness and longwave cross-section images in tandem to show an example of a place where cloud effects are dominant.

2. What do these strong vertical heating gradients imply as a PV source?