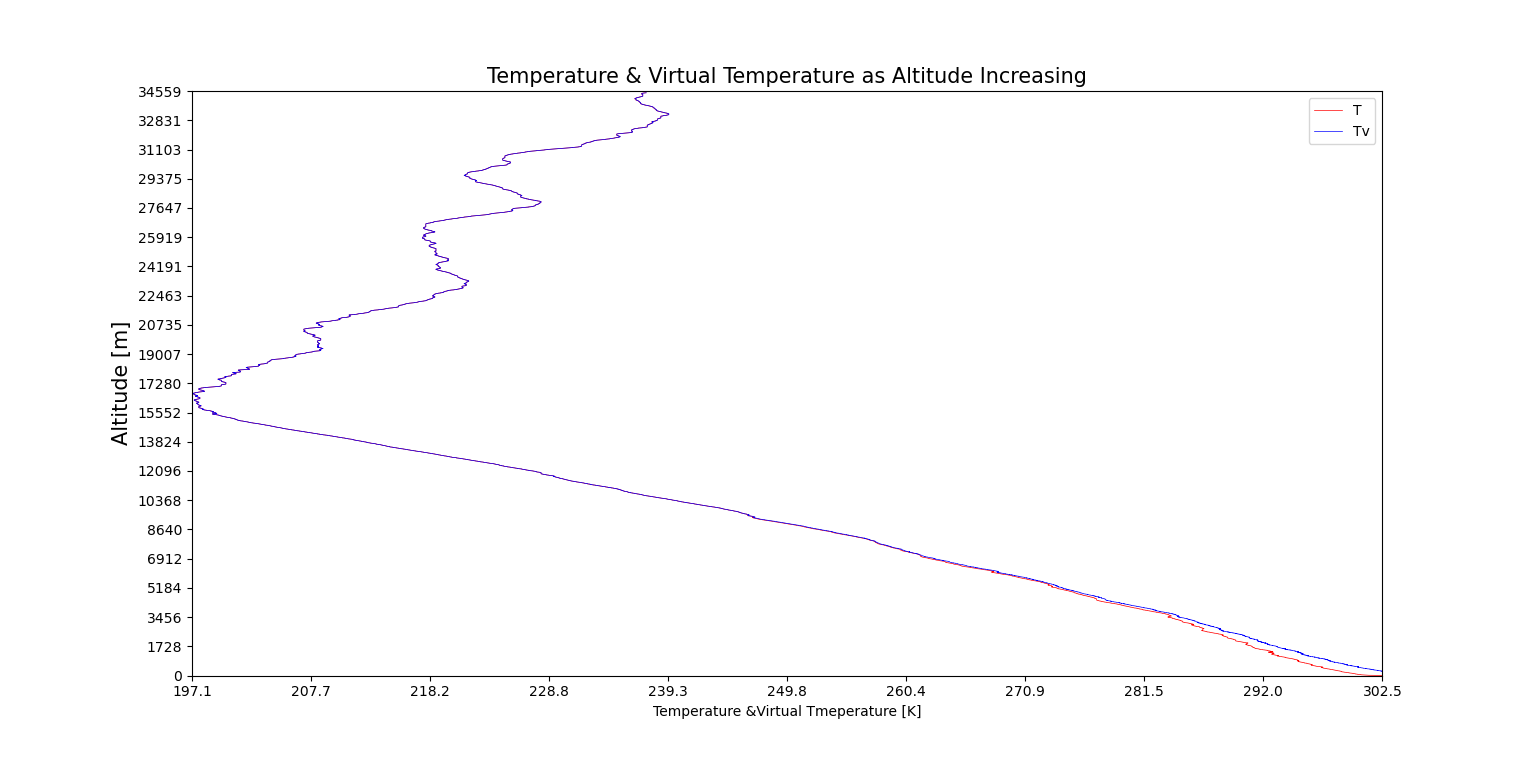
CA#2

B11209013 Department of Atmospheric Sciences 甘祐銓

1. Following Class Activity 1, use the soundings to calculate the vertical profiles of the specific humidity and virtual temperature. Plot the vertical profiles of virtual temperature, specific humidity, and temperature. Discuss their vertical structures. (Plot them in height coordinate up to lower stratosphere)



The profile of the temperature and virtual temperature change as altitude increasing. By using programming, we can know, in this data, virtual temperature is always greater than real temperature.

By examining the equation of virtual temperature:

We can know if there is water vapor in surrounding, then virtual temperature must be greater than real temperature.

Form the plot above, we can know that virtual temperature has the same distributional feature as temperature. Thus, we can compare the two data and know that tropopause is roughly occurring at 15512 m from the surface.

Otherwise, the difference between this two figures has become smaller as altitude increasing. Exact difference will be analyzed at the next topic.

1. Following 1., calculate the vertical profiles of the difference between the virtual temperature and temperature. Start from the surface and find the level when the difference is smaller than 0.1K.

一張含有 文字 的圖片

自動產生的描述

In this graph, the green vertical line represents the difference is smaller than 0.1K.