Answer to referee #1

The authors warmly thank the referee for his positive comments. We sincerely think that the reviewer remarks contributed to significantly improve the content of the article and we are grateful for this.

And thank you for all the language suggestions that we all followed.

Line 455-456: we do not know any reference about the spatial distribution of turbulence in the tropical UTLS.

Also, thank you very much for pointing out the typos.

Answer to referee #3

The authors warmly thank the referee for his positive comments. We sincerely think that the reviewer remarks and comments contributed to significantly improve the content of the article and we are grateful for this.

About the title of the paper: it is exact that we “do not detect turbulence but layers which are conditioned to be turbulent”. The paper describes methods for detecting turbulence occurences based on estimates of the local stratification. We therefore propose the following title:
“Detection of Turbulence Occurrences from Temperature, Pressure and Position Measurements Under Superpressure Balloons”

Following the suggestion of the referee, **we have shortened the abstract** in removing few technical information.

Since we point out that only one study based on aircraft measurements provides information on turbulence in the tropical UTLS, we do not think it useful to add that few aircraft reach the altitude of interest and that of those few, not all are equipped with high quality turbulence sensors.

About the fact that the oscillation frequency is larger than the BV frequency, the answer is in Eq (2).
Expressing ω_{NBO}^2 as a function of N^2 :
$\omega_{NBO}^2 = 2/3 N^2 + 10/21\, g/H$ ($H = RaT/g \sim 6500$ m)
$\omega_{NBO}^2 > N^2 \Rightarrow N^2 < 30/21\, g/H \sim 22.5\text{e-}4\ s^{-2}$. Such a condition is met in almost all situations encountered.