Response to Referee #1

We appreciate the reviewer's constructive comments, which have proved helpful in guiding our thinking. We address each of the referee's comments below and note the associated changes to the manuscript. All of the differences between the original and new versions of the manuscript are indicated by change bars in the margin.

The results of large-scale DNS of decaying stratified turbulent flows at three different Reynolds numbers are presented. The turbulence is initially isotropic and the stratification is instantaneously imposed. The integral length scale is small compared to the computational domain size which means that the Reynolds numbers are not very high and no clear stratified turbulence subrange with a k-5/3 is observed. The flows goes through a stage with strong stratification effects and relatively weak viscous effects but finally comes into a stage where viscous effects determine the dynamics.

The study is thorough but does not try to address new questions. Tellingly, the introduction does not mention an aim of the investigation. The paper gives a comprehensive picture of the flow when it goes through the different stages and that can be a reason for publication in JFM. However, there are no other strong arguments for publication and the study does not appear to produce new insights. It is also not clear why it is interesting to investigate isotropic turbulence suddenly subjected to strong stratification. This is not a case that is encountered in practice and it is not possible to reproduce by experiments. A clear motivation why this case is relevant and interesting should at least be given.

If the paper is considered for publication the following comments also need to be addressed.

- In general it is absolutely not clear in the figures (e.g. figure 3) which line/symbol corresponds to which case (with or without stratification) or which velocity component etc. The captions of the figures should give much more and complete information.

- It is not necessary to have both figure 1 and 2 since they both show the formation of layers due to stratification. I suggest to remove figure 1.

- Define the length scales L_{ux} etc.

- In figure 4, the straight solid lines, which is the prediction for the vertical and which for the horizontal length scale?

- There is no comment about Fr_v in figure 6.

- Waves/oscillations are exited when the stable stratification is suddenly imposed on isotropic turbulence. These play much less a role in other simulations and experiments. Their effects on the dynamics and statistics should therefore be discussed in some detail.