**Editorial comments:**

Each chapter is based on published or submitted paper. So, you define acronyms and models (CCSM4) in each section. So, if you want each chapter to be an independent and separate unit from the rest of the thesis, I think that it is ok to redefine acronyms, model and model runs. But, if you want to reduce the length of the thesis, you can remove the repeating parts.

**Science/Technical comments:**

Q1) “much of the Niño-3.4 error growth can be attributed to a “summer pulse” of terms associated with the Bjerknes feedback”

If spring is the perfect season where persistent stochastic taux could cause coupled instability, why the model experiments do not show a strong “spring pulse” in the Niño-3.4 error growth?

Q2) The heat budget analysis was performed based on March–initial conditions. If you repeat the heat budget analysis with January-initial conditions, do you expect a “spring pulse” of positive feedback terms? If not, why?

Q3) Do you think that 105m of a constant depth surface mixed layer is realistic for the equatorial Pacific? If not, how would you change your heat budget equation to address this issue?

Q4) “ENSO-independent” error growth?

Do you mean “precursor-independent” error growth?

Q5) If you perform the same ensemble experiments, but with a specific precursor, do you think that the error growth patterns are consistent with your findings with the ENSO-neural initial condition experiments? Is this something you plan to study in the future? If so, could you explain briefly how you are going to achieve this?

Q6) This is my suggestion for your future work. In CCSM4 control simulation and also in reality, the majority of the La Niña events evolve from preconditions and a large portion of El Niño events also evolve from preconditions. I have a suggestion for you to design a set of useful experiments to explore the effects of amplitudes and spatial patterns of these preconditions. First you obtain the dominant modes of ENSO phase evolution (not just the spatial pattern, but the spatiotemporal evolution) in spring and design the experiments for these dominant modes (Lee et al., 2014a). Or you can make four composites, namely, neutral-to-El Niño; La Niña-to-El Niño; La Niña-to-La Niña; El Niño-to-La Niña.

Q7) Quantifications of the prediction limits:

Is it possible to provide a quantitative estimate of the precursor-independent intrinsic error growth? For instance, 2 standard deviation (95%) of the Niño-3.4 in December could give us an idea of about to what extent the precursor-independent intrinsic noise-driven error alone could affect ENSO forecasts in CCSM4 as a function of initial condition month (January, March, May, July and September). These values can be provided as the predication limits. Perhaps, you already have those? Could you show them?