

# ***Interactive comment on “Coherence among the Northern Hemisphere land, cryosphere, and ocean responses to natural variability and anthropogenic forcing during the satellite era” by A. Gonsamo et al.***

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We thank the anonymous referee #1 for very positive overall comments on our manuscript. We reply below after each numbered comments.

1. The paper uses different environmental datasets to link the coherent changes and trends in CO<sub>2</sub>, snow cover, spring phenology and thaw, solar radiation, Scandinavian Pattern, and North Atlantic Oscillation, solar radiation. Authors tries to give us a relatively full picture on the relation between these different variable but their internal coherence in the change among land, cryosphere, and ocean to natural and human

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induced climate variability and change. The study fits the central theme of the journal ESD. Because this study tries to give a big picture and thus it is understandable that many more details are missed and some statements have no data to support and needs other further studies are needed. I suggest the paper accepted for publication with minor revision.

Thank you very much for the positive comments.

2. From line 5 to line 10, the below relevant key papers should be cited. A. Angert et al. (2005). Drier summers cancel out the CO<sub>2</sub> uptake enhancement induced by warmer springs. *Proceedings of the National Academy of Sciences*, 102: 10823-10827. A. L. Westerling, H. G. Hidalgo, D. R. Cayan, T. W. Swetnam (2006). Warming and earlier spring increase western U.S. forest wildfire activity. *Science*, 313: 940-943. P. J. van Mantgem, N. L. Stephenson, J. C. Byrne, L. D. Daniels, J. F. Franklin, P. Z. Ful, M. E. Harmon, A. J. Larson, J. M. Smith, A. H. Taylor, T. T. Veblen (2009). Widespread increase of tree mortality rates in the western United States. *Science*, 323: 521-542. W. A. Kurz, et al. (2008). Mountain pine beetle and forest carbon feedback to climate change. *Nature*, 452: 987-990.

We will include the suggested references in the new version of the manuscript

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