

## ***Interactive comment on “Earth’s energy imbalance and implications” by J. Hansen et al.***

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- p. 27032, line 3: change of "sun" to "Sun" has been made.
- p. 27032-p. 27033: These sentences were inadvertently included in the Abstract because of our failure to name and number the Introduction. We have corrected that and now have a succinct Abstract and Introduction.
- p. 27034: We added reference to land cover change.
- p. 27035: We removed references to grandchildren.
- p. 27036: We clarified that the slow surface albedo feedback refers to continental ice sheets, not sea ice or seasonal snow cover.
- p. 27040: We switched the red and green colors, as suggested.

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- p. 27040, line 17: El Nino and La Nina changed to El Niño and La Niña throughout the paper.
- p. 27042, lines 14-15: Handler’s irrational exuberance about volcanoes causing El Ninos has indeed been discredited, but there are researchers who believe, given a situation in which the West Pacific is sufficiently "reloaded", volcanic aerosols could affect the likelihood of El Nino initiation. So we have simplified the statement to a very general one that is sufficient for our purpose and does not require referring to Handler’s paper. "Although it is conceivable that volcanic aerosols affect the probability of El Niño initiation, the possibility of such intricate dynamical effects should not affect deep ocean heat sequestration on longer time scales.
- p. 27046: Space inserted as suggested.
- p. 27050: The link is not broken in the version of the manuscript that we submit. It gets broken in the process of translation to the print version. We will check to be sure it does not happen in the proofs of the typeset version.
- p. 27060: Changed to double quotation marks, as suggested.
- p. 27061, line 10: Again, changed to double quotation marks, as suggested.
- p. 27061, line 16: Our paper compares observations (thus the past) and models, thus only deals with the past. It is of interest to see how the real world changes compare with the past projections. In a future paper when we replot Figure 16 in conjunction with our simulations for the future we can use the new RCP scenarios, but for this paper the old SRES scenarios are more relevant. So we did not make a new figure here.
- p. 27061, line 24: We have noted the current estimate of solar irradiance by Kopp and Lean (2011), which is  $1360.8 \pm 0.5$  W/m<sup>2</sup>.
- p. 27063: Spelling of Soufriere has been corrected.
- p. 27065, line 12: The incorrect statement (that the y-axis had been magnified by a

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factor of 10 for the solar forcing) has been removed (it was a remnant from an early draft of the paper – we decided later that it was better to use the same scale for all forcings).

p. 27083 and 27088: We links are not broken in our Word version of the paper. We will check to be sure they are not broken in the submitted/published version.

p. 27095: Grammatical error has been corrected.

p. 27105: We have added an indication of what the forcing is within each of the a-g portions of Fig. 18 and also clarified the caption, as suggested by the referee.

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