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# ***Interactive comment on “Ice melt, sea level rise and superstorms: evidence from paleoclimate data, climate modeling, and modern observations that 2 °C global warming is highly dangerous” by J. Hansen et al.***

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This is nice and succinct.

The principal cause of the hemispheric asymmetry is the greater water mass of the southern hemisphere. The southern hemisphere is 81 per cent water-covered. The northern hemisphere surface is only 61 per cent water. This causes seasonal variations to be more moderate in the southern hemisphere than at the corresponding northern latitudes. The elliptical shape of the earth's orbit partly offsets the southern moderating

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effect of the earth's land-sea distribution. That's because the earth is currently closest to the sun in January during the southern summer and northern winter. The earth is most distant from the sun in July during the southern winter and northern summer. This clearly favors northern seasonal moderation and southern seasonal extremes. Near perihelion (January) the earth as a whole receives about 6 percent more energy from the sun per day than near aphelion (July). 13000 years from now, because of the precession of the equinoxes, things will be reversed. Perihelion will occur in July during the northern summer, favoring greater contrast in the northern seasons. At that time the north-south asymmetry should be even greater than it is at present.

<http://www.physics.byu.edu/faculty/christensen/physics>

Interactive comment on Atmos. Chem. Phys. Discuss., 15, 20059, 2015.

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