

**WAS THE ATMOSPHERE LOST DURING THE MOON-FORMING IMPACT?** S. J. Lock, S. T. Stewart and S. Mukhopadhyay, Department of Earth and Planetary Sciences, Harvard University, Cambridge, MA 02138 (slock@fas.harvard.edu)

The volatile inventory of the Earth is significantly fractionated compared to any of the chondrite classes, in particular the N/H and C/H ratios are lower than the chondritic values. A mechanism is therefore required to remove N and C while retaining H. Here we examine the effect of the moon-forming giant impact on the Earth's volatile budget by calculating the magnitude of atmospheric loss in different moon-forming models. We find that the specific impact energy in the canonical-moon forming model is too low to give more than minimal atmospheric loss. However the newly proposed high angular momentum moon forming models have much greater specific impact energies and so can provide much greater atmospheric loss fractions in cases with a pre-impact ocean. The water is largely retained in most impacts and so these models may be able to explain the N/H and C/H fractionations in the Earth.