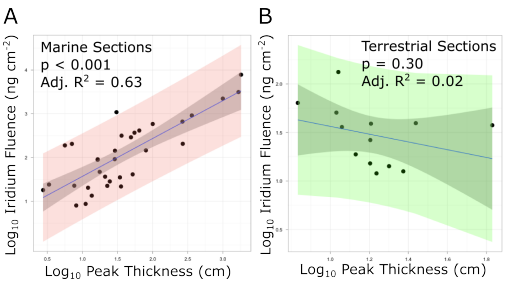
Post-depositional sedimentary transport biases marine K-Pg impact iridium fluences

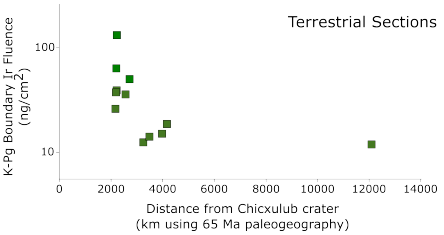
J. R. MOORE[1,2] AND M. SHARMA[1]*

[1]Dartmouth College, Dept. of Earth Sci., Hanover, NH 03755, USA (*correspondence = mukul.sharma@dartmouth.edu)
[2]Current address: Honors College, University of New Mexico, Albuquerque, NM 87131, USA (jrm@unm.edu)

Point iridium fluences in combination with models of impact debris distribution are commonly used to assess the quantity of extraterrestrial material accreted to the Earth from a major bolide impact [1], e.g. the K-Pg. A significant portion of marine K-Pg iridium fluence data overestimate primary iridium fluences due to post-impact addition of allochthonous iridium (Fig. 1A). Such a relationship is not present in non-marine iridium point fluences (Fig. 1B), where any broadening of the peak, for example by bioturbation, is produced by reworking of autochthonous iridium.



Some of the marine iridium fluence data are likely unbiased, but it is not at present possible to parse those reliably from the biased localities. Therefore, until such time as better criteria for distinguishing allochthonous iridium have been developed, marine iridium fluence data should be excluded from impact studies. Excluding marine data also removes the apparent lack of correlation between iridium fluence and distance from the Chicxulub crater [2] (Fig. 2).



[1] Donaldson & Hildebrand (2001) *Met. Plan. Sci.,* **36.** A50
[2] Smit (1999) *Ann. Rev. Ear. Plan. Sci.,* **27**, 75-113