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Reply to the commentary by Eric Buffetaut on the note by Vincent Courtillot and Paul R. Renne, *On the ages of flood basalt events* [C. R. Geoscience 335 (2003) 113–140] ☆

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We thank Eric Buffetaut for his interest in our paper and for his detailed comment on patterns of theropod and sauropod dinosaurs. We acknowledge that we made a somewhat hasty inference from his earlier work and that this may not apply. This can be understood (and hopefully excused) coming from a geophysicist and a geochemist having used data contributed by a specialist in Palaeontology... We also concur with Dr Buffetaut that better knowledge of mass extinction patterns is now required to further our understanding of mass extinctions and other major biotic crises. Indeed, we think that the most important clues may now come from very detailed and rigorous palaeontological work. However, this comment in no way alters our main conclusions about the one-time coincidence of an impact and extinction at the K/T boundary, and the several cases of a correspondence of flood-basalt volcanism and extinction. For instance, the T/J and K/T boundaries both

coincided with a major flood basalt, only the latter with an impact. Thus we urge caution regarding statements such as: “If a meteorite impact was involved at the T/J boundary, its effects on terrestrial vertebrates were quite different from those of the Chicxulub impact at the K/T boundary...”, which seems to presuppose impact as the extinction mechanism, whereas we argue that it is currently impossible to estimate quantitatively the significance of the Chicxulub impact as a factor in the K/T extinctions. Combinations of these coincidences (or lack thereof), plus details on where and how the events happened (for the flood basalts: pre-existing climate and atmospheric composition, number, size, chemistry and timing of flows and impact of aerosols and gases in the atmosphere, latitude and position of volcanism within continents...) are the observations which should help to constrain any model of differences in the stresses that affected the biota.

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