We thank Jan Smit and colleagues (Smit et al., 2016) for giving us the opportunity to clarify some important points in our original manuscript (Font et al., 2016a) and to discuss the issues raised in their Comment. Their main critique centers on the origin of the mercury anomalies, which they argue are post-depositional and cannot be assigned to Deccan Traps activity. Their arguments center on the hypothesis of Lowrie et al. (1990) who invoked a process of downward infiltration by reducing waters to explain the origin of the white beds below the Cretaceous–Paleogene (KPg) boundary at Gubbio, Italy. Apparently Smit et al. are not aware of the work by Abrajевич et al. (2015) or that this issue was addressed in our Geology paper. Here we provide more detailed explanations of why the comments by Smit et al. are out of date.

(1) Smit et al. argue: “Deccan Traps Phase 2 should begin >370 k.y.…below the KPg boundary…As a consequence, the Hg concentrations should not be restricted to the top 50–60 cm”. In addition, they argue that “Phase 2 of the Deccan traps begins somewhere in the top of MagnetoChron 30N”. However, Smit et al. are not aware that high-precision U-Pb dating of Deccan phase 2 accurately places the onset ~250 k.y. before the KPg boundary (Schöne et al., 2015) and correlative with the base of magnetochron C29r (Chenet et al., 2007). The mass extinction was documented within the inter-trappean sediments (Keller et al., 2016) and anoxia anomalies are also observed above the KPg boundary (in biozones P0 and P1a), which contradicts Smit et al.’s argument. In addition, their anoxia interpretation is not compatible with the low total organic carbon (TOC) values observed across the KPg boundary at Bidart, nor with the suboxic to oxic conditions indicated by widespread colonization of Thalassinoides during the KPg boundary event at Agost and Caracava (Spain) (Rodriguez-Tovar, 2005). We conclude that Smit et al.’s arguments for post-depositional alteration to explain the newly found Hg anomalies are not sustainable. These Hg anomalies mark the time when Deccan volcanism reached paroxysmal eruptions and adds to unraveling the true nature of the KPg mass extinction, which needs to be highlighted rather than obscured.

REFERENCES CITED


