**Manuscript Number: EARTH2489**

**Title: Jurassic-Cretaceous transitional terrestrial red beds in Northeast China and the region's**

**paleogeography, biota, and sedimentary tectonic evolution**

General comments (additional comments are provided in the manuscript)

* This manuscript provides an important step forward in our understanding of Jurassic/Cretaceous terrestrial ecosystems. Geologically speaking, this area is currently poorly understood compared to the marine realm.
* The manuscript would greatly benefit from being edited grammatically by a native English speaker. Many sentences are grammatically incorrect, or of uncertain meaning, and as such makes the text very difficult to read and understand in places. This would best be conducted by someone familiar with geological terminology.
* The geological background section is detailed, but would benefit from a discussion of how the four cycles correspond to shifts in the depositional environment, or general environment throughout.
* The Paleogeography section (3.1) contains text that would be more appropriate in the geological background or Rift basin evolution sections, such as the tectonic evolution described in the first paragraph. Similarly, parts of the Paleoclimatology section (3.2) describe the geology of the Tuchengzi Formation, and should be moved to the geological background. This will help to maintain the framework defined by the headings.
* Section 4. This section would greatly benefit from increased detail, as the authors do with the example of *Chaoyangsaurus* for ceratopsians. What are the other dinosaurs, and other fossils, from this formation, and how do they show direct connectivity between lineages of the bounding formations, and what do they tell us about the timings, geography, and magnitude of the radiations or diversity of these groups? This will help to strengthen the argument that this fauna represents the hypothesised ‘bridge’ between other biotas.
* Section 4. No discussion of the Late Jurassic or Early Cretaceous biotas of North America is provided. Details of the fauna present during this period, and how this contrasts with the North China biotas is a requisite to justify the comparisons between regions. Furthermore, it should be highlighted in greater depth how the fauna of the Tuchengzi Formation is different to the apparent disparity between Late Jurassic and Early Cretaceous N. American biotas, including a hypothesis of what is expected in the J/K transition in N. America.
* Relevant citations for Chinese biota include: Godefroit et al (2013) for the early evolution of birds in China; Han et al (2012) and Xing et al (in press) for the evolution of basal ornithopods; Wang and Zhou (2006) and Sullivan et al (2014) for Late Jurassic pterosaurs; Wang (2000) and Zhang et al (2009) for salamanders; and Danilov and Parham (2006) for eucryptodirans. This is just a small selection of important studies on Late Jurassic-Early Cretaceous Chinese fossils, and it should be made clear how the Tuchengzi fauna fits in our current understanding of J/K biotic dynamics in China, as the basis for comparison with North America.
* See also Abbink et al (2001) and Zhang et al (2014) for discussions of Chinese flora and their relationships with biodiversity, and contrast this with North America.
* The current structure could do with a shuffle, as at the present it changes from abiotic, to biotic, to abiotic sections. The discussion of the biota should form the final part, and be placed into context of how the tectonic and environmental evolution of North China corresponds to any shifts in faunal or floral dynamics.
* The main points that need addressing include: the structure of the manuscript, including concluding remarks and synthesis of the various sections, and the detail of biota present in the Tuchengzi Formation and surrounding formations, and how this corresponds to that in North America.

**Reviewer: Jonathan P. Tennant**