Review of "Temporally and spatially uniformed rates of erosion in the Southern Appalachian Great Smoky Mountains" by Matmon et al.

Matmon et al., present a modest cosmogenic nuclide data set that suggests that some of the basins in the Smoky Mountains are eroding at similar rates regardless of basin area size. Alone these data are impressive. The authors also draw on other erosion data that covers different temporal and spatial scales. The conclusions are that the erosion rates were an order of magnitude higher during tectonic activity and relatively constant since session of tectonic activity over 200 My.b.p. The authors convincingly relate the regular erosion rates (over the last 200 My) to "dynamic steady state" over the mountain range scale. A major implication is the longevity of old orgenic belts due to low erosion rates and isostatic rebound of thick continental crusts.

I believe that this paper should be published in *Geology* after minor revisions. This paper provides a major contribution to the understanding of persistent orgenic belts. This paper, although based on a strong cosmogenic nuclide data set, also serves as a brief review paper by compiling data from several other sources that cover different temporal and spatial scales, and then makes a strong conclusion on long-term erosion of old mountains.

Below are brief comments relating to specific areas of the text. The only general comment is to make the abstract more powerful by writing a better last sentence.

1. Write out 100 instead of using a superscript. All of your other erosion rate numbers are not in superscript format.
2. I don't know if you need this reference. Not too many people place much stake in Davis today anyway. I would ref some of the other studies instead.
3. You should put in soil creep also, especially if you are going to measure the velocity field.
4. Need a stronger lead sentence. How about "The Great Smoky Mountains are an ideal location to measure the sediment generation using ^{10}Be. Because most of the valleys are steep and narrow, and because there are no large terraces, gravel bars, floodplains or alluvial fans, sediment storage is insignificant."
5. Move this up after my suggestion in #4. As it reads now this seems just like a sentence thrown in. It should come before the conclusion that calculations are straightforward.
6. "To test the efficiency of fluvial mixing, we collected samples from the mouths of two sub-basins (GSCO-2 and GSRF-12) and a sample immediately below the confluence of these two large sub-basins (GSCO-1; Figure 3)." I guess I don't like the sample names in the text. They don't mean anything to the reader. Describe what you did and put the names in () so the reader can find them on your map.
7. Get rid of Paul's "Indeed" ha ha ha ha ha
8. This has nothing to do with the rest of the paragraph. You are in a different basin now. If you want to leave this in the paragraph give a better lead sentence, for example, "Our data from field tests of sediment mixing and from a field replicate suggest that our sampling strategy and laboratory methods are valid. To test…(from

#6)….” Your last sentence in the paragraph then could be, “A sample replicate pair (GSBC-1 and GSBC-2) collected 1.6 km apart, have similar nuclide activities (Figure 4), further demonstrating rapid and well-mixed sediment.”

9. I disagree. The scatter becomes less…yes! However, the variance (either the square root of the standard deviation or the square, I forget) is the same. The standard deviation is the same for each subset +/- 5, therefore the variance is the same.

10. Uniform means the same. You, however, have some slop, so maybe a less strong word would be better….similar? comparable? regular? consistent?

11. What is this slope/erosion rate relationship? You have not mentioned it yet.

12. Since the session of tectonic activity.

13. Do these models include isostatic rebound? If not maybe you should mentions something.

14. …of other Paleozoic mountain belts **around the world**.”

See remarks on figures.