Dear reviewers, dear editor, dear interested readers,

Thanks to all who have read the manuscript and provided comments. Here, I want to briefly address the main review comments. A detailed rebuttal letter will be supplied with the revised paper.

Both reviewers requested additional figures to illustrate the model concepts. I do agree that this will be helpful for the reader and have prepared three additional figures.

First, a figure to illustrate the relationship between channel width and the sideward deflection length scale, both in transient adjustment and in steady state (figure numbers as in the revised manuscript).

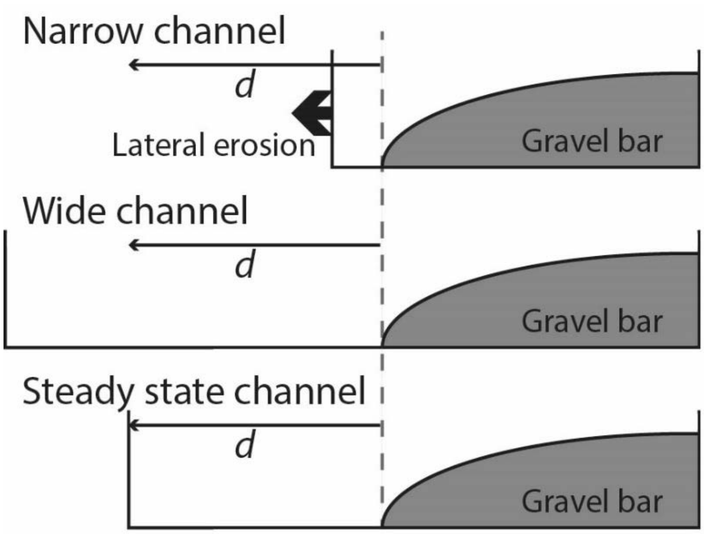

Figure 1: Illustration of how the sideward deflection length scale *d* and the channel width interact to determine lateral erosion. The dashed vertical line shows the relevant deflection point within the cross section. Top: in a narrow channel, particles that are laterally deflected a distance *d* may hit the wall and cause erosion. The channel widens. Center: in a wide channel, the deflected particles do not reach the wall. No lateral erosion occurs. Bottom: in a steady state channel, the channel walls are just out of reach of the deflected particles.

Second, a figure illustrating the potential for sideward deflection at various points in the cross section.

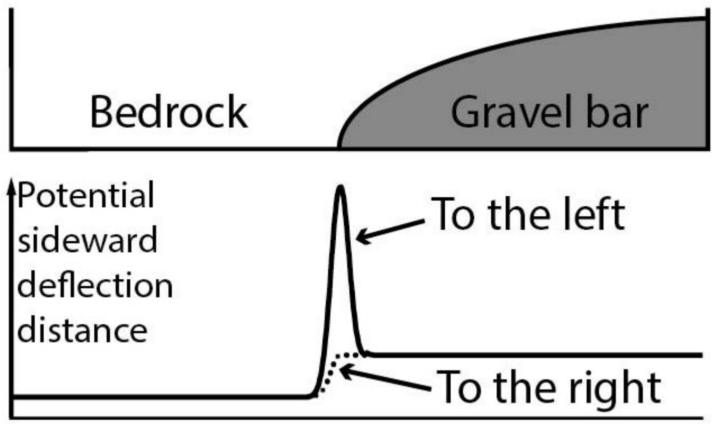

Figure 4: The potential sideward deflection distance is larger over alluvium than bedrock, since roughness elements facilitate sideward deflection of moving particles. However, the same roughness elements block path of the deflected particles, thus limiting the total distance. The largest deflection distances occur at the boundary between alluvium and bedrock towards the bedrock bed. Only where the particle stream intersects this point can large sideward deflection distances be achieved.

Third, a figure illustrating the thalweg and gravel path in a meandering channel.

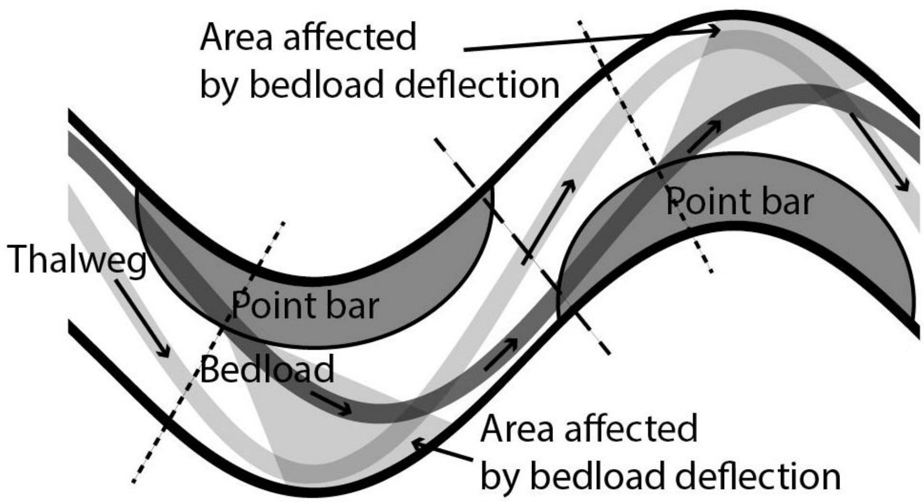

Figure 5: Schematic illustration of the thalweg (light grey) and gravel bedload path (dark grey) through a meandering channel, after the observations of Dietrich and Smith (1984) and Julien and Anthony (2002). Flow is from left to right. Dotted lines show the relevant cross section for particle deflection. Areas that are presumably affected by bedload particle deflection and should lead to wall erosion are shaded in light grey. The dashed line is placed at the inflection point of the channel centre line.

Although none of the reviewers has picked up on this, there was a definitional ambiguity of the sideward deflection length scale. The symbol *d* was used for the deflection distance at a particular point, the distance relevant for lateral erosion within a specific cross section, and for the value relevant for setting width at the reach scale. I have now clarified these different parameters and will introduce them with separate symbols in the revised paper.

Both reviewers made some comments on structure. In the revised paper, the section on previous models (in the discussion, section 4.1) will be moved to the opening of the model development section (section 2). In addition, I will add a paragraph to the introduction introducing the wider relevance of bedrock channels, for example for deriving tectonic information using stream profile inversion. I will also slightly expand the conclusion.