Reply to comment on “Giant saltation on Mars”

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The comments of Andreotti [1] are nonsense. First we do not maximize the flux, instead we calculate the saturated sand flux [2]. Thus, no “criterion” is adopted, since the value of sand flux is a result of the calculations and not an assumption. Second, the statement that our model ignores the ability of the transported grains to eject other grains (“splash”) is false. The simulations do account for the splash, however it is well known that in the saturation regime each grain-bed collision results in one ejected grain — as in the simulations [2]. Furthermore, of course one has a complex splash function giving the probability into which directions grains are ejected with which velocity [3]. But putting it in any calculation is useless because it would turn the calculation impossible. On top, this function is only known empirically and with low precision and thus, in practice, such kind of simulations would be neither useful nor possible.

The last point raised by Andreotti is just plain wrong: That the trajectories on Mars are much higher than on Earth has been shown before also by White [4]. It is true that it does not agree with Andreotti’s model which is based on the wrong assumption that the grains of Mars dunes have diameters less than 100 µm. It is unfortunate that Andreotti has been publishing this wrong statement in various journals but this does not make the statement less false [5]. If the grains would be so small, dunes would not be stable under the observed Mars sand storms.


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