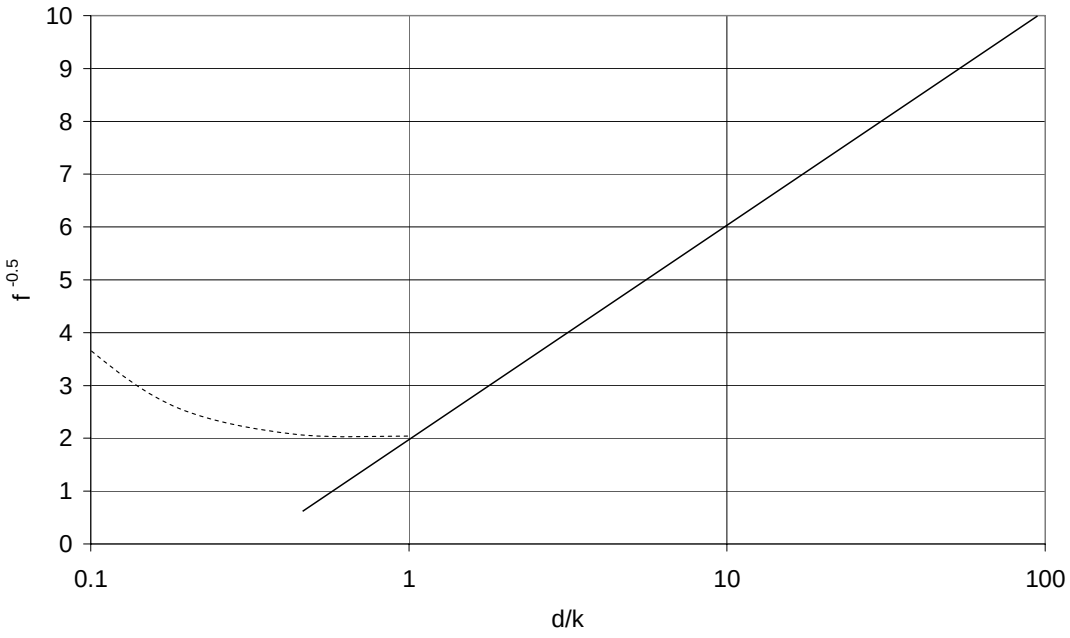
Figure 1. *Sphagnum* ground-cover on a peatland surface, with some localised *Eriophorum* swards.

a)



b)

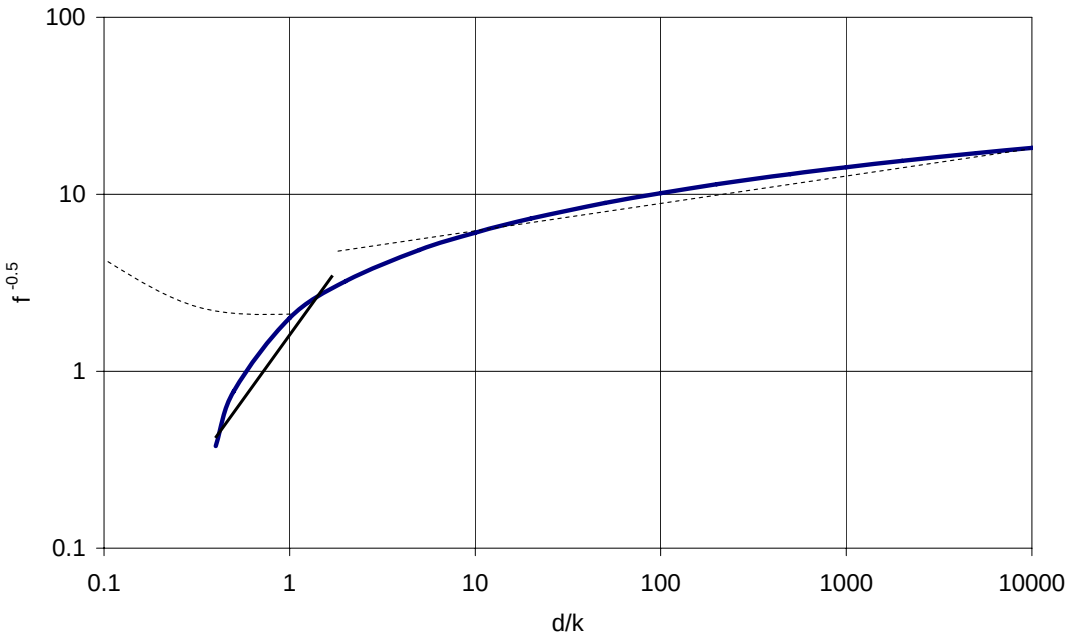


Figure 2. The relationship between Darcy-Weisbach roughness ($f^{-0.5}$) and the ratio of mean depth to effective roughness (d/k) from Equation [4]; (a) on a log-normal plot for comparison with later figures in this paper. The dotted curve sketches the relationship proposed by Lawrence (1997) for shallow depths ($f \sim d/k$); (b) on a log-log plot. The dotted straight line indicates the fit over the range 10<d/k<1e4 that is consistent with Manning's equation for which $f^{-0.5} \sim (d/k)^{1/6}$. The solid heavy line indicates a fit in the region 0.5<d/k<2 which is more appropriate to overland flow, for which $f^{-0.5} \sim (d/k)^{1.0}$

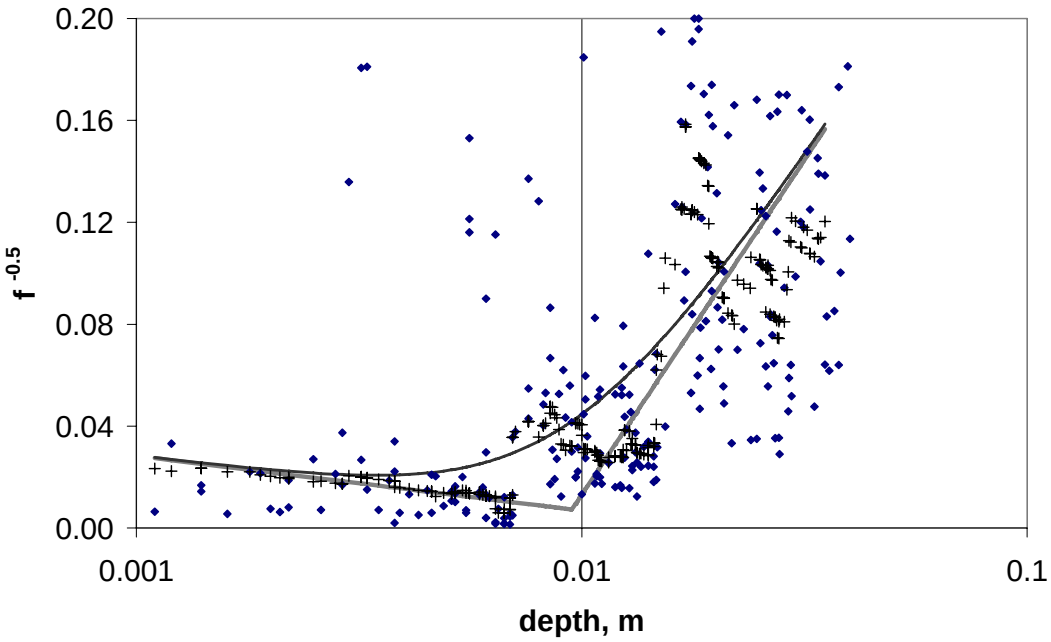


Figure 3. Plot of transformed Darcy-Weisbach friction factor against average flow depth for *Eriophorum* in overland flow. Dots indicate raw data points. Crosses indicate means of 19 adjacent values, sorted by depth. Grey lines indicate RMA regression lines based on median points, for depth categories <=0.007 and >=0.01 m. Black curve indicates bridging function.

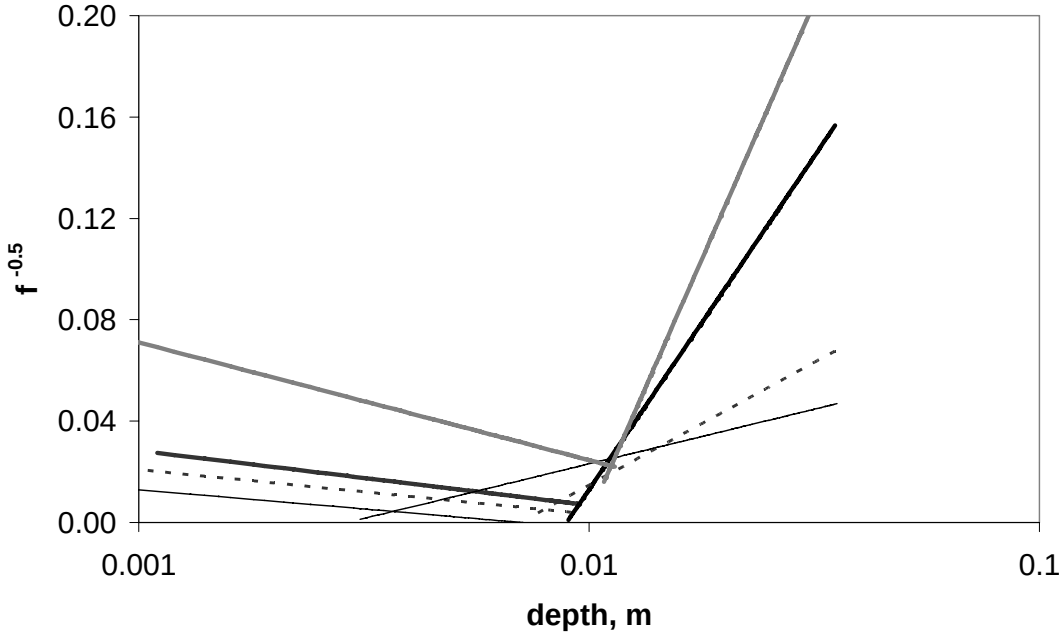


Figure 4. Summary of RMA regression lines for overland flow, similar to Figure 3, for the four surface covers: *Eriophorum* (thick black line), mixed *Eriophorum/ Sphagnum* (dashed line), *Sphagnum* (thin black line) and Bare (grey line).

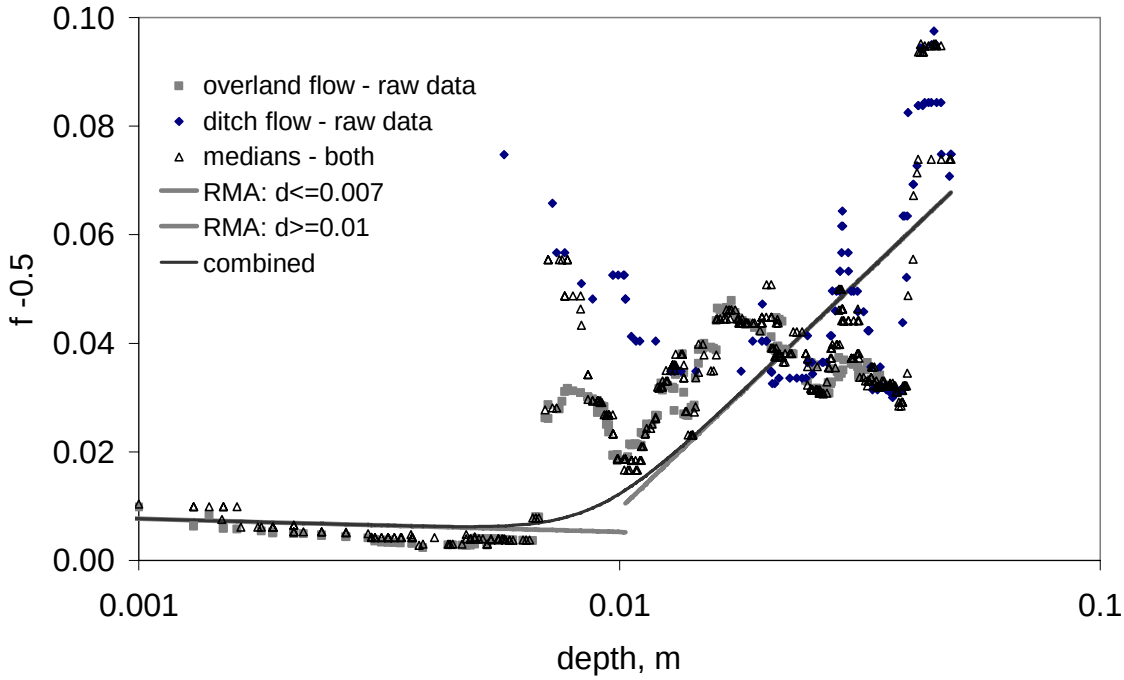


Figure 5. Combined ditch and overland flow data for *Sphagnum*

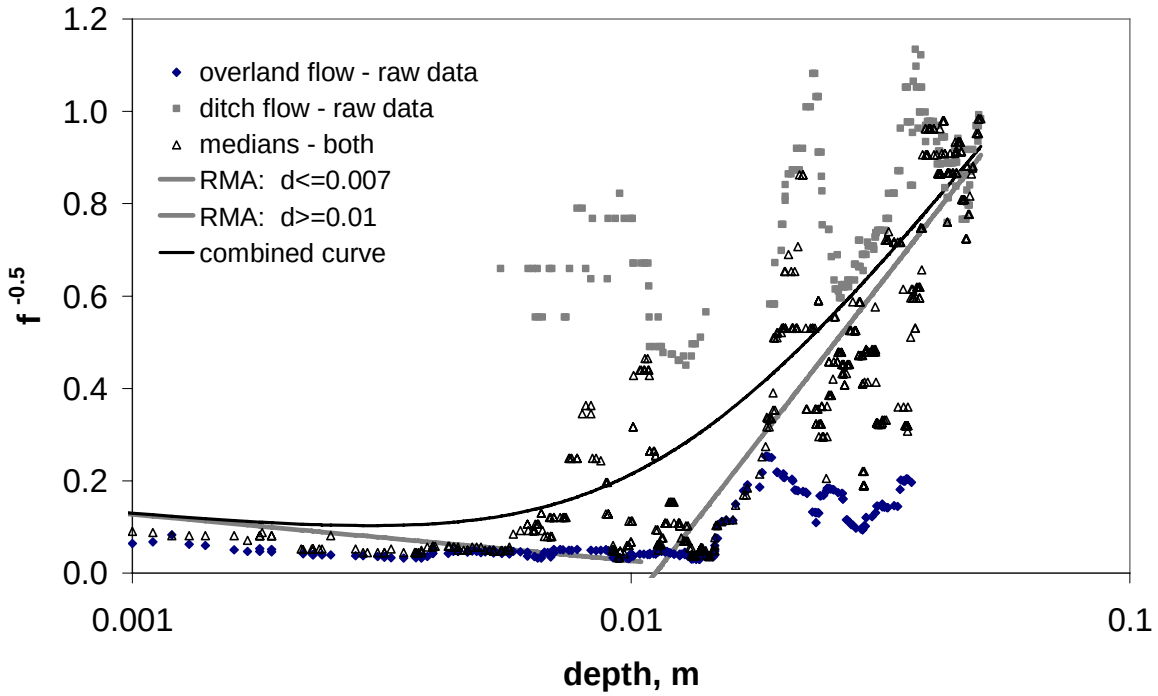


Figure 6. Combined ditch and overland flow data for bare (unvegetated) surfaces.

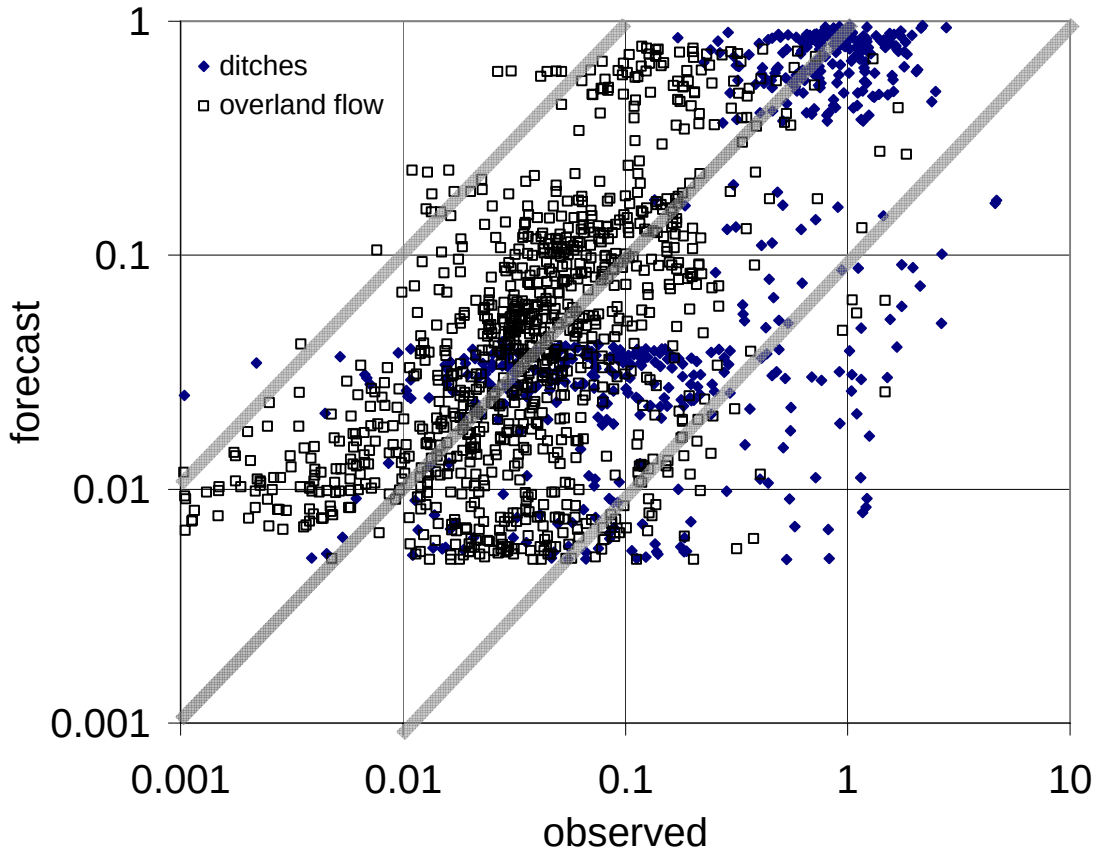


Figure 7. Comparing observed values of $f^{-0.5}$ with forecasts based on Equation [5] for all raw data points.

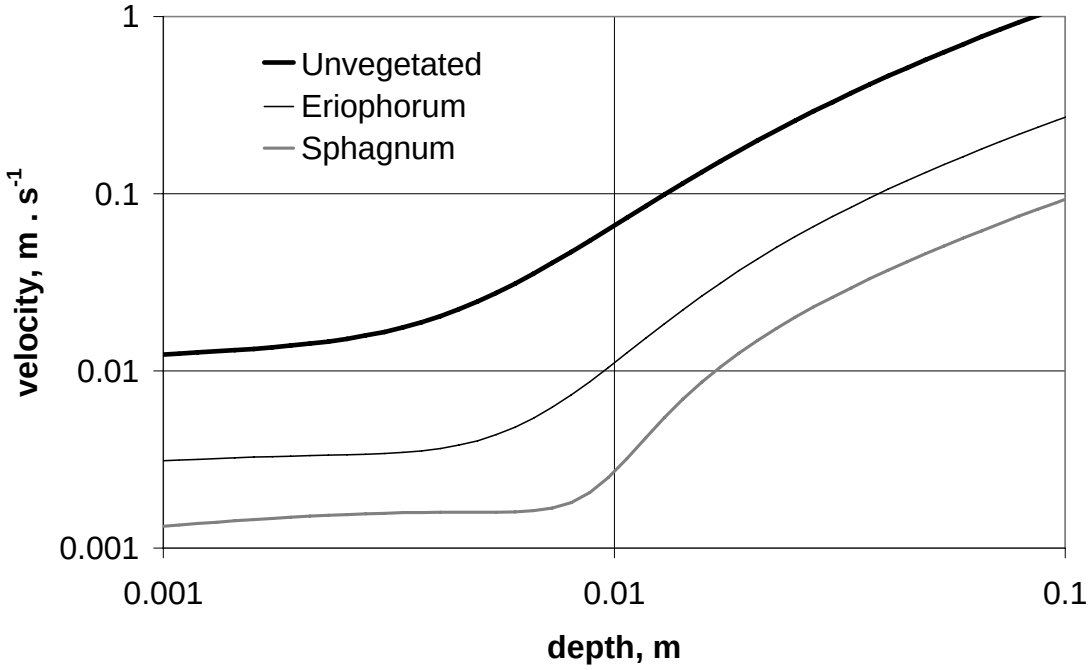


Figure 8. Modelled relationship between mean flow depth and velocity on a 10 % gradient.