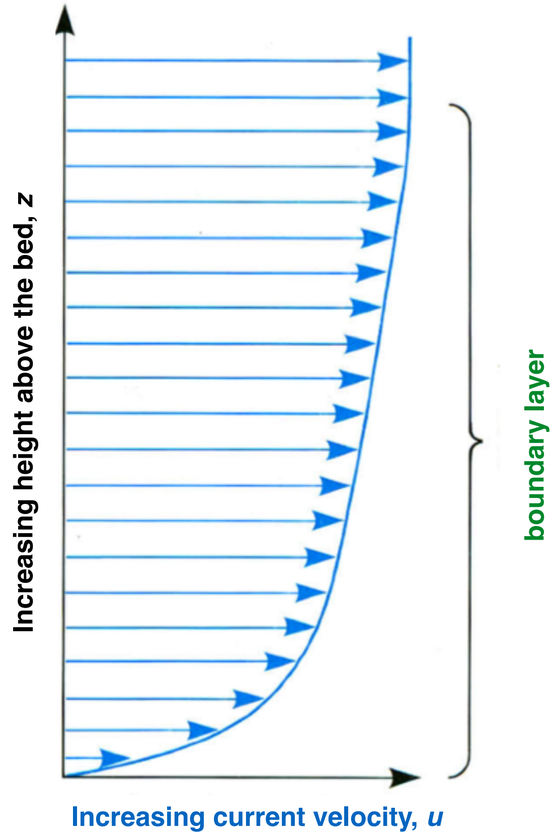
Frictional forces and the boundary layer

- Water flowing near a solid surface is slowed down by a **friction** along the boundary and the region of flow influenced by proximity to the surface is called the **boundary layer**.

- In theory, provided that no sediment on the bed is moving, the thin layer of water in direct contact with the bed is also stationary: its speed should be zero.

- With increasing distance from the bed the successive layers of water move a little faster as the effects of friction with the bed decrease

- There is thus a velocity gradient — a change of velocity with depth or **velocity shear**



Frictional forces and the boundary layer

- The rate at which speed increases gradually lessens with increasing distance from the bed as the influence of friction with the bed begins to vanish. Eventually the speed stops increasing and reaches a more or less constant value at the top of the boundary layer.