





Better physics for coastal dynamics

**School of Geosciences**

**sediment transport**

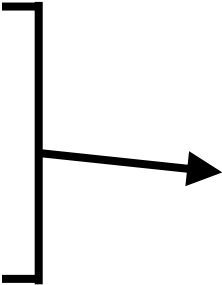
- The rate at which speed increases gradually lessens with increasing distance from the bed as the influence of friction with the bed begins to vanish. Eventually the speed stops increasing and reaches a more or less constant value at the top of the boundary layer.













Top of each layer is acted upon by a **shear stress** due to the layer above which is moving faster and tending to drag it along.

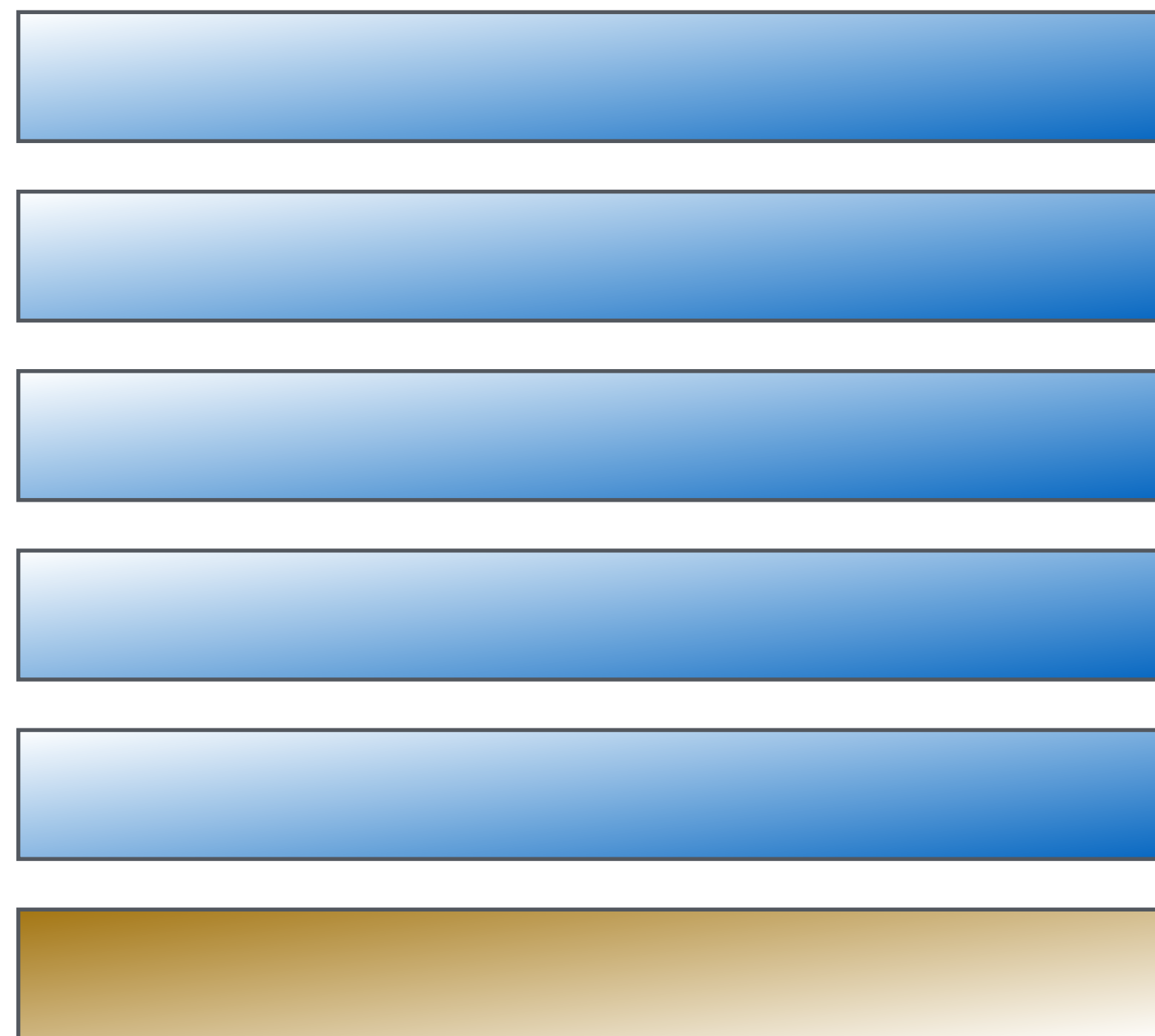
as well as a **shear stress** due to the layer below  
which is moving slower and tending to drag it back.



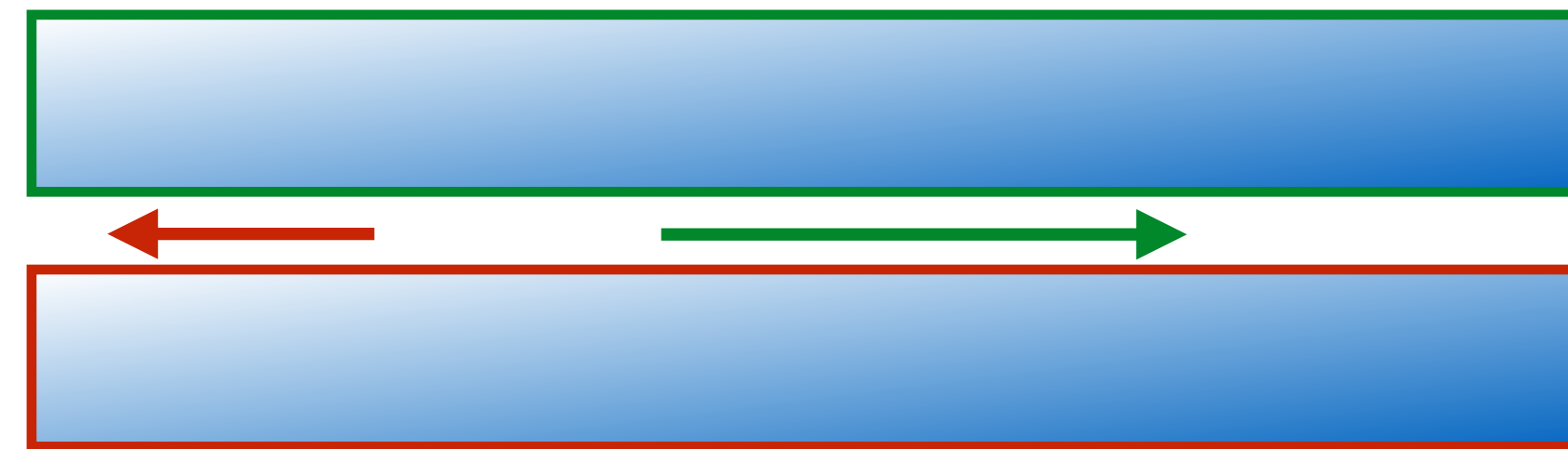
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## Sediment transport

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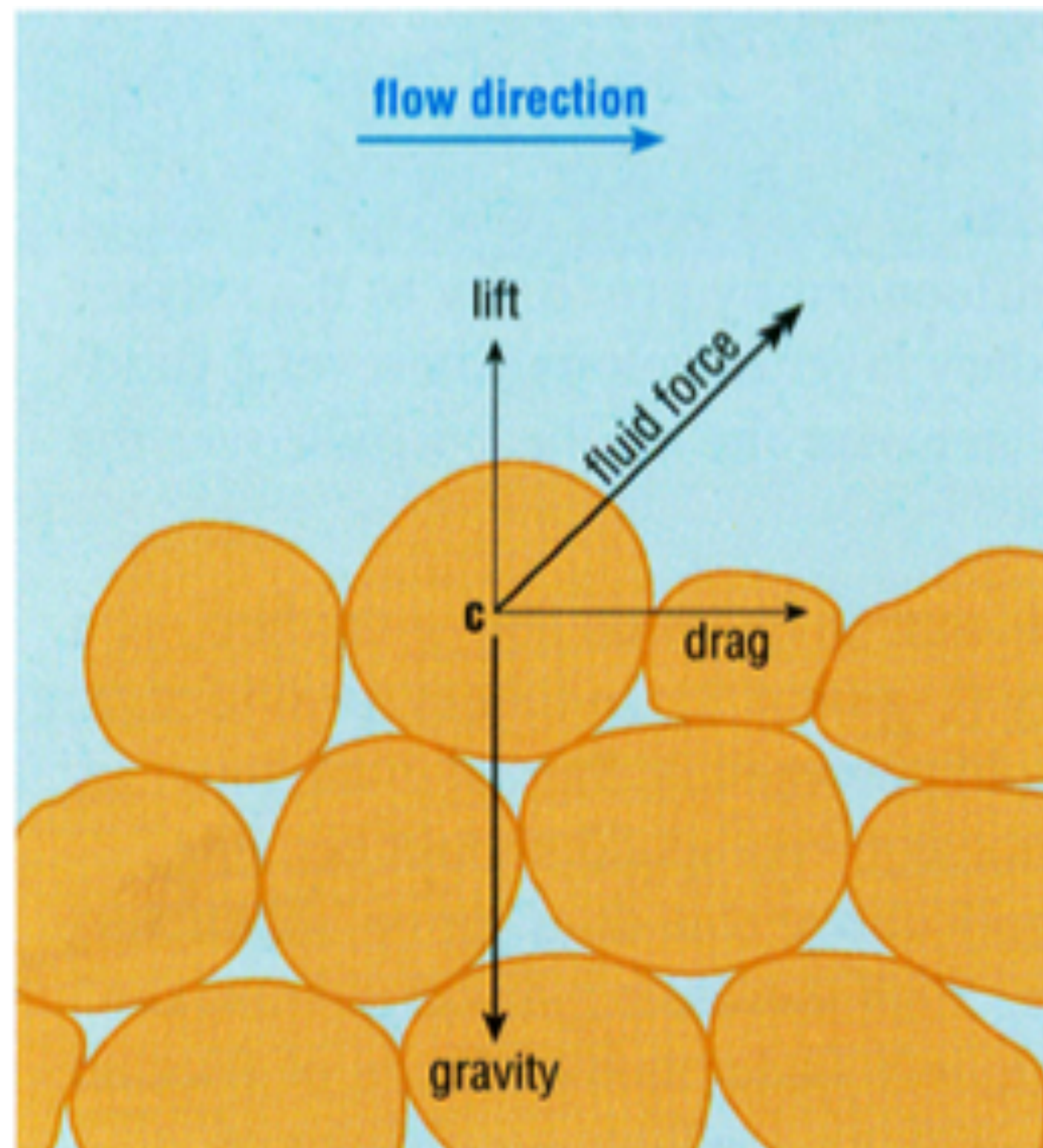


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## Sediment transport

- To determine if seabed sediment is likely to be moved by a current we need to know the value of the shear stress at the bed!
- Measuring its value directly is impractical but we can use the rate of increase of the current speed with distance from the bed as a proxy.



- The shear stress is proportional to the square of the speed of the flow
- In addition to the frictional drag, particles are subject to a lifting force by the moving current.