

Water flows faster
and is deeper on the
outside edge of a
meander curve essay
sam...



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The purpose of this study is to decide whether the hypothesis ' water flows faster and is deeper on the outside edge of a meander curve' is true or not.

To do this I have collected a lot of data about the river Wye. I will use this data such as bed load samples, width of the river depth of the river to create cross sections, velocity (measured in 2 different ways), and gradient. I will also use field sketches and maps of the areas.

The field sketch on the following page shows Group 3, Site B. This is an example of a hand drawn map of the area that we studied. In it there is all the relevant detail that we could see these are things like where we saw the biggest sediment, if there was any overhanging branches or vegetation at the edge of the river. We also identified if it was possible (in some cases we couldn't see) where the fastest flow looked to be. Other things we drew were pipes and that were intercepting slightly with the river's flow.

I think that many people would be interested in and benefit from this study. People such as younger students who want to know about rivers and how they work, or even just to find out how to study the river. It would also be of interest to anyone who has a particular interest in geology or it could even be to the interest of the Buckinghamshire County Council who could use the information to try and prevent things such as pipes and rubbish from intercepting and polluting the river.

The aim of the study is to collate all the data found at the river, analyse it and find out whether or not the hypothesis ' rivers are fastest flowing and deepest on the outside edge of a meander' is true.

The sequence that I will do this study is going to be; I will obtain all the data that I need. I will in obtaining the data first get samples of the bed load then I will measure the width followed by the depth; also I will find the velocity by two different methods. I will also be doing field sketches and finally I will find the gradient. I will then go on to do another site (all these things are explained in more detail in the method). I will then do the write up and analyse the data to find the aim of the experiment.

My question is ' does water flow faster and is it deeper on the outside edge of a meander curve' and I think that the water will flow faster on the outside edge of a meander bend. I think this because the general theory behind this investigation proves this. This is the general theory, water tries to go in straight lines and so when it comes across a meander it carries on going straight. This causes the water to flow to the outside edge of the meander.

The fastest flow of a river is, on a straight river is in the centre. This is because they wear away more sediment and don't deposit very much sediment and so there is less friction between the water and the bed because it is deeper in the middle. When this fastest flow reaches a meander it also travels in a straight line and so flows straight to the outside edge.

There is also another reason and this is that the river has a lot of momentum and so when it goes round a corner this momentum drags it wider and to the outside edge of the meander. The fastest flowing part of the river will have the most momentum and so it is dragged further to the outside. This is demonstrated in cars when you go round a corner you are pulled to the outside edge of the corner. It is also true to say that the faster you are going

in a car the more that the momentum pulls you outwards. Now we know that <https://assignbuster.com/water-flows-faster-and-is-deeper-on-the-outside-edge-of-a-meander-curve-essay-sample/>

the fastest flow is on the outside edge why is it deeper on the outside? Well this is also to do with it being fastest on the outside edge as well. Water erodes sediment in four major ways, these are,

- 1) Hydraulic action; Is when water is forced into the cracks in the banks and/or bed of the river and enlarges them.
- 2) Attrition; This is when sediment within the water is stuck by other sediment, this breaks them up and wears them down.
- 3) Abrasion; Is when water throws the sediment in the water against the bed and/or banks, this breaks them up and wears them down.
- 4) Solution; This means that water dissolves the rocks that make the bed and banks up. This only happens with soft rocks like limestone.

The fast water erodes the sediment much faster than slow moving water so all these methods of erosion will speed up. This after a long period of time will in fact cause the outside edge of a meander to be a lot deeper than the rest of the river. This will also cause the river to flow even faster on the outside edge of the meander because there will be even less friction between the water and the bed and sides. This theory shows that water should normally flow fastest and be deeper on the outside edge of a meander.