

Converting air-flow to sail power

A sail, being made of a more or less soft material, is curved in section when full of wind.

To sail a boat one must understand the *effects* of altering the setting of a sail in relation to the wind.

A sail that is flapping produces no power. Therefore, if you want to stop your boat you can let the sail flap free (A).

Assume your boat is lying with the wind blowing over one side, since this is the simplest case.

Now, pulling the sail to one side of the wind direction causes it to start catching wind (B).

First the downwind edge goes quiet and, if you pull in still further, more of the sail fills with wind until finally the last little bit at the windward edge stops shaking (C).

It is at this point that the sail develops maximum power as the airflow over it is *smooth*.

Pulling the sail in is known as *sheeting in* and you will feel the power increase as you sheet in at this point because the boat will try to heel and move forward.

With *smooth* air-flow you get push on the windward side (high pressure) as the sail bends the wind, and you also get pull or suck from the lee side (low pressure) (D).

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