Learn to love Windsurfing

by David Johnson
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Outline

• History
• The basics
• The physics
• How fast can you go
• My windsurfing journeys
• Who will break 50 knots?
History

- Jim Dake and Hoyle Schweitzer patent 1968
- First windsurfer produced 1973
- Sport was the fastest growing water sport in 1981
Different styles

Longboard for more traditional old-style sailing

Fin
Daggerboard

Shortboard for high speed and wave sailing
Different styles

Longboard

Shortboard
Choosing the right sail

- Pick a sail based on the wind conditions

<table>
<thead>
<tr>
<th>Sail size</th>
<th>Wind speed (MPH)</th>
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<tr>
<td>9.5</td>
<td>14</td>
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<td>8.5</td>
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<td>7.5</td>
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<td>6.5</td>
<td>21</td>
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<td>4.5</td>
<td>30</td>
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Windsurf Accessories

**Wetsuit.** A neoprene rubber suit that gets wet inside but still keeps you warm.

**Harness.** Lets you use your body weight to hold the sail, so your arms don’t get tired. The hook in front attaches to a loop of rope on the boom.

**Waterproof GPS.** Global positioning system. Can plot your course and keep track of your distance travelled, maximum speed, etc.
Longboards – Olympic sport

- The mistral one design is the official Olympic board
- Has the best upwind capability – great for exploring waterways
Shortboards – fun and fast

- Very manoeuvrable
- Turn very quickly
- Short enough to ride waves
- Good for high jumps
Formula Boards – the new longboard

- Very wide board that can plane in low wind
- Long tail fin for easy upwind sailing
- Becoming more popular than old longboards
Angles you can sail

Wind

Upwind
“No Go Zone”
10:00 - 2:00
Steering
Turning Around

Wind

Start

Tack

Jibe
Floating vs. Planing

Woo.

WOO HOO!
How it works
The physics

- In 2005 Drake wrote a paper studying the physics of windsurfing.
- All forces converting momentum from wind to water pass through sailor.
- Key opposing forces:
  - Weight/Lift
  - Heel/Skid
  - Drive/Drag
The physics

Drag/Lift Ratio

"Start" of Planing (about 6 knots)

0.15

Speed

HobieCat

Windsurfer Total

Spray, Waves, etc.

Planing Surface
How fast can you go

- Can you go faster than the wind?
- Oh yes – why? - how much faster?
- Up to 2.5 times wind speed
- 1993 world record – trimaran: 46.52 knots
- 2005 world record – windsurfer: 48.7 knots
Places I've windsurfed

- Southampton 2001
- Guernsey
- Jersey
- Pretoria 1988-2008
- Standerton - 1999
- Richards bay 1998-1999
- Stirkfontein 1998-2007
- Langebaan - Cape Town 1997-2008
- Cape Town 1991-1999
- Port Elizabeth 1999
- Mozambique 1998
- Mauritius 2008

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The 60's bus
The 60's bus
Standerton 1998
Richards bay 1999
Sterkfontein 2003
Langebaan – 2003
New speed record

• 19 September 2008
  Rob Douglas set a new record of 49.84 knots on a kite surfer

• Set at Luderitz – Namibia (1500km from my home town)
Who will break 50 knots