

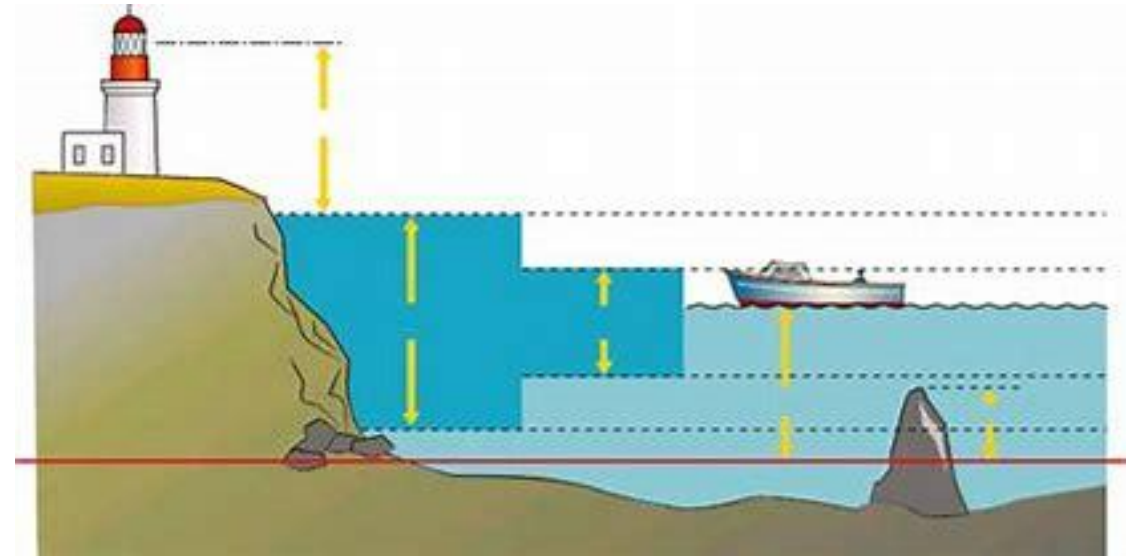
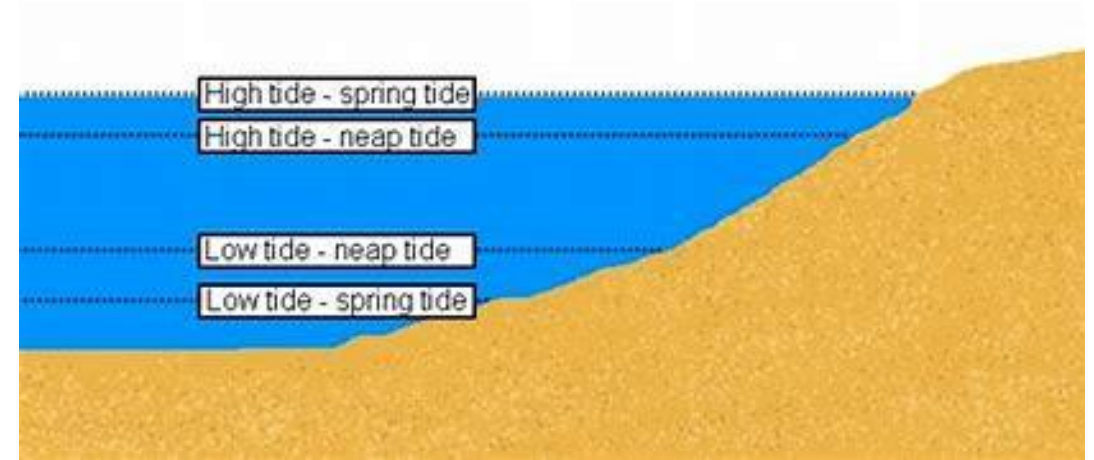
Technical Course for Coaches Level 3 – Tides & Currents



Tides and Currents – Key Words

Tide:

- Periodical vertical oscillation of the sea



Tides and Currents – Key Words

Tidal stream:

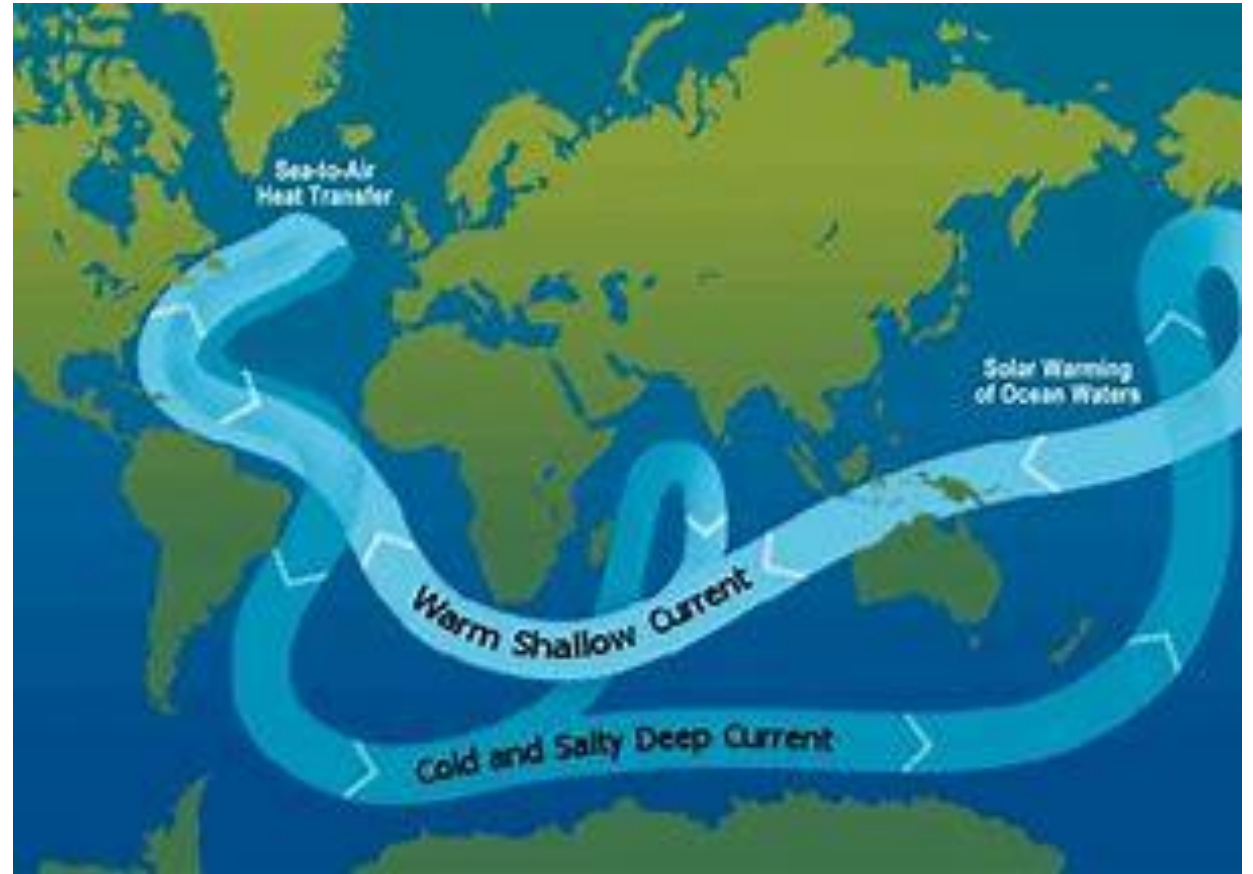
- Periodical horizontal oscillation of the sea in response to the tide



Tides and Currents – Key Words

Current:

- Horizontal movement of the water **not** connected to tidal effects
- Caused by meteorological, geographical effects, difference in temperature or difference in salinity



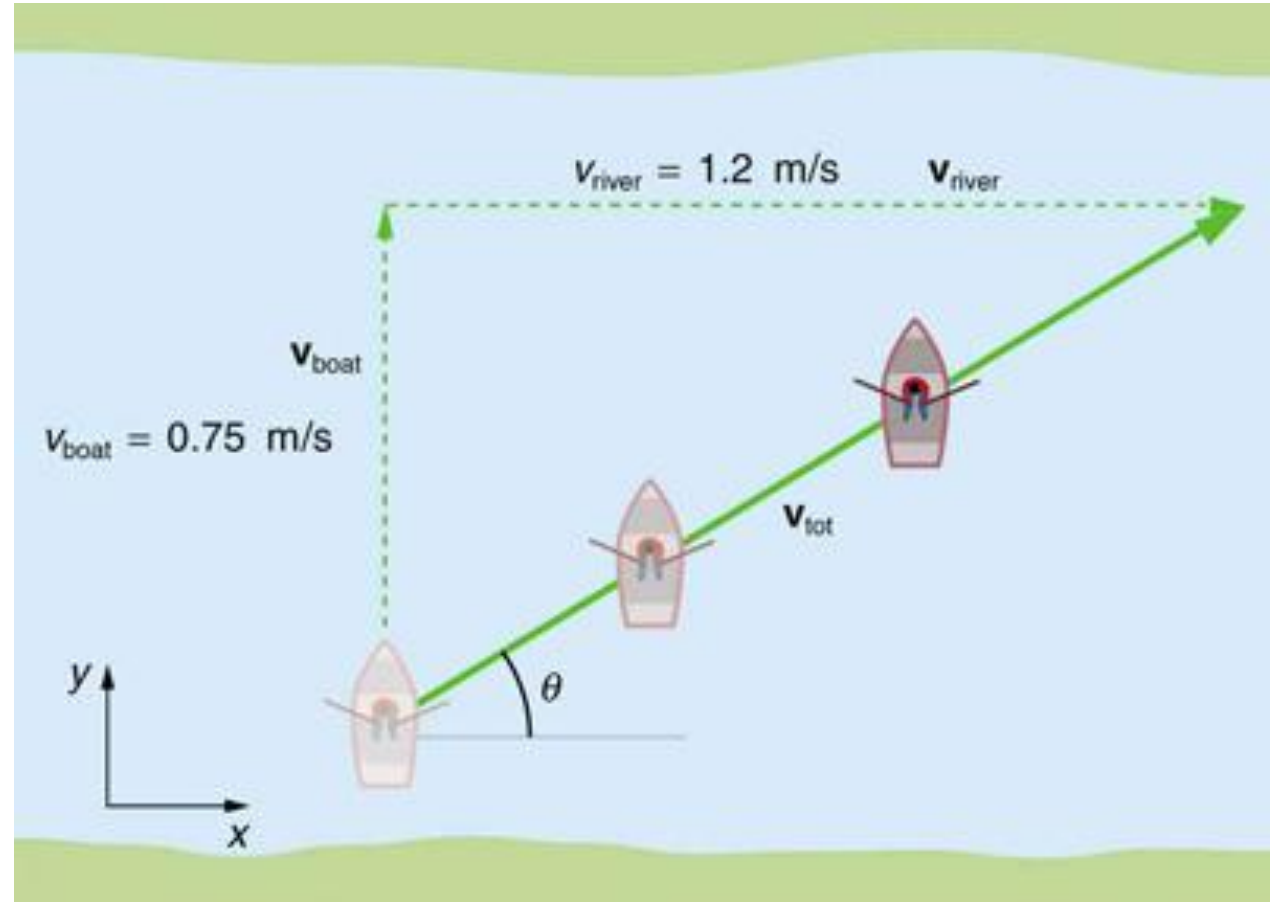
Currents of Europe

Now watch this video showing the currents in Europe from Focus -
<https://www.youtube.com/watch?v=SmGAVGAG8wg>

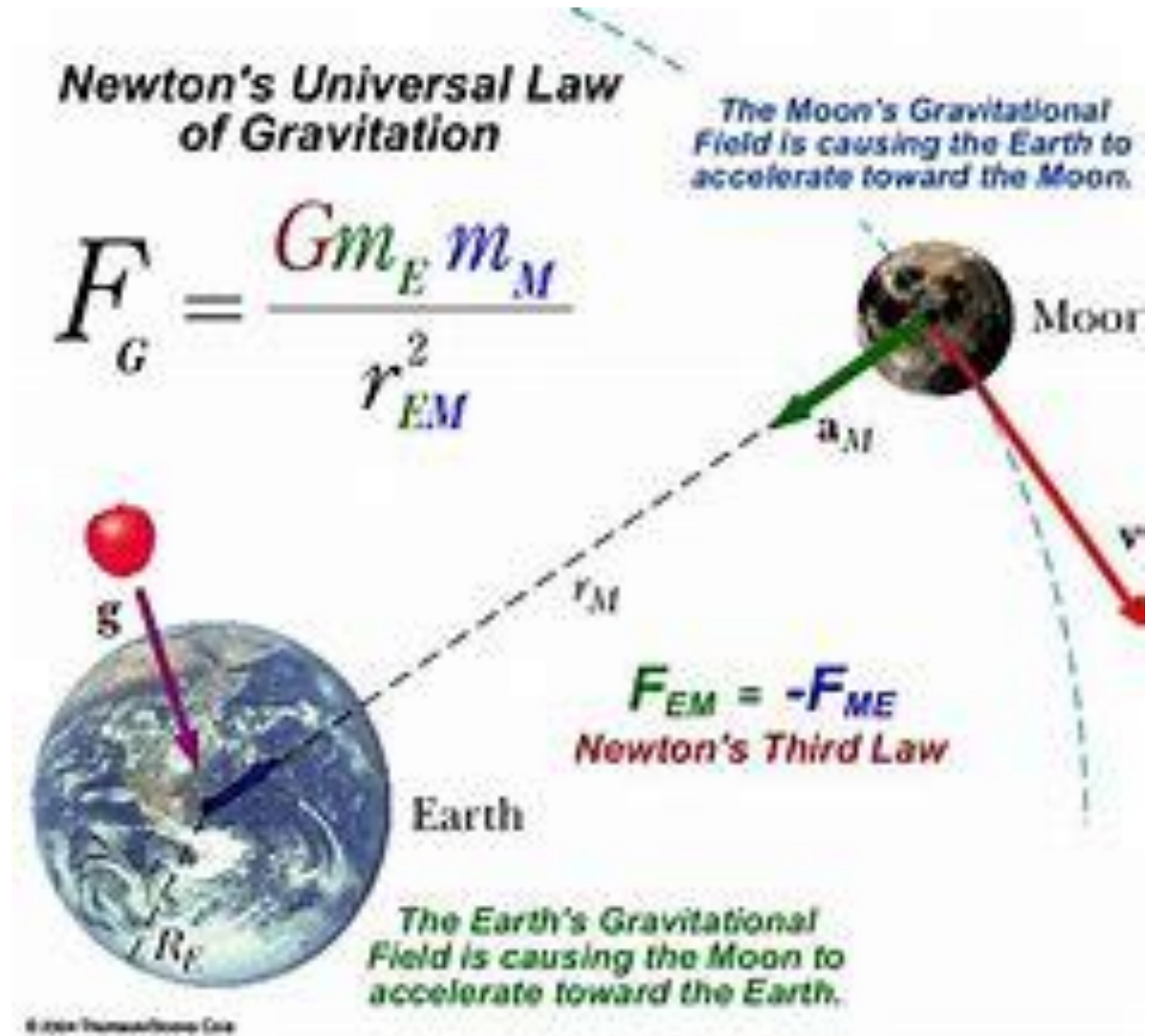
Tides and Currents – Key Words

Waterflow:

- Horizontal effect felt by the sailor.
- Combination of tidal stream and current.



What causes the tides?



Spring and Neap Tides

Now watch this video from Eagleby State School on Spring and Neap Tides - https://www.youtube.com/watch?v=Hdl_PyMFNro

Predicting the Tides

- Tide tables and diagrams
- Webpages



Tides by country

Tide Times for Limassol

Lat Long: 34.67° N 33.05° E

Tide Times

Sea Conditions

7 Day Tide Table

Live Weather

Tide Station Map

Location Guide

Plymouth Tides											
TIME ZONE (UT)				PLYMOUTH LAT 50°22'N LONG 4°11'W				Dates in red are SPRINGS Dates in blue are NEAPS			
For Summer Time add ONE hour to non-shaded areas				TIMES AND HEIGHTS OF HIGH AND LOW WATERS				YEAR 2006			
MAY			JUNE			JULY			AUGUST		
Time m		Time m	Time m		Time m	Time m		Time m	Time m		Time m
1 0149 0.8	16 0119 1.0		1 0247 1.3	16 0246 1.1		1 0301 1.5	16 0304 0.9		1 0227 1.6	16 0414 1.1	
M 1008 1.0	TU 1336 1.2		TH 1509 1.1	F 1504 1.3		SA 1511 1.7	SA 1549 1.0		TU 1336 1.8	W 1818 1.6	
2000 5.2	1542 5.1		2047 4.8	2111 5.2		2112 4.8	2147 5.4		TH 1348 4.6	TH 1818 4.6	
2 0213 1.1	17 0156 1.2		2 0326 1.7	17 0324 1.2		2 0346 1.7	17 0427 1.0		2 0327 1.8	17 0504 1.6	
0817 4.0	0811 4.3		0914 4.4	0916 4.8		0946 4.6	1021 4.9		0817 4.4	1021 4.9	
TU 1448 1.4	W 1413 1.4		TU 1542 2.0	SA 1534 1.4		SA 1551 1.8	W 1623 1.3		W 1511 2.5	TH 1735 2.1	
3018 5.0	2822 5.8		2128 4.4	2201 5.1		2192 4.7	2233 5.1		2229 4.6	2229 4.6	
3 0265 1.5	18 0248 1.8		3 0370 1.9	18 0437 1.9		3 0417 1.8	18 0452 1.2		3 0438 2.8	18 0612 2.2	
0907 4.9	0904 4.7		1012 4.2	1043 4.7		1038 4.4	1110 4.3		1110 4.3	1128 4.5	
W 1515 1.6	TH 1457 1.6		SA 1627 2.1	SA 1648 1.6		SA 1631 2.0	TU 1712 1.8		TH 1707 2.2	F 1904 2.3	
2109 4.7	2109 4.9		2220 4.5	2257 4.9		2245 4.9	2327 4.8		2325 4.3		
4 0349 1.6	19 0338 1.6		4 0503 2.1	19 0527 1.9		4 0601 1.9	19 0647 1.8		4 0550 2.2	19 0727 4.1	
0925 4.3	0949 4.5		1118 4.1	1146 4.8		1116 4.8	1210 4.5		1217 4.2	19 0752 4.3	
TH 1537 2.1	F 1601 1.8		TH 1726 2.2	M 1759 1.7		TH 1725 2.1	W 1811 1.8		F 1843 1.9	SA 1819 2.4	
2149 4.5	2205 4.8		2329 4.4			2326 4.4				2012 2.2	
5 0452 2.2	20 0334 1.7		5 0605 2.1	20 0604 4.8		5 0658 3.0	20 0637 4.3		5 0602 4.2	20 0717 4.2	
1050 4.8	SA 1704 2.0		1224 4.2	1252 4.5		1218 4.2	0846 3.9		0724 2.2	SA 1925 2.1	
F 1456 2.4	2213 4.7		W 1623 2.2	1682 1.3		W 1629 2.2	TH 1722 4.6		SA 1809 4.9	SA 1924 4.4	
2245 4.2							1844 2.8		2118 1.8	2118 1.8	
6 0542 2.3	21 0355 1.8		6 0606 4.8	21 0719 4.7		6 0626 4.4	21 0755 4.4		6 0514 4.3	21 0440 4.5	
1242 4.8	SA 1820 1.8		0708 1.9	0745 1.9		0745 1.9	0815 1.9		0501 1.7	0501 1.7	
SA 1915 2.3			TU 1329 4.9	W 1357 4.8		TH 1319 4.3	F 1432 4.5		SA 1459 4.6	M 1607 4.9	
			1935 2.1	2010 1.7		1936 2.1	2054 1.9		2117 1.8	2117 1.8	
7 0651 4.2	22 0395 4.7		7 0744 4.4	22 0422 4.7		7 0726 4.4	22 0504 4.7		7 0614 4.6	22 0447 4.7	
0714 2.2	0714 1.6		0805 1.8	0845 1.5		0806 1.8	0848 1.8		7 0847 1.7	22 0707 1.4	
SA 1341 4.1	M 1331 4.5		W 1425 4.5	TH 1458 4.8		F 1425 4.5	SA 1546 4.7		M 1603 4.9	TU 1706 5.1	
1941 2.3	1944 1.3		2141 1.9	2141 1.8		2141 1.8	2221 1.7		2228 1.4	2221 1.2	
8 0756 4.2	23 0412 4.8		8 0842 4.8	23 0524 4.8		8 0756 4.5	23 0408 4.8		8 0416 4.8	23 0527 4.8	
0828 2.0	0820 1.3		0858 1.7	0909 1.4		8 0927 1.5	1029 1.6		8 0948 1.4	23 0712 1.2	
M 1428 4.5	TU 1436 4.8		TH 1519 4.6	F 1525 4.9		SA 1527 4.7	SA 1642 4.6		TU 1607 4.3	W 1707 5.2	
2046 2.0	2046 1.4		2123 1.7	2212 1.4		2128 1.7	2237 1.6		2318 1.0		
9 0349 4.6	24 0354 5.8		9 0335 4.7	24 0421 4.9		9 0355 4.8	24 0509 4.8		9 0319 5.1	24 0618 1.0	
0915 1.7	0918 1.1		0949 1.5	1048 1.3		1008 1.5	1139 1.4		1148 1.8	24 0622 5.0	
W 1523 4.6	W 1529 5.8		F 1609 4.8	SA 1649 5.1		SA 1637 4.9	M 1715 5.1		TH 1215 5.1	TH 1215 1.0	
2153 1.7	2163 1.2		2212 1.9	2309 1.2		2215 1.4	2345 1.2		2345 1.2	1811 5.8	
10 0318 4.8	25 0398 5.2		10 0426 4.8	25 0512 5.0		10 0452 4.8	25 0543 4.9		10 0308 4.7	25 0648 0.9	
0949 1.4	0911 0.9		1005 1.3	1129 1.2		1101 1.2	1238 1.2		10 0618 5.3	25 0658 5.1	
W 1465 4.8	TH 1428 5.2		SA 1651 5.8	SA 1728 5.2		M 1714 6.1	TU 1706 5.2		TH 1231 3.7	F 1258 1.8	
2215 1.4	2235 1.9		2259 1.3	2353 1.1		2329 1.2			1835 1.7	1845 5.3	
11 0423 4.9	26 0442 5.2		11 0514 4.9	26 0537 5.0		11 0544 5.0	26 0628 5.1		11 0557 0.4	26 0717 1.0	
1037 1.2	1001 0.8		1121 1.2	1214 1.2		1153 1.1	1262 4.9		11 0786 5.4	26 0788 5.1	
W 1445 5.6	F 1707 5.2		M 1708 5.1	M 1811 5.3		TH 1802 5.3	W 1244 1.2		F 1317 0.5	SA 1327 1.1	
2249 1.2	2318 0.8		2344 1.1			1831 5.2			1917 5.8		
12 0547 5.8	27 0535 5.5		12 0559 5.8	27 0638 1.1		12 0620 6.9	27 0707 5.1		12 0742 0.5	27 0743 1.8	
1115 1.1	1147 0.6		1236 1.1	1303 4.9		1242 5.1	0000 4.9		0751 1.4	27 0759 5.6	
F 1725 5.1	SA 1750 5.4		M 1816 5.2	TU 1256 1.2		W 1342 1.0	TH 1320 1.2		SA 1430 0.5	SA 1550 1.2	
2332 1.1			1846 5.2	1846 5.2		1846 5.2	1907 5.2		2004 5.8	1940 5.2	
13 0647 5.1	28 0608 0.8		13 0819 1.0	28 0709 1.1		13 0730 0.8	28 0642 1.1		13 0224 0.4	28 0346 1.2	
1151 1.8	0614 0.2		0843 0.9	0716 4.9		0727 5.3	0716 4.9		0834 0.4	0834 0.4	
SA 1748 6.2	SA 1230 0.6		TU 1216 1.1	W 1336 1.3		TH 1330 0.9	F 1253 1.2		SA 1418 0.5	M 1411 1.8	
	1829 0.3		1857 5.3	1925 5.7		1934 5.5	1941 5.2		2006 4.6	2076 5.8	
14 0808 1.0	29 0651 0.9		14 0914 1.0	29 0756 1.2		14 0757 0.7	29 0714 1.2		14 0801 0.8	29 0724 1.3	
0819 5.1	0856 5.1		0928 5.0	0855 4.8		0809 5.2	0809 4.8		14 0813 5.5	29 0825 4.8	
SA 1226 1.9	TH 1410 1.6		W 1424 1.4	TH 1415 1.5		SA 1425 1.5	SA 1415 1.5		TH 1417 0.6	TU 1417 1.4	
1832 5.2	1905 5.3		1829 5.0	1808 5.0		2026 5.8	2015 5.1		2125 5.4	2041 4.9	
15 0848 1.0	30 0721 1.8		15 0749 1.0	30 0731 1.8		15 0741 0.7	30 0729 1.3		15 0748 5.0	30 0748 1.6	
0918 5.1	0912 4.9		0816 5.0	0817 4.7		0816 5.0	0814 4.9		15 0814 5.2	30 0814 5.1	
M 1301 1.1	TU 1347 1.2		TH 1419 1.2	F 1444 1.5		SA 1458 0.9	SA 1446 1.4		TU 1414 1.2	W 1414 1.6	
1807 5.2	1938 5.1		2034 5.3	2135 4.9		2104 5.5	2087 4.8		2204 5.0	2308 4.7	
31 0206 1.2			31 0816 4.7			31 0815 1.4			31 0111 1.7		
			W 1423 5.5			0915 4.7			0915 4.7		
			1811 5.8			TH 1527 1.9			TH 1527 1.9		
						2143 4.5			2143 4.5		

Chart Datum: 9.22 metres below Ordnance Datum (Meanlyn)

SAMPLE TIDE TABLE PAGE

Local Effects – Wind Effect

- After a strong or prolonged wind, the tidal stream may be affected, increased, decreased, change direction
- In the Baltic sea after a prolonged period of southern winds the water is piled up on the northern part (Gulf of Finland). After the wind stops a southern current of up to seven knots is created
- Similar effects are noted in Long Island Sound, some areas in Mediterranean etc.

Local Effects – Geography and Topography

- Shallow water effect

Tidal stream is less inshore than offshore - due to the friction of the bottom of the sea.



Tidal Current

Now watch this video on the Saltstraumen, in Norway. The strongest tidal current in the world -

[https://www.youtube.com/watch?v= FfK4HVRcfY](https://www.youtube.com/watch?v=FfK4HVRcfY)

Tidal Stream Effect on Apparent Wind – Upwind

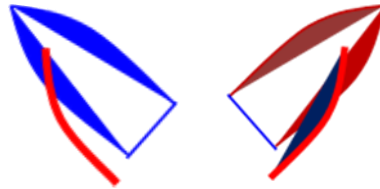
The current opposes the wind.



CONCLUSION:

Both boats have the same increase in velocity.

The current is with the wind.



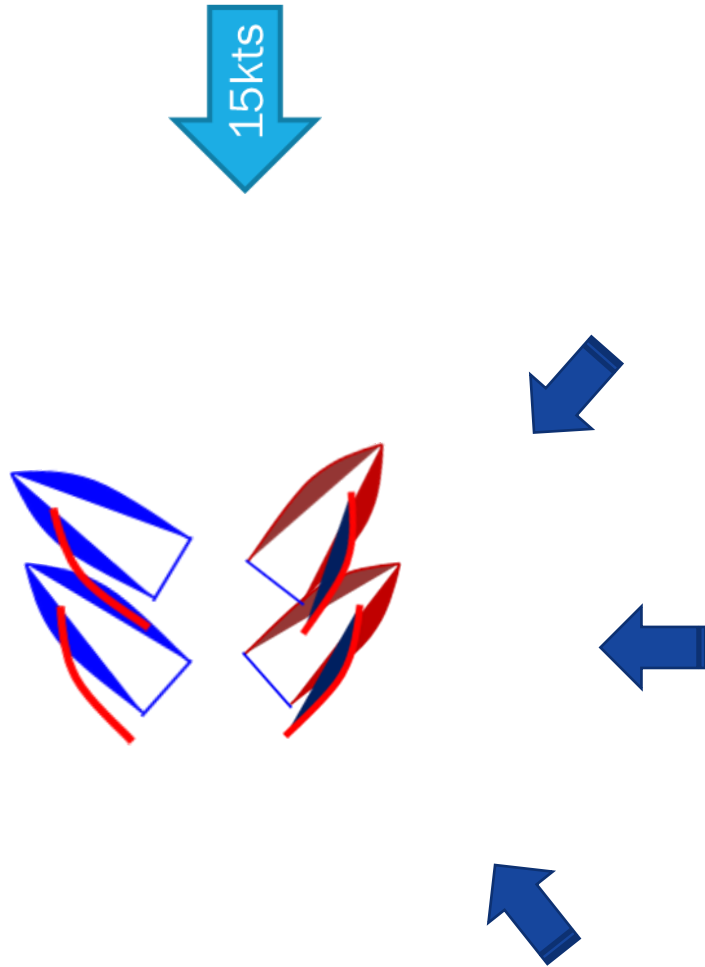
CONCLUSION:

Both boats have the same decrease in velocity.



Tidal Stream Effect on Apparent Wind – Upwind

The current is clockwise to the wind.



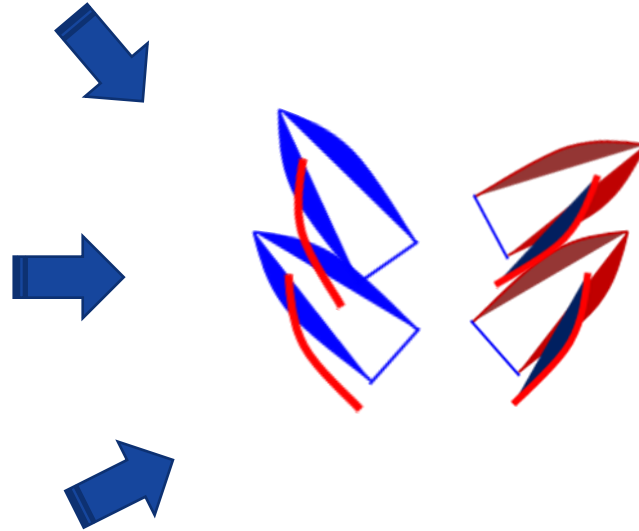
CONCLUSION:

The port tack boat is lifted, and the starboard boat is headed.

Tidal Stream Effect on Apparent Wind – Upwind



The current is
anticlockwise to
the wind.



CONCLUSION:
The starboard
tack boat is lifted,
and the port boat
is headed.



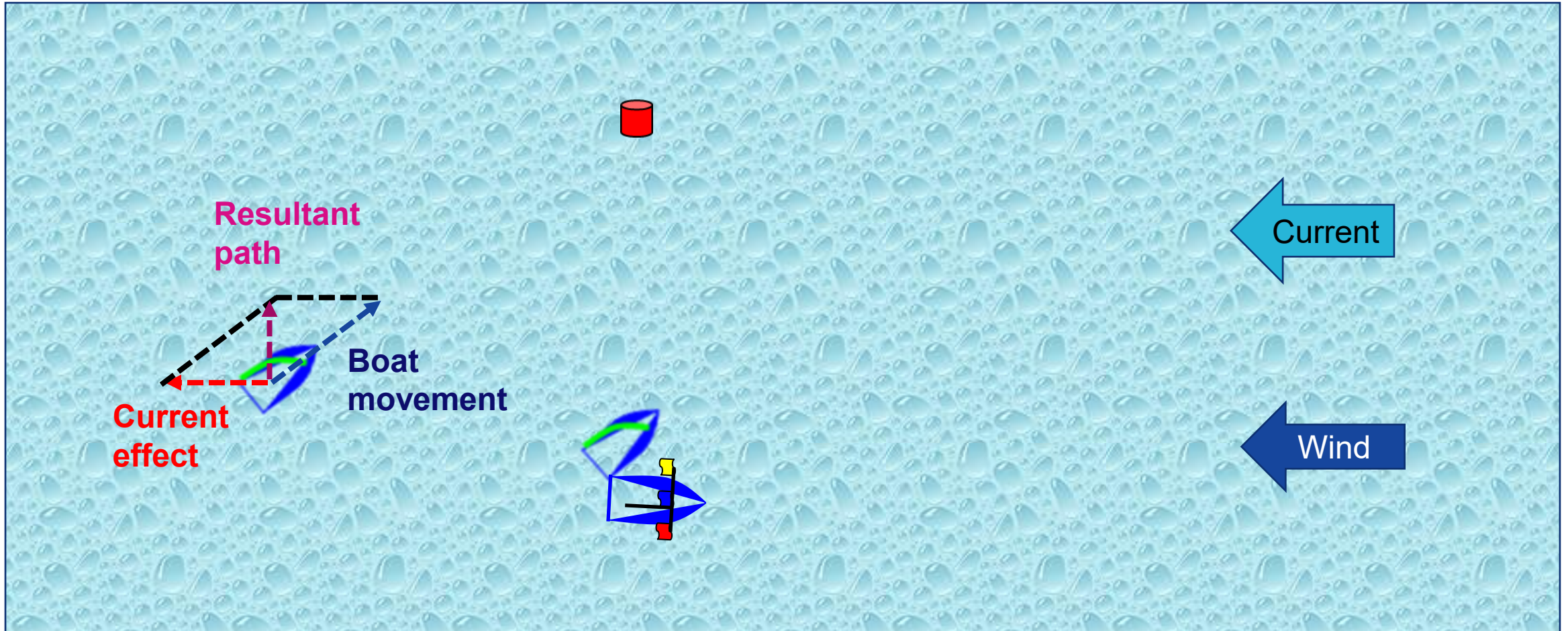
What is the effect of the current on the boat?

Consider the current like
a moving carpet.
Imagine what effect will it have
on your boat.

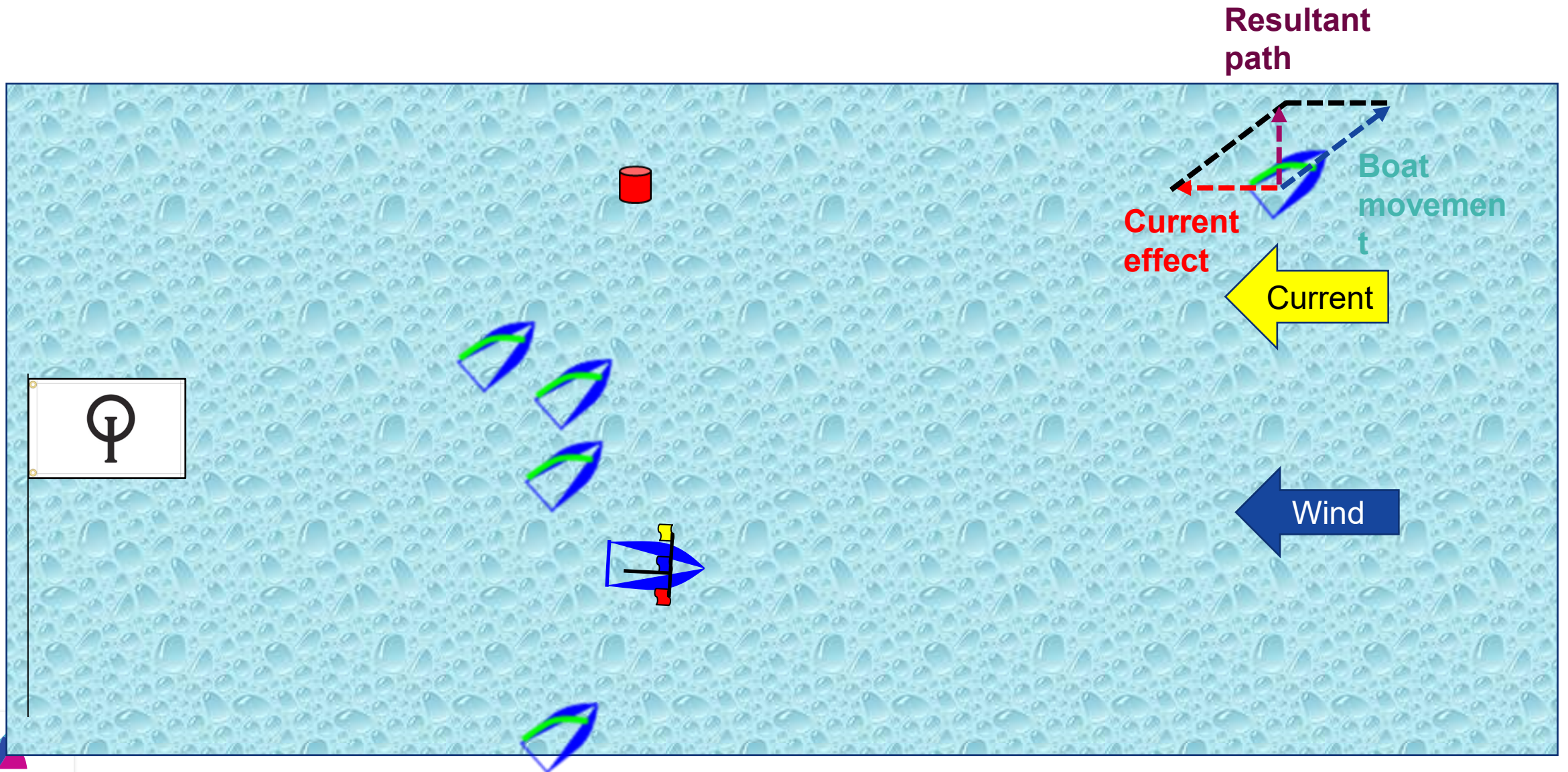
East Australian Current

Now watch this video of the East Australian Current from Disney -
<https://www.youtube.com/watch?v=8YlvfH1CcKs>

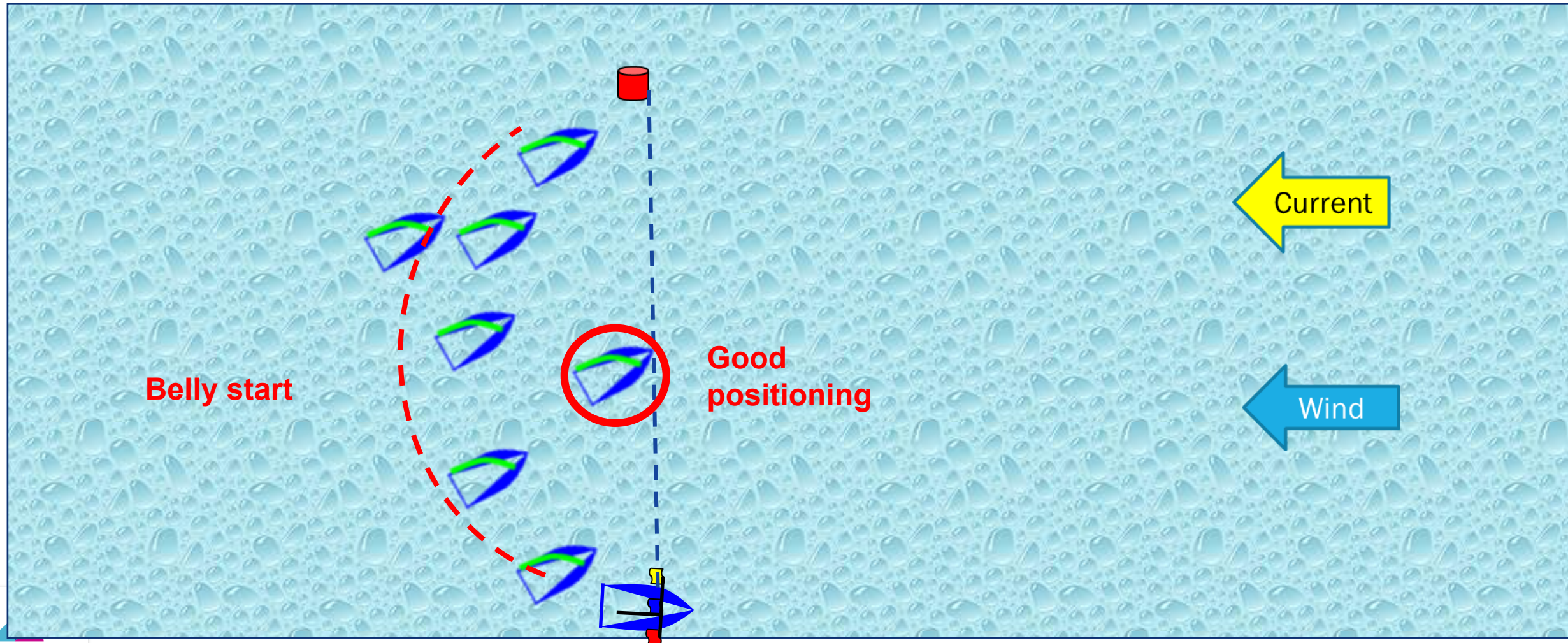
The Effect on the Start



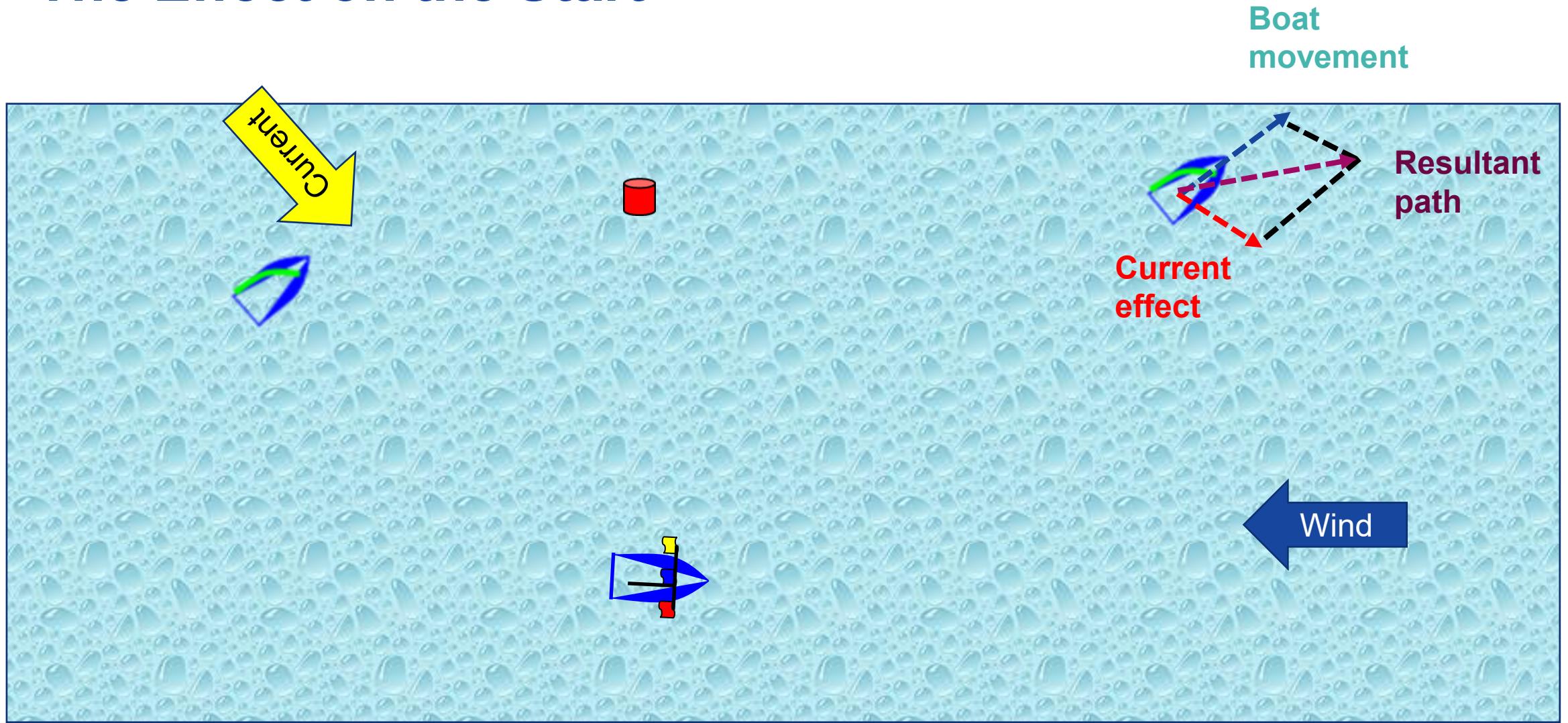
The Effect on the Start



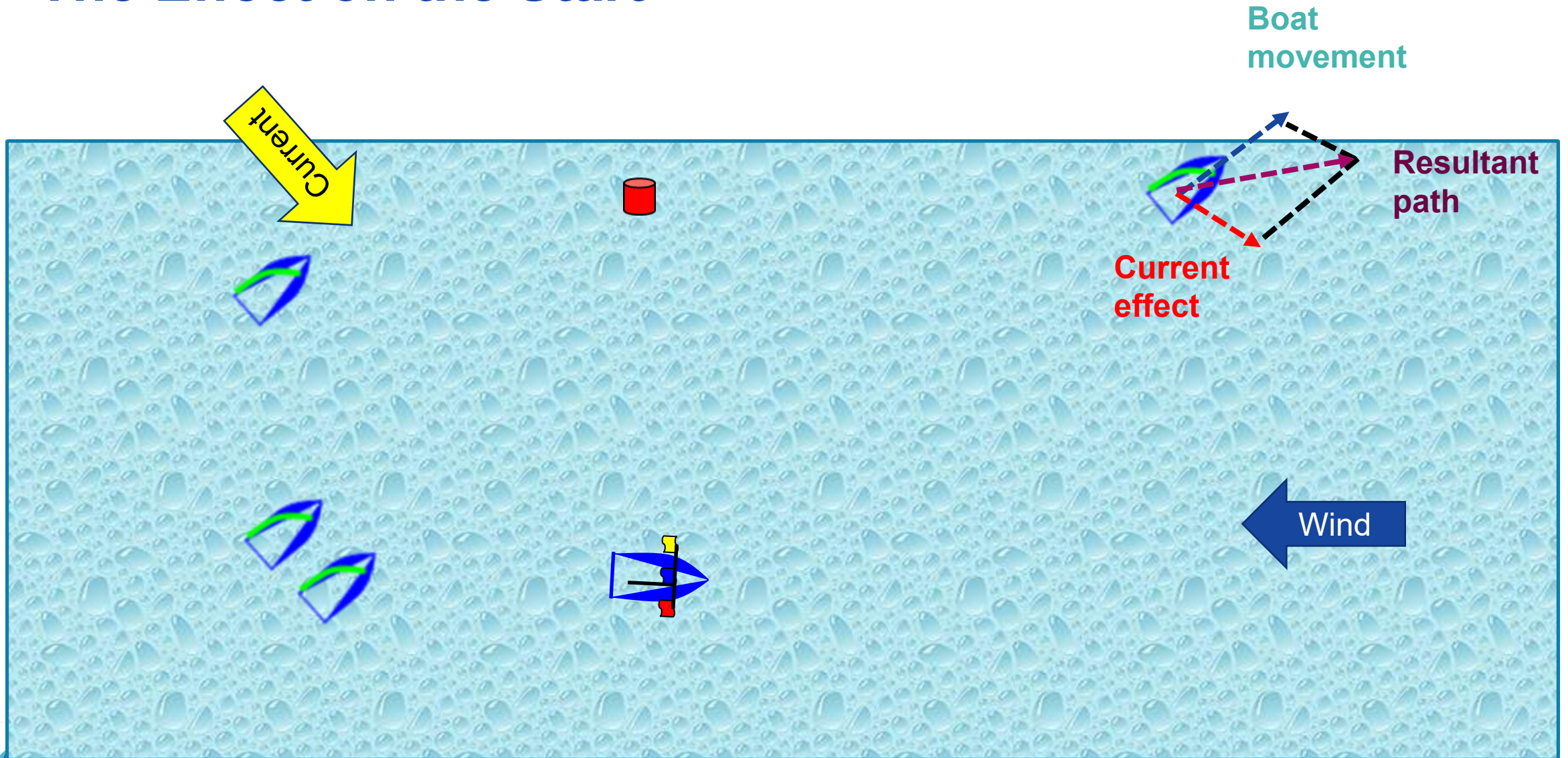
The Effect on the Start



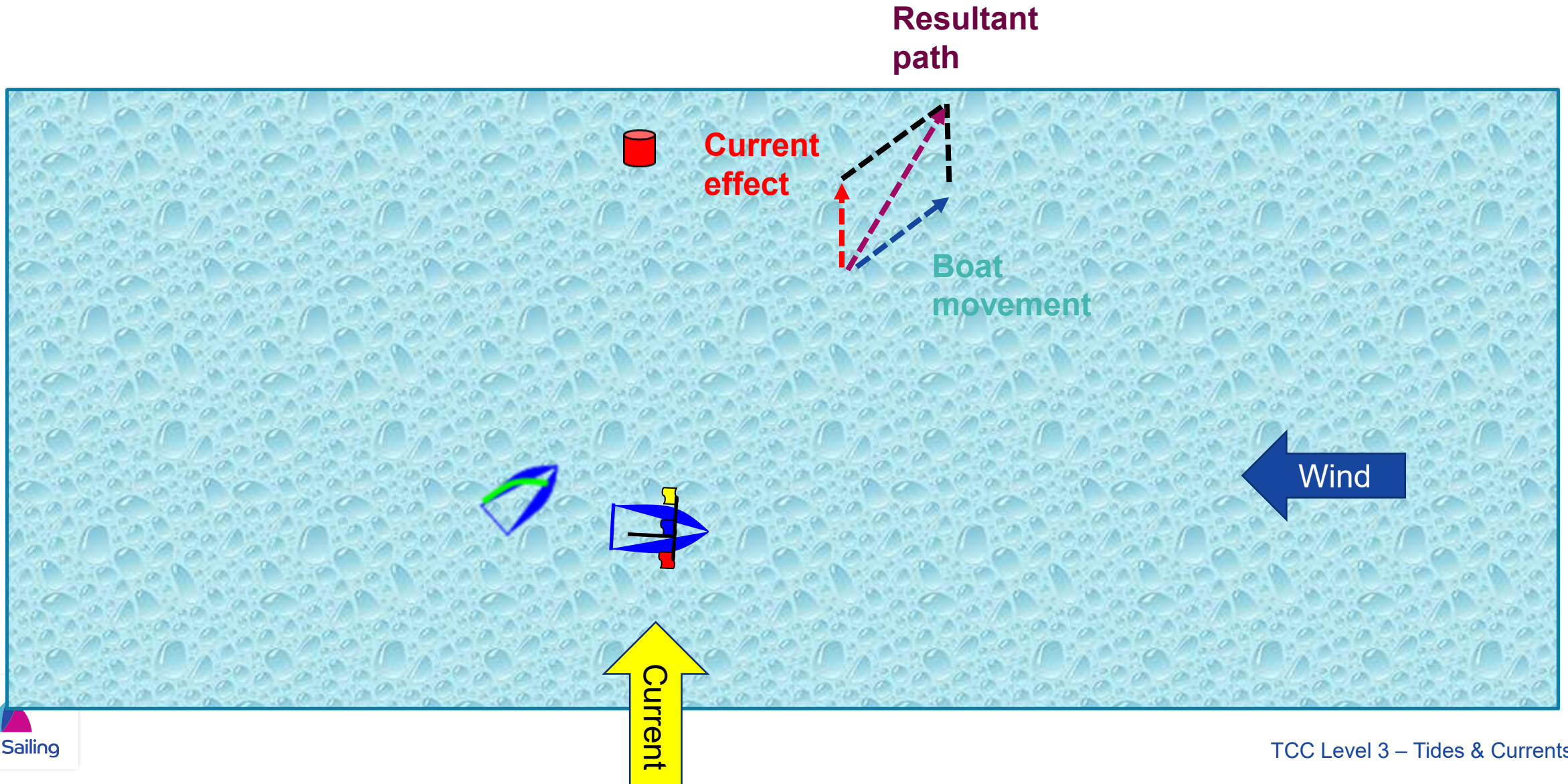
The Effect on the Start



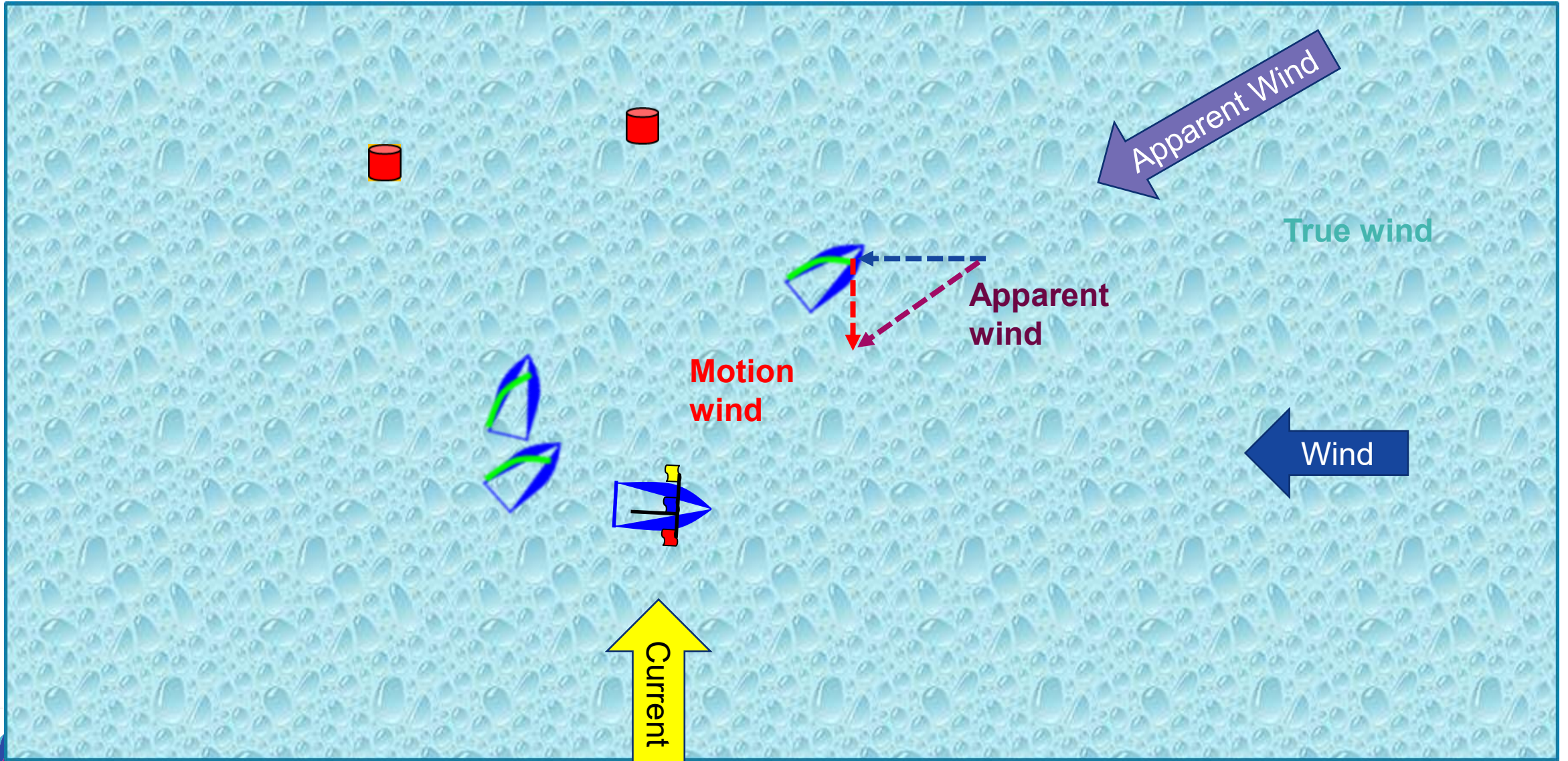
The Effect on the Start



The Effect on the Start

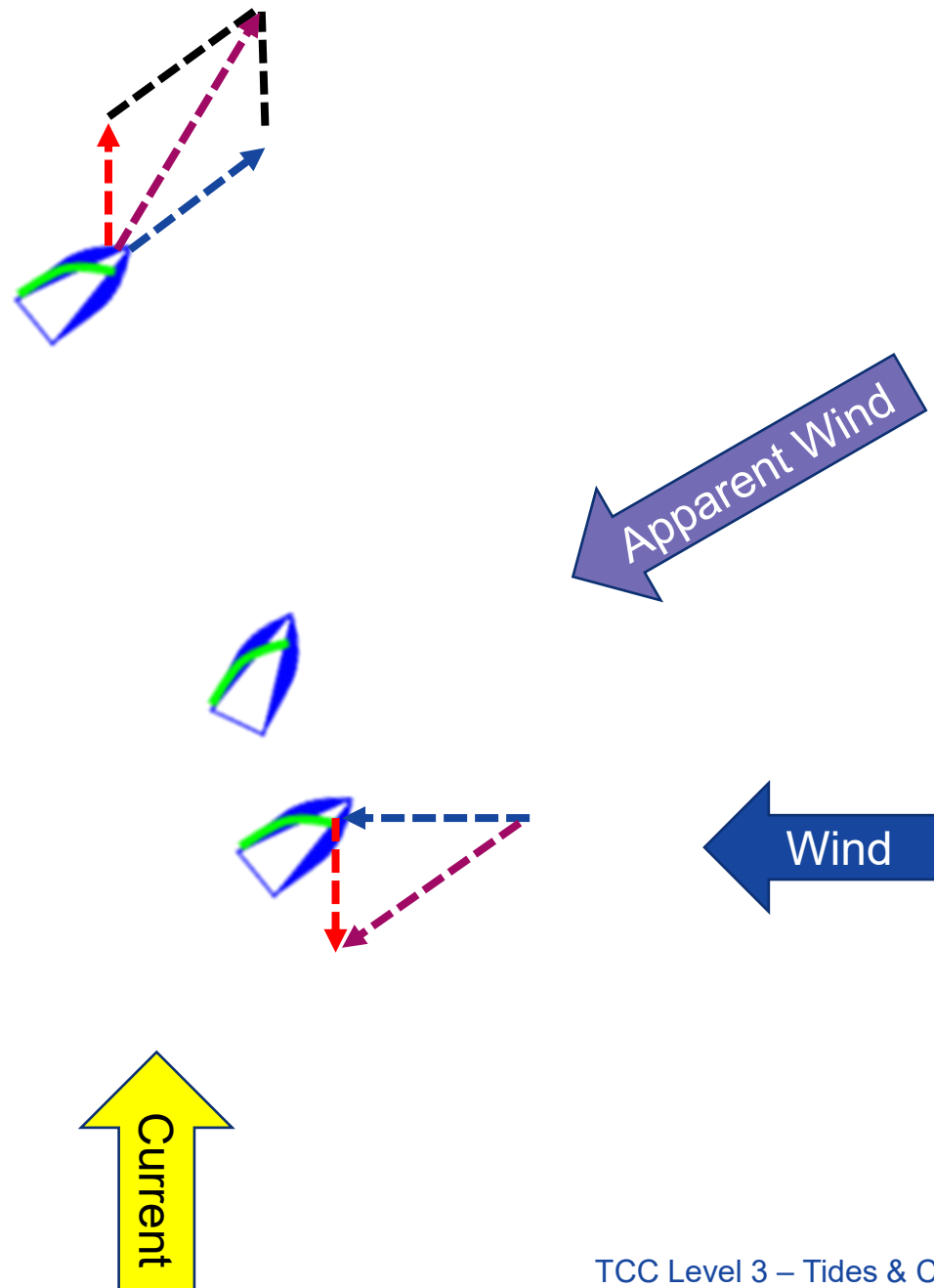


The Effect on the Start

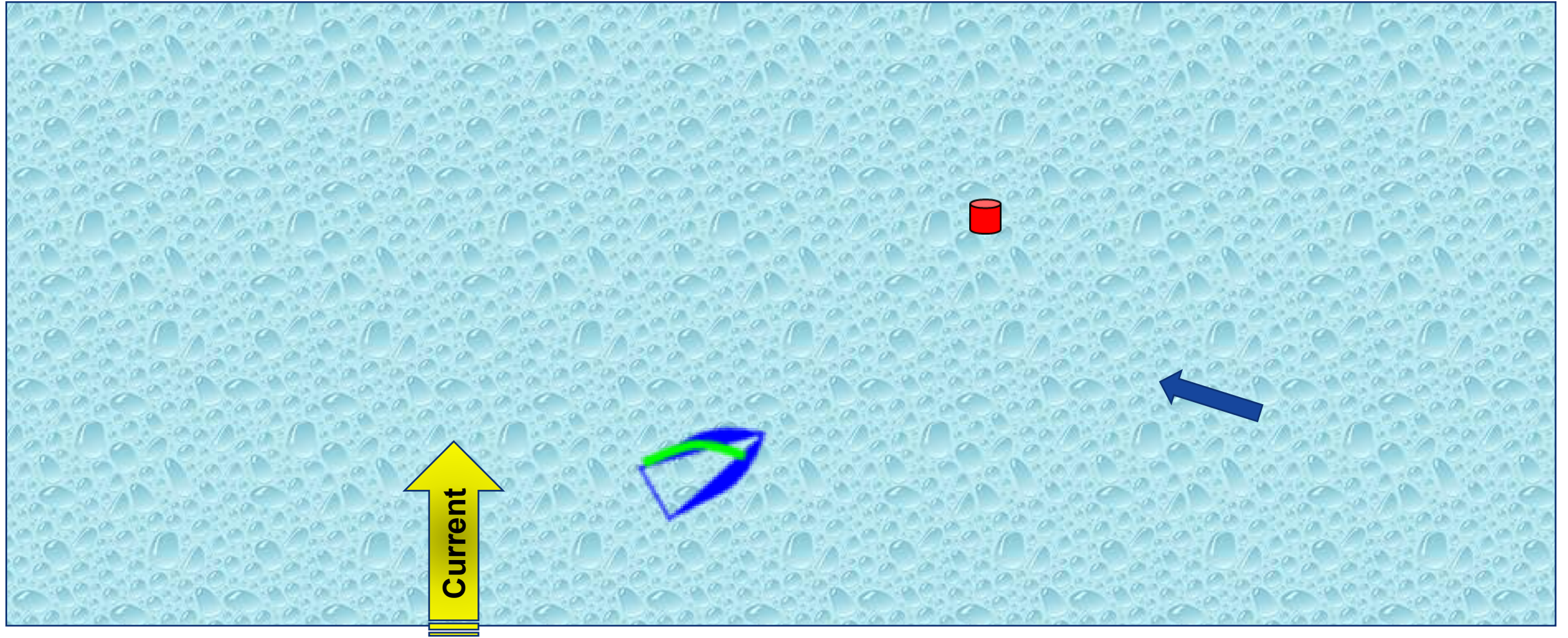


The Effect on the Start

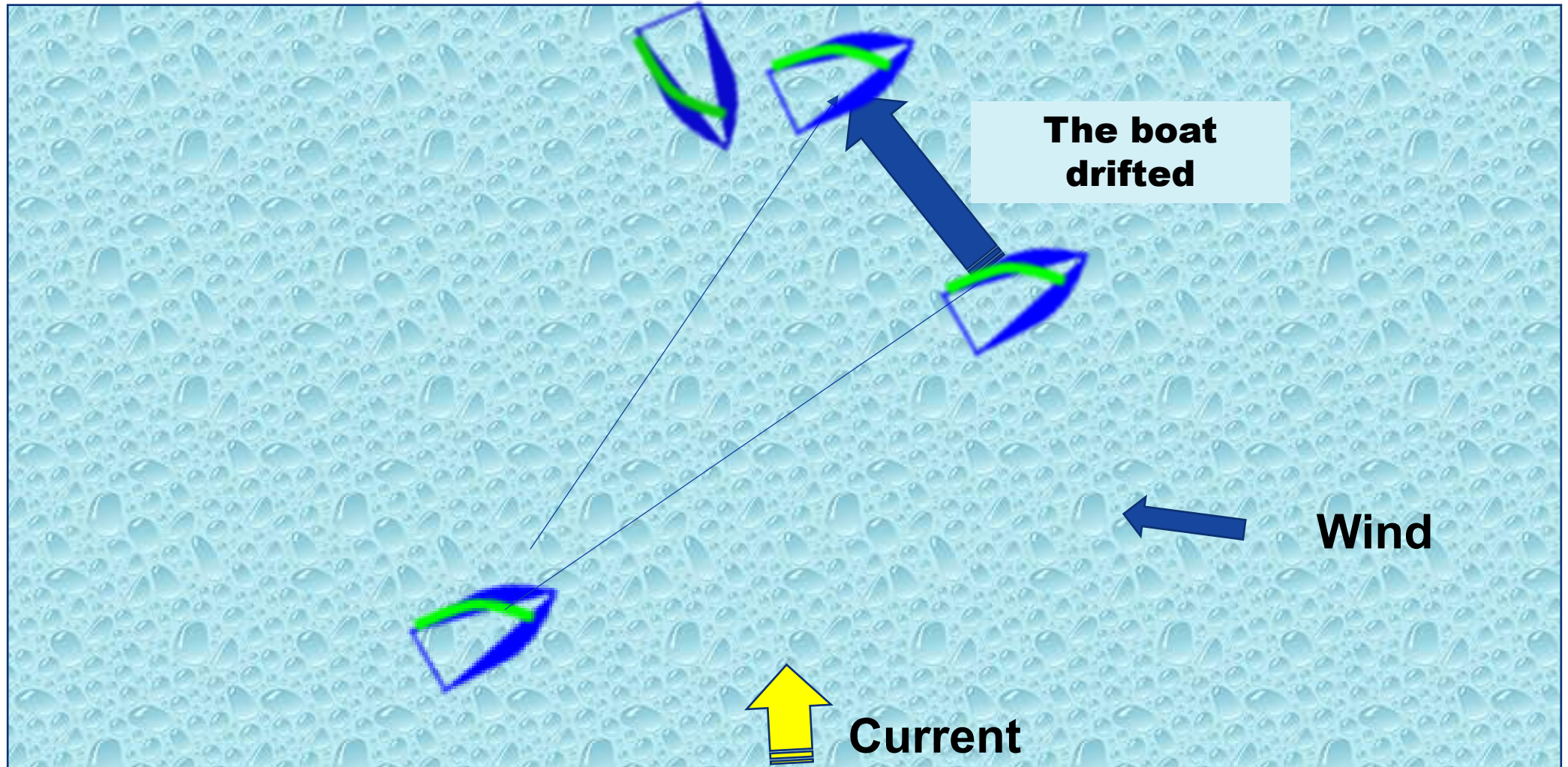
- When the current is in right angles with the wind the boat experiences 2 effects
- The new motion path
- Change of the wind direction – apparent wind



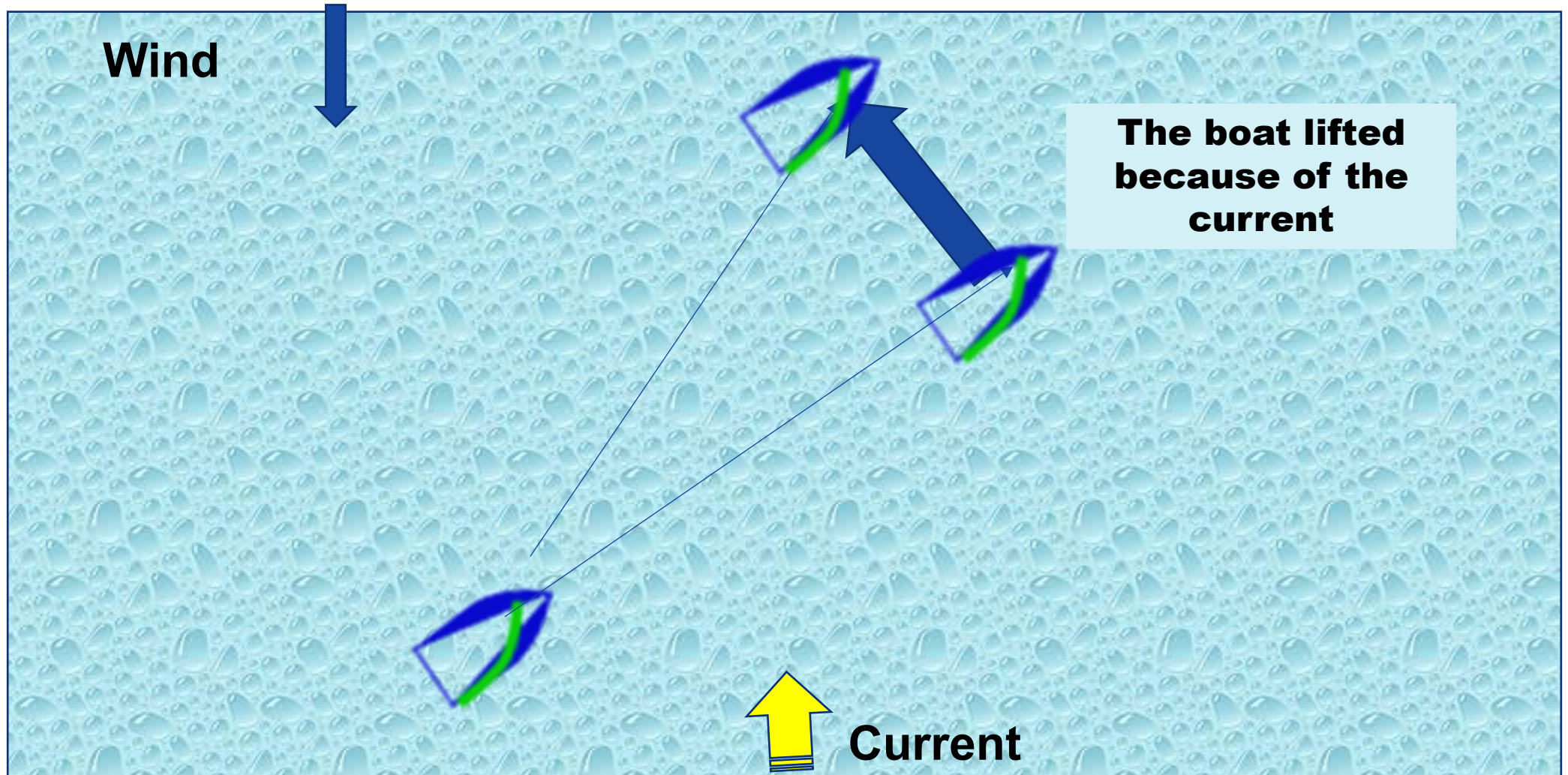
While Rounding the Upwind Mark

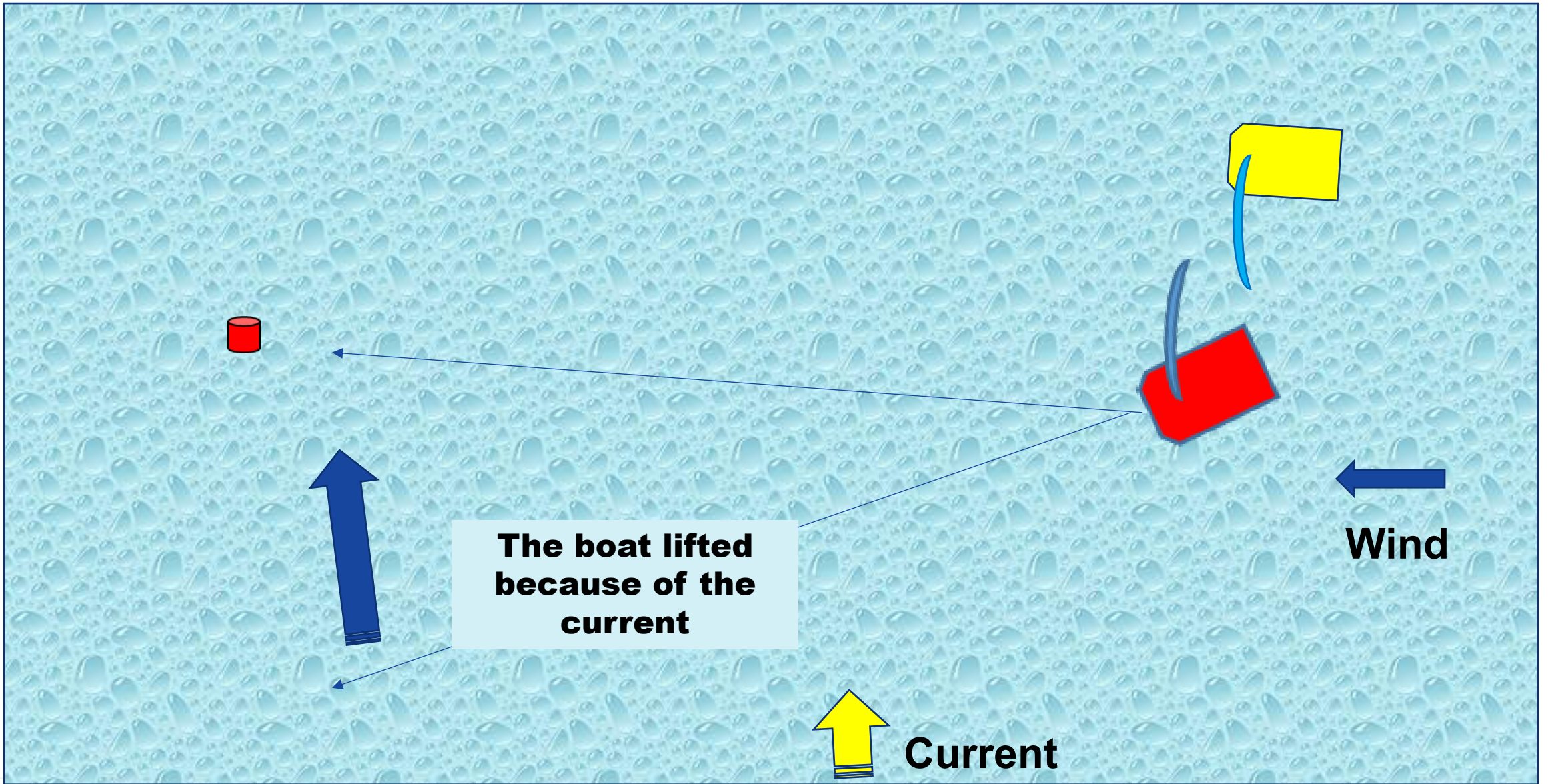


A boat moving opposite the current doesn't drift...



The boat uses the current and lifts!



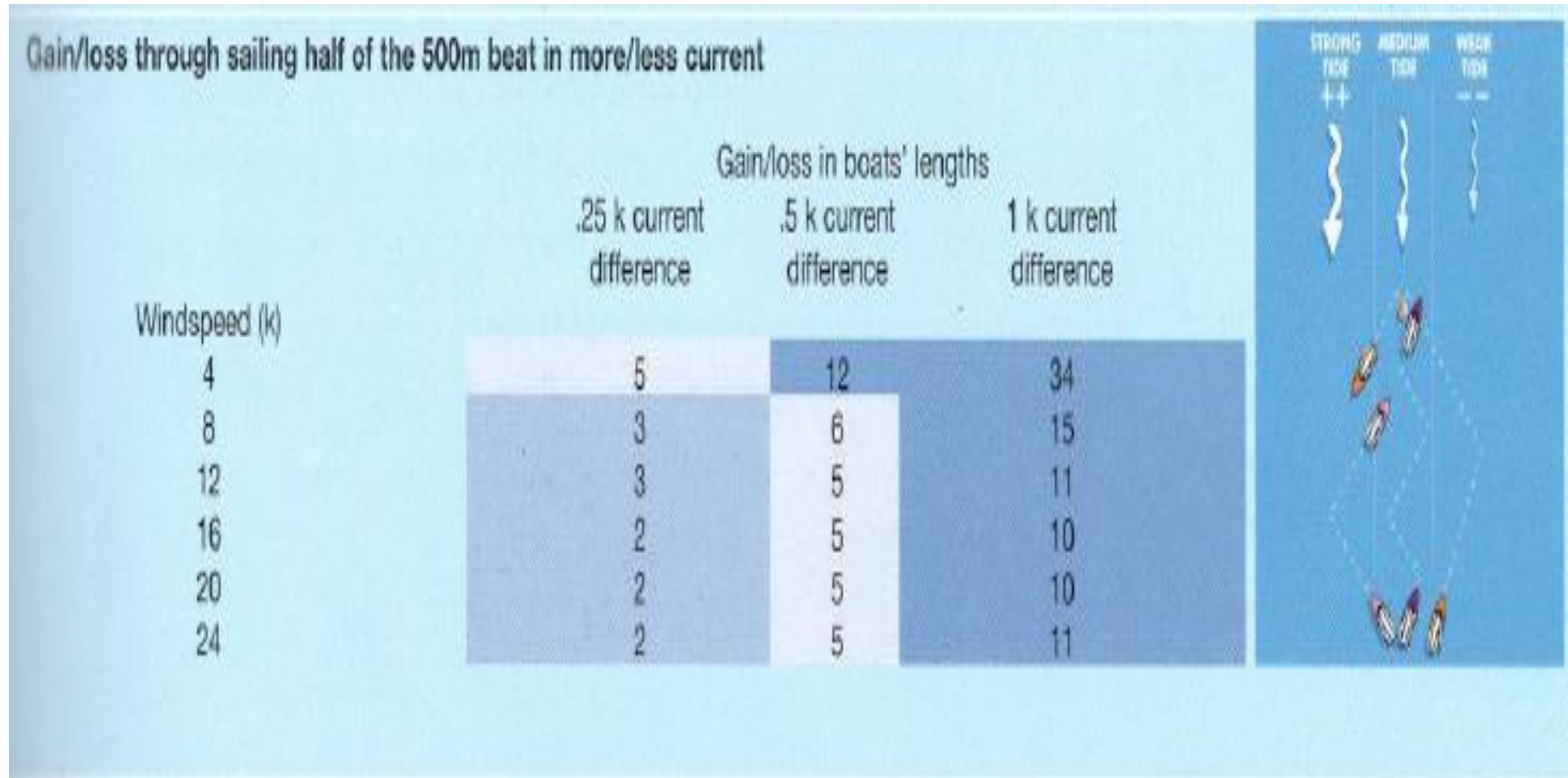


**The red boat is sailing open reach,
therefore faster than dead down wind.
Taking advantage of the current it was
pushed near the mark and gets in front of
the yellow boat sailing dead downwind.**

Useful Tips

- Current is more “painful” when there is less wind
- I choose to sail the course with the current on my side in the pressure

Gain or loss measured in boat' lengths and for a sailing distance of 500 meters in beat in more or less current



GATHER INFORMATION

1. When ashore:

- From current and tide charts
- From relevant sites on the internet
- From older sailors, fishermen

GATHER INFORMATION

2. In the water before the start:

- Sailing alone or with a friend sailor around the course
- Watching carefully anything that can give us information, i.e., an anchor rope, a ship, the starting boat
- I measure the current using a bottle
- Stopping next to the mark and see how the boat moves
- Talk with the coach

Important Questions

- **Is the current the same in all the race area?**
- **Do you expect it to change during the race?**
- **How will it affect us?**

ATTENTION!

- **Pay attention what will happen during the start**
- **On the lay lines and during rounding the marks**
- **The course opposite the current is less painful**