

You hit trouble with *VMC* when you actually have to get ‘there’. *VMG*? Bez problem; just go onto the other tack (or gybe) for a while. *VMH* (velocity made hopping) is just like *VMG*; simply round up or bear down onto the other hop when you can lay and you will get ‘there’. Look at it another way, and tacking (up or downwind) is just a specific form of hopping; hopping over a deadzone on two equal and opposite TWAs at identical *V* (or SOG if there is no current), in which case $VMG = V \cdot \cos a$, where *a* is the angle between the course you are actually on and the direction you actually want to go (i.e. upwind or downwind).

Imagine now that your speed opportunities are not symmetrical either side of the deadzone. Then, in general you will be looking at sailing off course at some angle *a* and speed *A* for a while, followed by another course off by some angle *b* at speed *B* to get ‘there’ where you want to be. The average speed you will make good to your goal is then, in general, given by:

$$VMH = \frac{A \cdot B \cdot (\sin b \cdot \cos a + \cos b \cdot \sin a)}{A \cdot \sin a + B \cdot \sin b}$$

Don’t believe me? Put $B = A$ and $b = a$ and you’ll find $VMH = A \cdot \cos a$, i.e. good ol’ *VMG*.

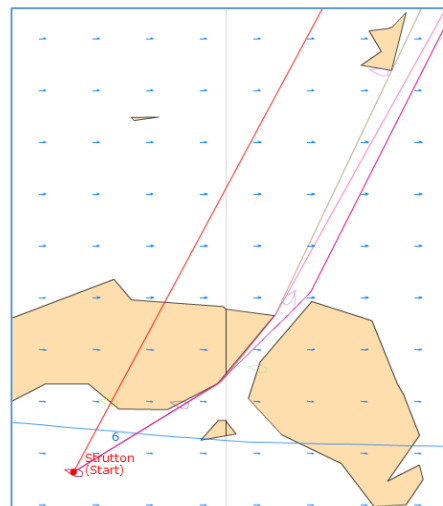
When I first looked at this sprint (our second one in less than two months on James Bay; guess it’s ice-free at the moment), it rather looked like a locus of straight lines along the shortest course through the channel between Strutton West and East and then round the eastern point of Cape Hope was going to be the quickest option. If you hung right a bit for more pressure, you’d be punished later with a tighter angle; if you compensated for the header by holding up left, you’d consistently have just a tad less breeze. A race to see who could corner best, then? I confess that didn’t enthruse me.

Whether the 16:30 WX brought a subtle change or whether I only spotted it when I set my preliminary DC for the first corner (a quirk of mine, cornering by DC), it turned out I was wrong to be unenthusiastic. A straight line up the channel was going to put you on a TWA of c 110, smack bang in the middle of a feint hollow in the polar diagram. We’d raced the 11mOD before, so I had done the maths (as per the intro) and a quick glance learned that TWA 118 or so was as much as I should round up at that first corner.

	13.2	13.3	13.4	13.5	13.6	13.7	13.8	13.9	14.0	14.1	14.2	14.3	14.4	14.5	14.6	14.7	14.8	14.9	15.0
VMH Up Angle	108.0	106.7	105.1	103.2	100.7	99.0	98.3	97.8	97.4	97.0	96.7	96.4	96.2	95.9	95.7	95.5	95.4	95.3	95.1
V Up at Angle	8.478	8.479	8.446	8.426	8.432	8.442	8.465	8.484	8.511	8.530	8.554	8.579	8.606	8.622	8.639	8.666	8.694	8.710	8.739
VMH Dn Angle	110.8	111.3	112.1	112.7	113.4	114.1	114.7	115.3	115.9	116.4	116.8	117.3	117.7	118.1	118.4	118.8	119.2	119.5	119.8
V Dn at Angle	8.570	8.600	8.642	8.676	8.715	8.756	8.793	8.831	8.870	8.907	8.939	8.978	9.013	9.048	9.080	9.118	9.156	9.190	9.225
VMH	8.521	8.532	8.527	8.520	8.519	8.521	8.537	8.553	8.574	8.589	8.609	8.629	8.650	8.665	8.681	8.703	8.727	8.745	8.768
V direct	8.524	8.525	8.526	8.522	8.512	8.513	8.521	8.533	8.543	8.552	8.561	8.570	8.579	8.586	8.595	8.603	8.612	8.621	8.631

Unfortunately I was so preoccupied gradually tightening up that first angle as the pressure dropped, that I hopped onto the tighter (spinnaker down?) angle perhaps 3 or 4 server jumps too late. Initially this did no harm at all. I was in more pressure, the wind was heading, I was pointing well West of the south eastern corner of Cape Hope and bonk continued to accelerate, and was even showing P1 from time to time, which given that there was an island in the way on the rhumb line to the finish, of course didn’t mean too much.

Adjacent you see bonk’s aberrant track vs SimeMali (light pink) and sassy63 (light mauve), who both ignored the polar’s deadzone and simply went for shortest distance by hugging the east coast of West Strutton.



sassy after clearing West Strutton opted to take some height in anticipation of the header later down the track, whilst Sime went dead straight for south east Hope, which we now know was the right thing to do.

Back to bonk's progress. About half way down the track to Good Hope, TWA hit the low 90s and the curvy predictor line the corner of Hope, so I switched to constant TWA. As the wind dropped further, this angle slowly became less attractive compared to sailing those few degrees freer that Sime, sassy and also SadlerSailing (the 'S' team) were, but stronger TWS continued to compensate a little.

It's always useful to have a look at the black curve on the SOL polar diagram and where the dot is. I did and blinked as it looked suspiciously like the dot was sitting in a second ever so minor but nevertheless discernible concavity. I checked the maths (see below). Yep, I was sailing at least a degree too tight, and freeing off for a hop later onto a tighter angle later would be quicker.

	10.7	10.8	10.9	11.0	11.1	11.2	11.3	11.4	11.5	11.6	11.7	11.8	11.9	12.0	12.1	12.2	12.3	12.4	12.5
VMH Up Angle	86.3	86.0	85.7	85.6	85.4	85.4	85.3	85.4	85.5	85.7	85.9	86.1	86.4	86.8	87.2	87.7	88.3	89.1	
V Up at Angle	7.666	7.682	7.698	7.716	7.737	7.756	7.775	7.795	7.816	7.831	7.854	7.878	7.903	7.924	7.946	7.971	7.997	8.025	8.055
VMH Dn Angle	93.3	93.9	94.3	94.7	94.9	95.1	95.2	95.3	95.3	95.2	95.0	94.8	94.4	94.0	93.5	92.9	92.1	91.0	
V Dn at Angle	7.738	7.759	7.777	7.795	7.810	7.826	7.841	7.857	7.873	7.890	7.907	7.924	7.942	7.960	7.979	7.999	8.020	8.041	8.062
VMH	7.688	7.702	7.716	7.731	7.747	7.763	7.779	7.797	7.815	7.832	7.853	7.876	7.900	7.922	7.947	7.973	8.000	8.028	8.057
V direct	7.686	7.700	7.712	7.726	7.740	7.755	7.771	7.788	7.806	7.826	7.847	7.870	7.893	7.918	7.944	7.972	7.999	8.028	8.057

So, I did and then luffed up (dropping the Code 0 for the genoa?) to rake past the northern bit of the south eastern cape, as shown in the chartlet adjacent. It was making the best of a bad lot, and clearly the distance bonk had to stand off the southern extremity of the cape (which Sime, sailing a mite tight, and sassy, free and fast, neatly clipped) could have been avoided if only on exiting the strait between the two Struttons I had hardened bonk up those couple of jumps earlier.

And that was that. An interesting race, but unexpectedly not so much because of the challenges of reading WRF wind, but primarily because our much loved 11mOD has a quirky polar!

