

EASTERN BASS STRAIT WEATHER

Ian P Dunn

For better or worse, to “paddle across Bass Strait”, has become an iconic paddle for Australian sea-kayakers. Yet, it is apparent from reading at least one recent trip report, that some wanna-be adventurers go quite ill-prepared for the trip. “... *we get confused as to where we should be paddling. We have lost sight of (the leader) who has the GPS and maps.*” (!)

Sooner or later, one of these crossings will come to grief, or - at very least - will require a rescue that makes the daily news, and such an event will inevitably reflect poorly on the wider sea-kayaking fraternity.

An essential part of preparing to cross Bass Strait (or any other significant trip) should be to learn about the environment that you are entering. Once you know the likely range of conditions to be encountered, you can assess whether your skills are up to the task. Very long open-crossings demand an informed judgement of whether it is safe to “go” or better to “stay-put”. A survey of the typical weather conditions can also help address the question “*When is the best time of year to go*”?

Over the last few years I have studied Bass Strait weather patterns, and some of what I have found I present here.

Information from the Australian Pilot

An obvious starting point for learning about Bass Strait weather is to consult the coastal bible for these waters – the *Australian Pilot, Volume II*. (AP2)

Some pertinent quotes directly from AP2 illustrate the nature of Bass Strait weather:

“*The frequency for heavy swell may be of the order 15-20% in summer and in excess of 30% in winter and spring.*” (AP2, 1.69).

“*Gales, force 8 and above, are rather frequent off the more S coasts of the mainland and around the coasts of Tasmania ... The bad weather is usually associated with the frontal systems of E moving lows.*” (AP2, 1.71)

Of winds, the information is presented mainly in the form of wind roses, but relevant quotes are: “*Most of the winds are moderate to strong in winter, averaging force 4 to 7.* “*The average strength in summer is force 4 to 5.*” (AP2, 1.73)

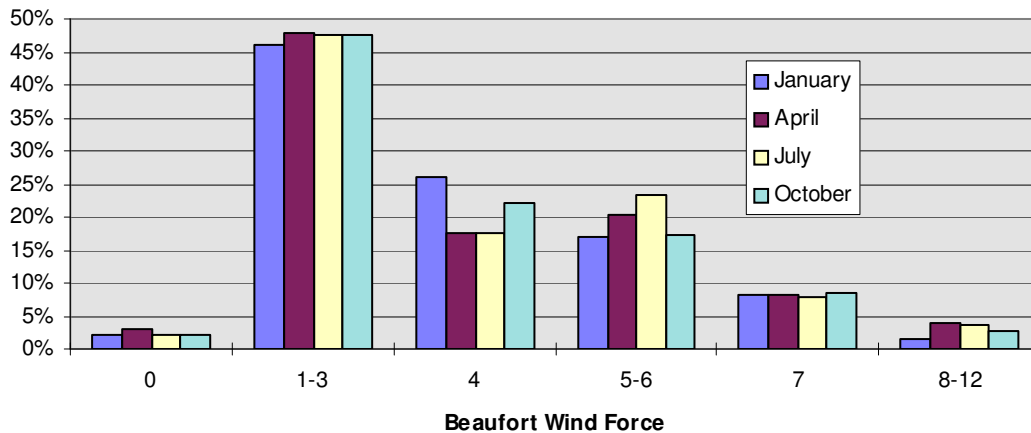
Wind Roses

The most concise method of summarising wind-direction, strength and frequency statistics throughout the year for a location is by using a “wind-rose”. Each “ray” shows the direction from which the wind blows, and the length of each ray indicates frequency of occurrence. Each ray is further subdivided to indicate the Beaufort scale.

Wind Strength

By careful measurement of each sector of the wind-roses, it has been possible to produce the following interesting graph. It shows that throughout the year, if one ignores wind direction, the distribution of wind forces is almost the same. In other words, there is no one season - for Eastern Bass Strait - which should be regarded as being windier (or calmer) than the other. This was a surprising and unexpected result, since I had always regarded early autumn as being calmer than at other times of year.

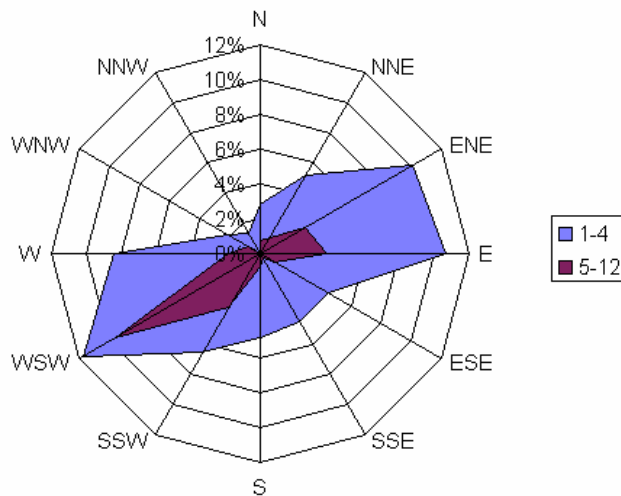
% Occurrence of different Wind Forces



Wind Direction

When one analyses the distribution of wind directions, it is clear that for Eastern Bass Strait (at least for January), the prevailing directions are mainly ENE and WSW. The following graph makes the rarity of winds from NW and SE quite apparent.

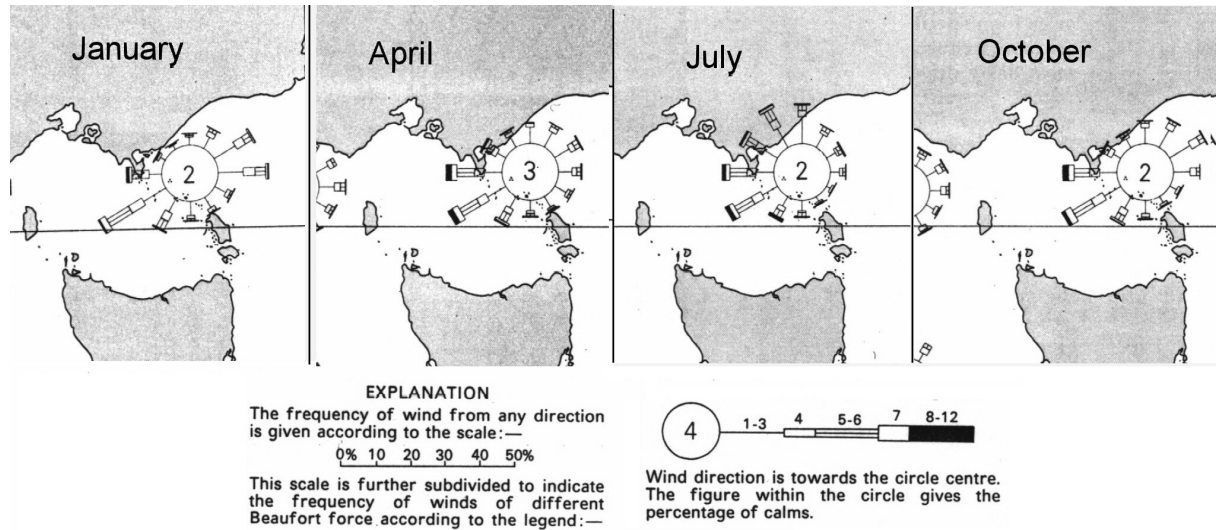
January - wind directions



Polar plot of wind directions obtained from an analysis of wind rose for Eastern Bass Strait for January. The percentages refer to probability of occurrence, and the two colours indicate the two ranges of Beaufort wind strength.

Bass Strait has a deserved reputation for fierce conditions. But it is important to understand that storms and associated deadly seas are an extreme condition. At the other end of the weather spectrum, the water can also be balmy and calm. However, neither of these

extremes is the usual situation. In summer, about 88% of the forecasts will say that wind strengths up to 20 knots are expected!



Information from Weather Forecasts

In order to familiarise myself with typical Bass Strait (BS) conditions, I monitored the forecasts from the Bureau of Meteorology (BOM) website (www.bom.com.au).

During the period from 1 December 1997 until 11 May 1999 (527 days), I collected the forecasts for 302 days as the opportunity arose - essentially this comprised weekdays and non-holiday periods. This 57% sampling for the total period resulted in the following number of forecasts for each calendar month being obtained:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
38	32	43	27	26	19	23	15	15	16	19	29

Each BS forecast comprises forecasts for the Western, Northern, Eastern and Southern BS. The following map shows the four forecast regions of the Strait.

BASS STRAIT FORECAST AREAS



The first forecast gathered (1 Dec 97) is representative of the nature of the information provided by the BOM forecasts for BS:

WESTERN BASS STRAIT:

Northwest wind of 15/20 knots increasing to 15/25 knots during the day and tending westerly. Seas 1 to 2 metres increasing to 2 to 3 metres later. Southwest swell around 2 metres rising to 3 to 4 metres later today.

NORTHERN BASS STRAIT:

West/northwest wind 10/15 knots increasing to 15/20 knots during the day. Seas 1 to 2 metres. Southwest swell around 2 metres.

EASTERN BASS STRAIT:

Northwesterly wind 10/15 knots increasing to 15/20 knots later. Seas 1 to 2 metres. Southwest swell around 2 metres.

SOUTHERN BASS STRAIT:

West to northwest winds 15 to 25 knots, reaching 30 at times over open waters. Seas 2 to 4 metres. Swell west to northwest around 2 metres.

To simplify the analysis, I decided to utilise just the Eastern zone forecasts. The Eastern region was chosen because it contains the significant open crossings of the “conventional” route for paddling BS.

Each forecast follows the same general pattern: (early) wind direction and strength, (later) wind direction and strength; sea height (early and late), and swell(s) direction and height (early and later).

To enable a systematic analysis of the data, I extracted the crucial numeric elements from each day’s Eastern BS forecast. This was quite a laborious step. The following table gives the data from the first eight forecasts to illustrate what was done. (The first row of data can be compared to the Eastern BS forecast given above).

DATE	MIN WIND Knots	MAX WIND Knots	MIN SEA Metres	MAX SEA Metres	MIN SWELL Metre	MAX SWELL metre
01-12-97	10	20	1	2	2	2
02-12-97	15	30			1	3

03-12-97	10	20	1	2	1	2
05-12-97	5	20	1	2	1.5	1.5
15-12-97	20	40	2	4	2	3
17-12-97	10	25	1.5	3	1	2
18-12-97	10	15	1	2	1.5	2
19-12-97	10	20	1	2	1	2

The resultant table of data (7 columns and 302 rows) was entered into an EXCEL spreadsheet. To provide bigger data-sets for each category, I pooled the data into (calendar) seasons, then further grouped each variable into different ranges (different wind speeds, different swell heights etc).

Finally, the results were expressed as percentages of the number of forecast-days within each pooled group. These six tables are presented as an appendix to this report.

CONCLUSIONS

WIND

Minimum Wind Speed

The lightest winds, those less than 5 knots, are predicted in 23% of the winter forecasts compared to 9% in summer and just 6% in spring. The typical lower limit for wind speed forecast is for 15 to 20 knots.

Maximum Wind Speed

Strong winds are the bane of all open water paddlers. Autumn clearly offers the best chance of modest winds with 34% of the forecasts being in the 10 to 15 knot range; by comparison, summer has just 12% of the forecasts being in the same range.

In fact 88% of all the summer forecasts predicted winds of 20 knots or higher, compared to 66% of autumn forecasts.

SEA CONDITION

Minimum Sea Height:

If one is seeking slight seas, then autumn and winter offers the best likelihood. There is then, about a 65% chance of a minimum sea condition of 1 metre or less. This compares to about 45% during spring and summer.

However, it is worth noting that, irrespective of the season, there is between 92% and 94% probability that the minimum seas forecast will be 2 m and less.

Maximum Sea Height:

If avoidance of heavy seas is the issue, then, again autumn is favoured. Autumn has a 33% forecast rate of seas being 2.5 metres or higher. The probabilities for the other seasons average about 50%.

Similarly, autumn has the highest chance (22%) of the sea being 1 metre or less; this contrasts with summer in particular, where just 5% of the forecasts predicted such slight seas.

SWELL

Minimum Swell Height

Swell is generally less troublesome to the paddler than sea, but a slight swell is always to be preferred to a heavy swell. However, the predicted minimum swell height shows only modest variation between the seasons: the probability ranging from a low of 56% (summer), to a high of 66% (autumn). No one season seems much different to the rest in regards to minimum predicted swell.

Maximum Swell Height

If avoidance of heavy swell is being sought, then summer and autumn are the best seasons because each has just a 6% chance of a swell of 4 metres and above. The probability of 4 metre swell and above is almost 3 times more prevalent in winter and spring. Not surprisingly, summer and autumn are also the seasons that have the best likelihood of slight swell (i.e less than 1.5 m), with autumn (28%) the slightly better of the two.

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APPENDIX – Tables of results (all values are expressed as percentage of forecasts).

FORECAST WIND SPEEDS (Knots)

Minimum Wind Speed

	Summer	Autumn	Winter	Spring
<5 knots	9%	14%	23%	6%
10-15 knots	74%	74%	63%	82%
>=20 knots	17%	13%	14%	12%

Maximum Wind Speed

	Summer	Autumn	Winter	Spring
<5 knots	0%	0%	0%	2%
10-15 knots	12%	34%	23%	20%
>=20 knots	88%	66%	77%	78%

FORECAST SEA-HEIGHT (metres)

Minimum Sea Height

Metres	Summer	Autumn	Winter	Spring
0.5 – 1	43%	63%	67%	46%
1.5 – 2	51%	31%	26%	46%
2.5 – 3	6%	5%	4%	8%
3.5 – 4	0%	1%	4%	0%
4.5 – 5	0%	0%	0%	0%

Maximum Sea Height

Metres	Summer	Autumn	Winter	Spring
0.5 – 1	5%	22%	18%	16%
1.5 – 2	48%	45%	37%	30%
2.5 – 3	26%	19%	18%	32%
3.5 – 4	20%	11%	21%	10%
4.5 – 5	1%	3%	7%	12%

FORECAST SWELL HEIGHT (metres)

Minimum Swell (metres)

Metres	Summer	Autumn	Winter	Spring
1, 1.5	56%	66%	61%	62%
2 – 3	44%	34%	39%	38%
4+	0%	0%	0%	0%

Maximum Swell (metres)

Metres	Summer	Autumn	Winter	Spring
1, 1.5	23%	28%	19%	16%
2 – 3	71%	65%	61%	66%
4+	6%	6%	19%	18%