

Weather for Sailors

The Fundamentals-Enclosed Waters





Greg Patten



Simon Dryden



Ray Shaw



Kerren McMaster
PredictWind



Meet Keryn McMaster

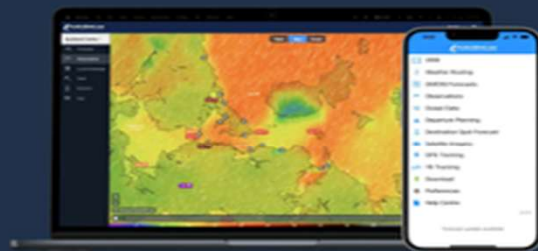
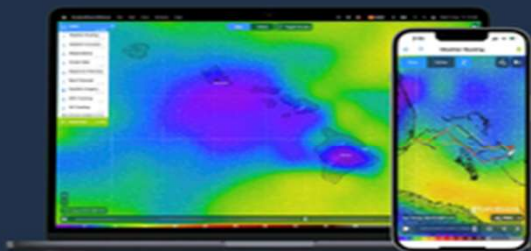
Apps

PredictWind App

Designed for use on cellular and wifi networks.

Offshore App

Designed for offshore cruising and racing, outside of mobile reception.



- Head of Support & Sales at PredictWind
- Experienced offshore sailor with 2 circumnavigations
- Leads global customer support & training
- Highly involved in event sponsorships and races such as The Ocean Race , Admirals Cup and Fastnet

Revision Poll

- What happens to pressure and temperature with height?

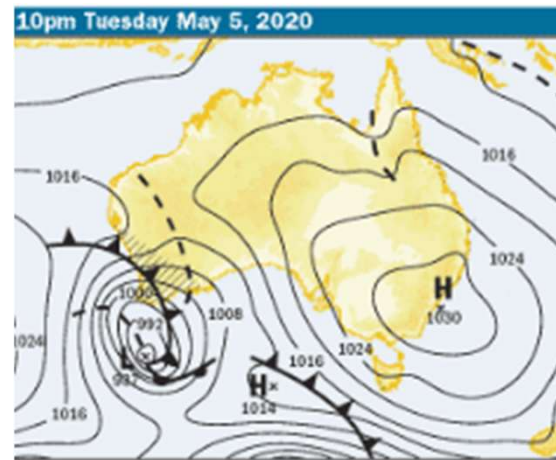
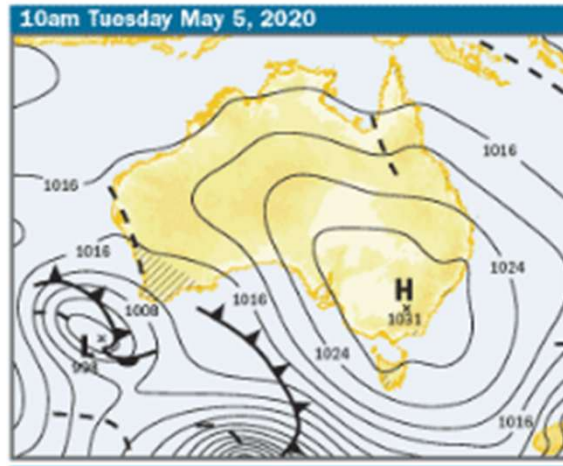
Revision Poll

- What direction does wind blow around a low- pressure in the southern hemisphere?

Revision Poll

- Does air rise or fall in a high-pressure system?

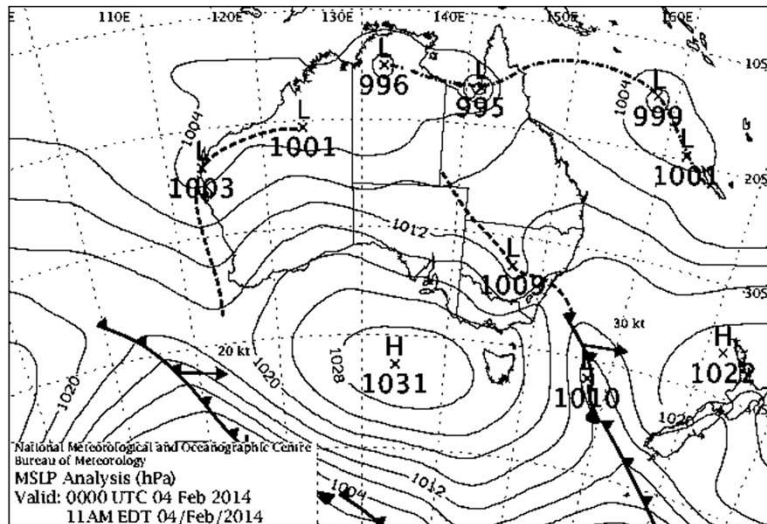
Movement of Weather Systems



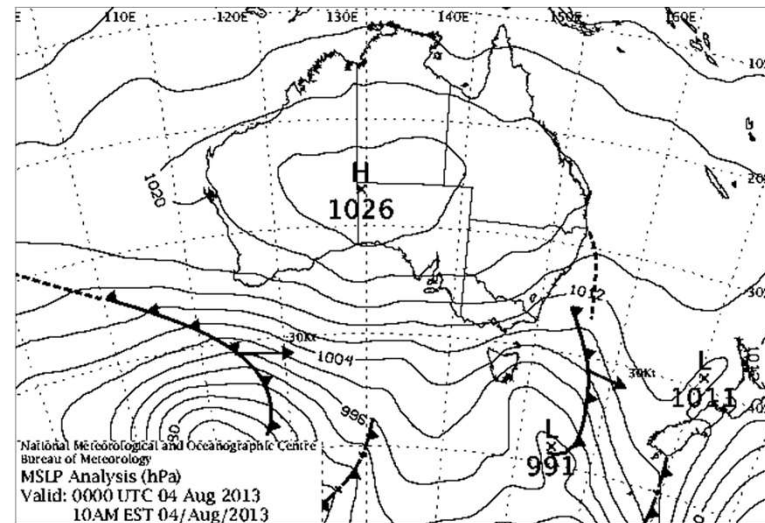
- In mid-Latitudes, weather moves from west to east
- Driven by global wind circulation patterns and the Coriolis Force
- Moves across the continent in a few days
- Can be slowed down by blocking high pressure systems that form further south than usual and remain near stationary for an extended period of time

Changes Between Seasons

Summer

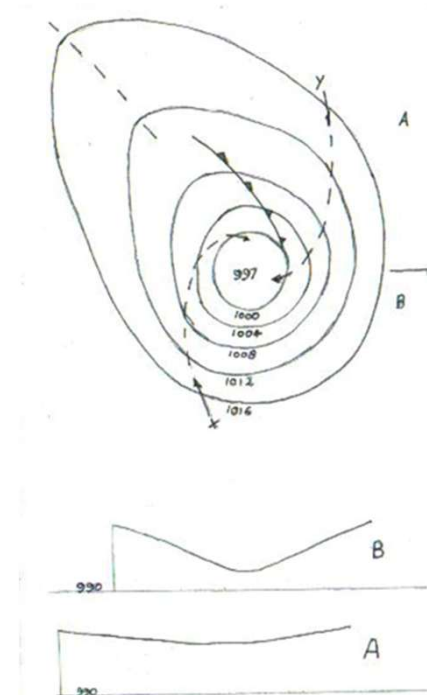
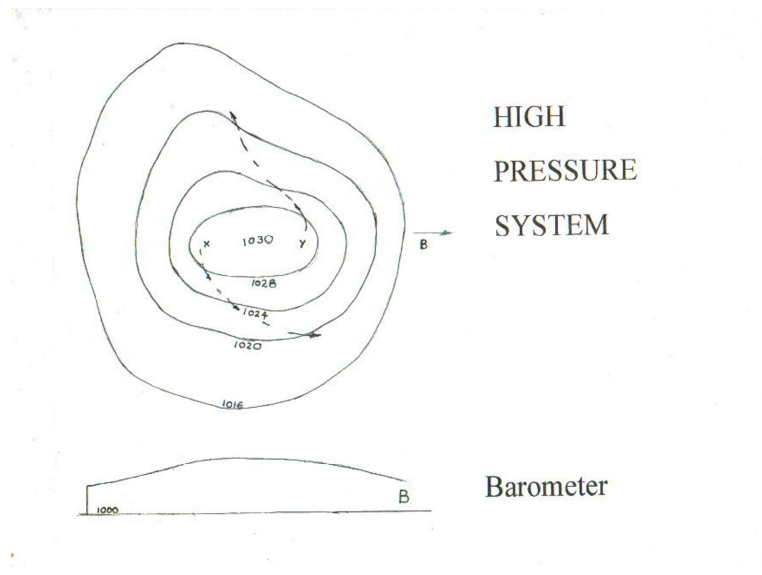


Winter

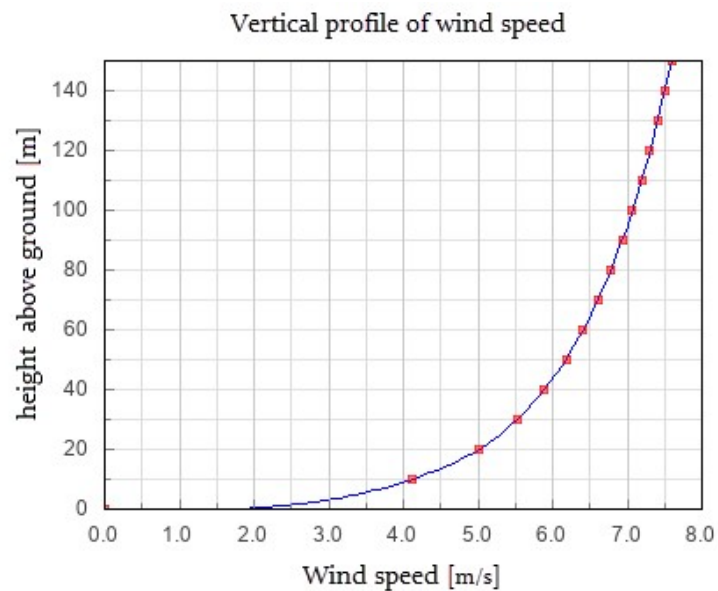


- In Summer, the high-pressure belt is usually south of the continent
- In Winter, the high-pressure belt is further north
- In Summer, the high-pressure belt is over the continent. The effect of westerly winds and cold fronts have more impact

Horizontal Wind Profiles in Highs and Lows



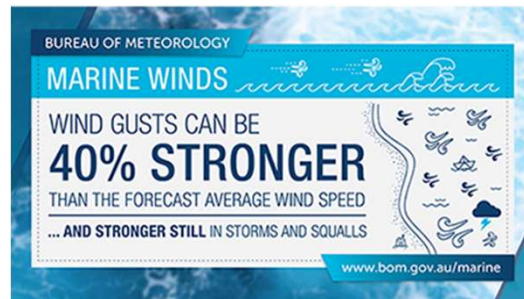
Vertical Wind Profiles



- Surface friction causes wind gradient near the sea surface (more pronounced in lighter winds)
- BOM wind speeds at 10m and 10-minute average
- Has obvious impacts on sail trim, particularly in light winds

BOM Wind Levels

- Measured over a 10-minute interval at 10m height



40% speed increase means twice the force on your yacht!

Average wind speed (knots)	Gust strength that should be planned for (knots)	Wind Warning thresholds
10	14	
15	21	
20	28	
26 - 33	36 - 45	Strong wind warning issued
34 - 47	48 - 65	Gale force warning issued
48 - 63	67 - 88	Storm force warning issued
64 or more	90 or more	Hurricane force warning issued

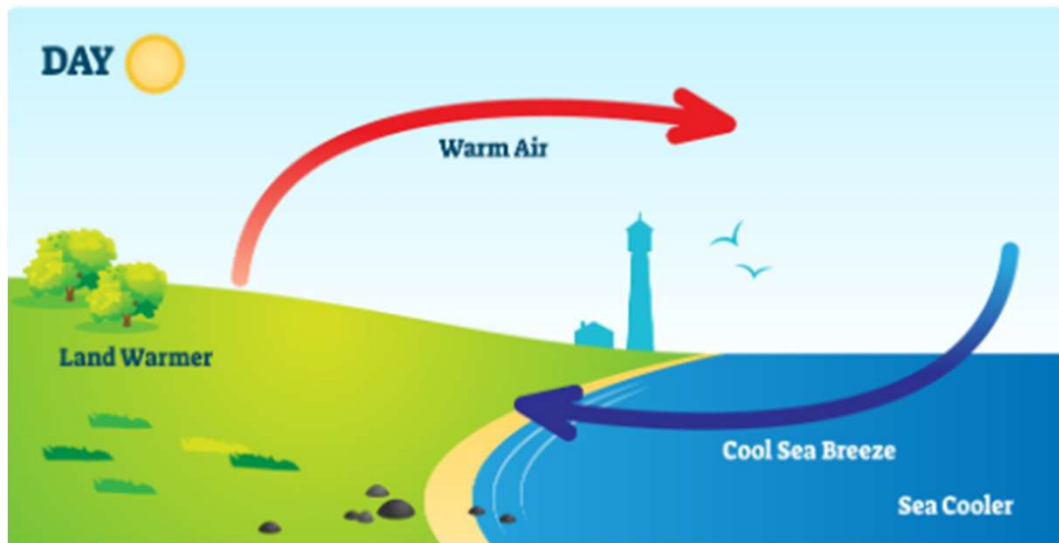
Beaufort Wind Scale

- Admiral Beaufort RN
- 1830's - Pre-wind instruments – Based on Sea and Land effects
- Internationally Understood
- Note Beaufort storm force is different to BOM Storm warning 48-63 kts

BEAUFORT SCALE WIND FORCE		DESCRIPTION	WIND SPEED IN KNOTS
	1	Light airs, ripples Drifting Conditions	1-3
	2	Light breeze, small wavelets Both need large sails to catch breeze	4-6
	3	Gentle breeze, crests begin to break Large headsails & full mainsails	7-10
	4	Moderate, small waves becoming larger frequent white crests. Reduce headsails and full main (B) might start reef.	11-16
	5	Fresh breeze, moderate waves many white crests, spray Reduce headsails and (B) starts to reef.	17-21
	6	Strong breeze, large waves, white foam crests Less sail	22-27
	7	Near gale, sea heaps up, white foam, breaking waves blown in streaks Both under reefed mains with small jibs.	28-33
	8	Gale, Moderately high waves, breaking crests, foam streaks Deep reefed mains, storm jib on (B).	34-40
	9	Severe gale, high waves, crests tumble spray affects visibility. (A) Storm jib & trysail, storm jib only on (B).	41-47
	10	STORM Very high waves with long breaking crests. Survival conditions.	48-55

REMEMBER – This scale was devised for large sailing vessels and each figure only refers to an AVERAGE speed. So gusts well up into the next force can be expected at times.

Sea Breeze



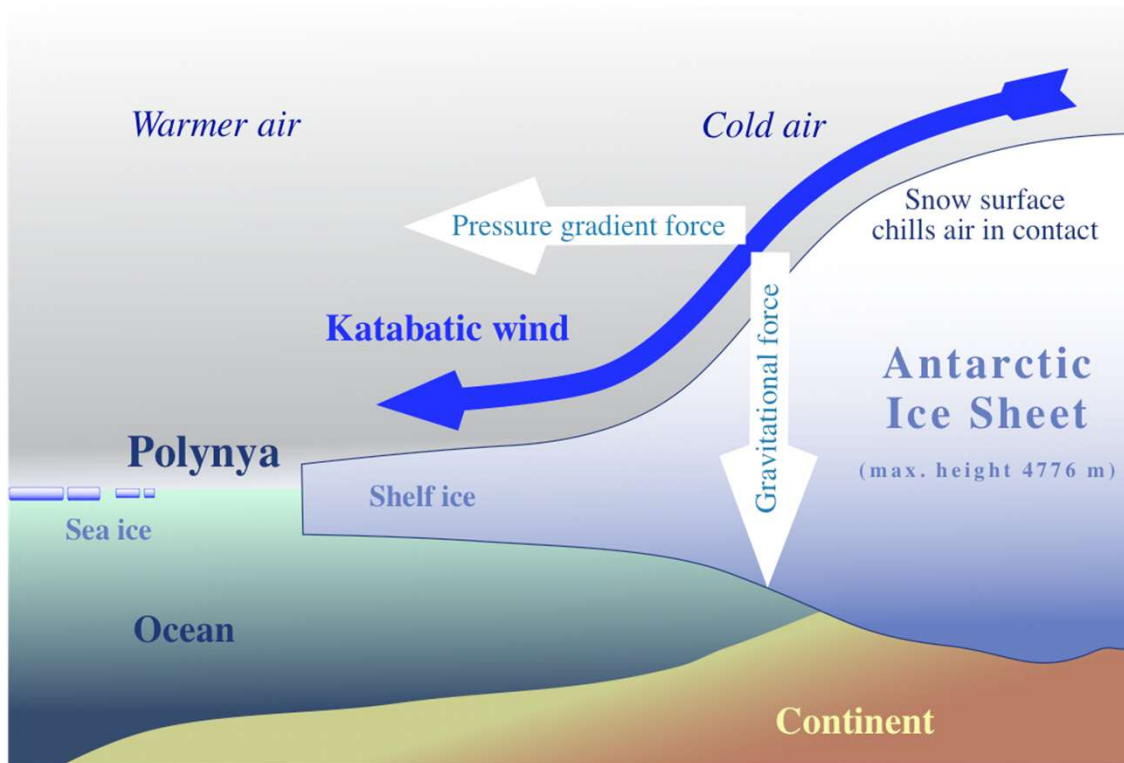
- Land heats and cools faster than sea
- Late morning, warmer air rises over land
- Cooler air moves in from the sea
- Cloud formation over land can be an early warning sign
- Dissipates by late afternoon
- Wind strength can increase if the sea breeze aligns with the prevailing gradient wind direction (converse too!)

Land Breeze



- Land cools once sun disappears
- By late evening, sea is warmer
- Cooler air moves out from the land
- Starts close to shore and gradually moves outwards
- Weaker if significant cloud over land

Katabatic Wind



- Air aloft cools due to land cooling or nighttime radiation loss
- Cooler air becomes more dense
- Gravity drags the denser air downhill
- Particularly strong with valleys to the water
- Common in Antarctica, also Tasmania West Coast
- Can be strategically important

Katabatic Winds



Poll

- At what height and over what time does the BOM measure wind strength?

Poll

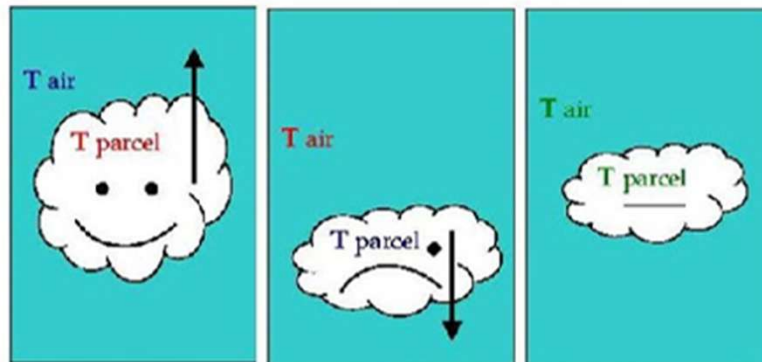
- What is the range of wind speeds for a strong wind warning?

Clouds – Signs of the Sky

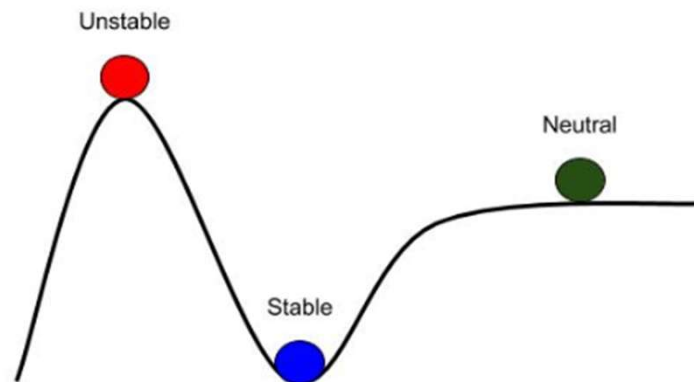
- Why Study Clouds?
- Clouds are indicators of vertical motion
- Used to understand current and future winds and weather (local and regional)



Atmospheric Stability

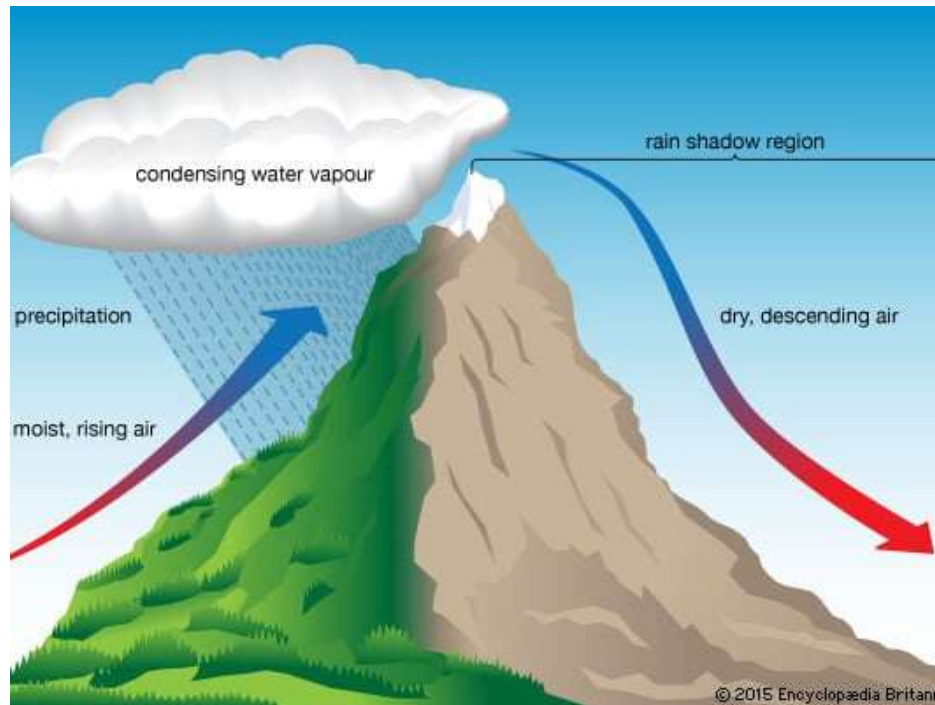


UNSTABLE $T_{\text{parcel}} > T_{\text{air}}$ The parcel is warmer than its surroundings, so it rises and expands	STABLE $T_{\text{parcel}} < T_{\text{air}}$ The parcel is cooler than its surroundings, so it sinks and compresses	NEUTRAL $T_{\text{parcel}} = T_{\text{air}}$ The parcel is the same temperature as its surroundings, no change
--	---	---



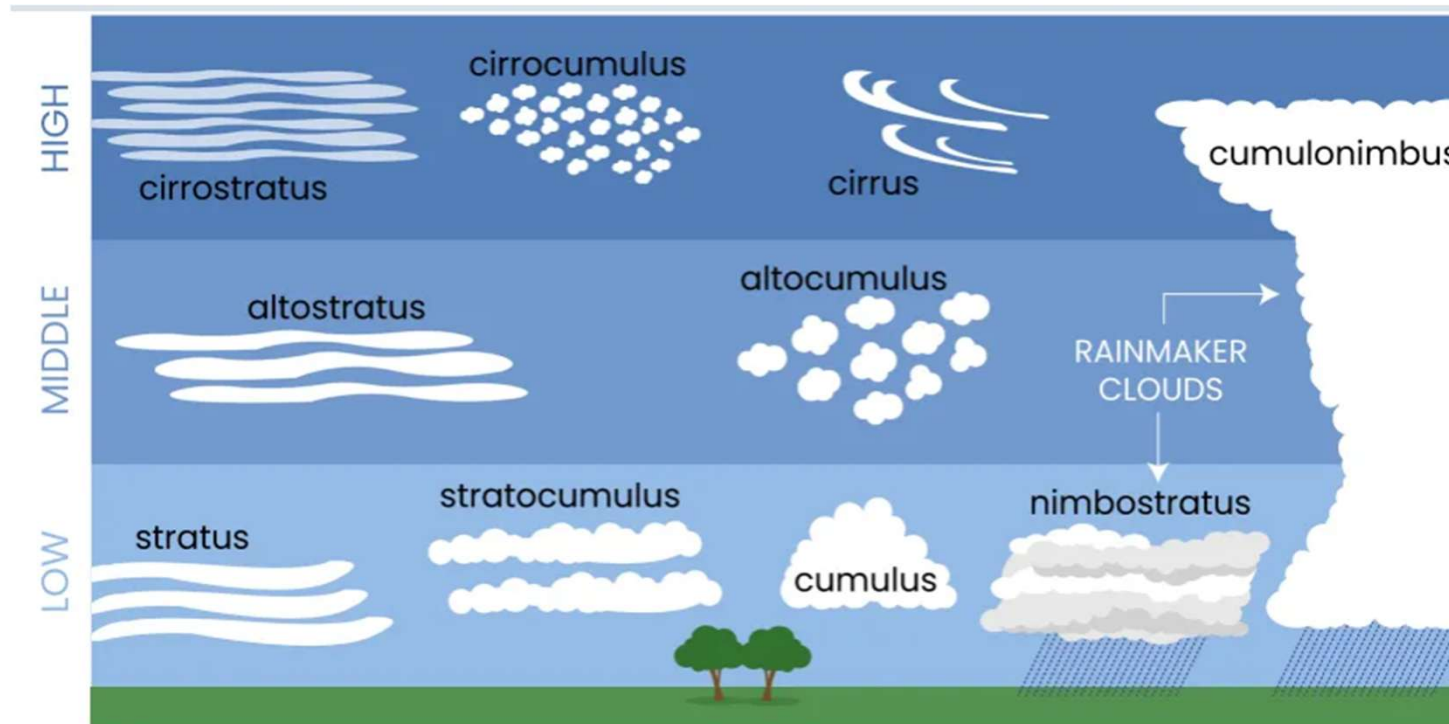
- If a parcel of air has a higher temperature than its surroundings, it rises. If the surrounding air temperature decreases rapidly with height we have instability and the parcel continues to rise. We see cumulus or even cumulonimbus clouds and typically rain or thunderstorms - Unstable
- If the atmosphere cools slowly with height, a lifted parcel will eventually cool and sink back down. This produces calm winds, clear skies or flat layered stratus clouds – Stable
- If a parcel of air has the same temperature than the surroundings, it is stationary - Neutral

Orographic Lifting



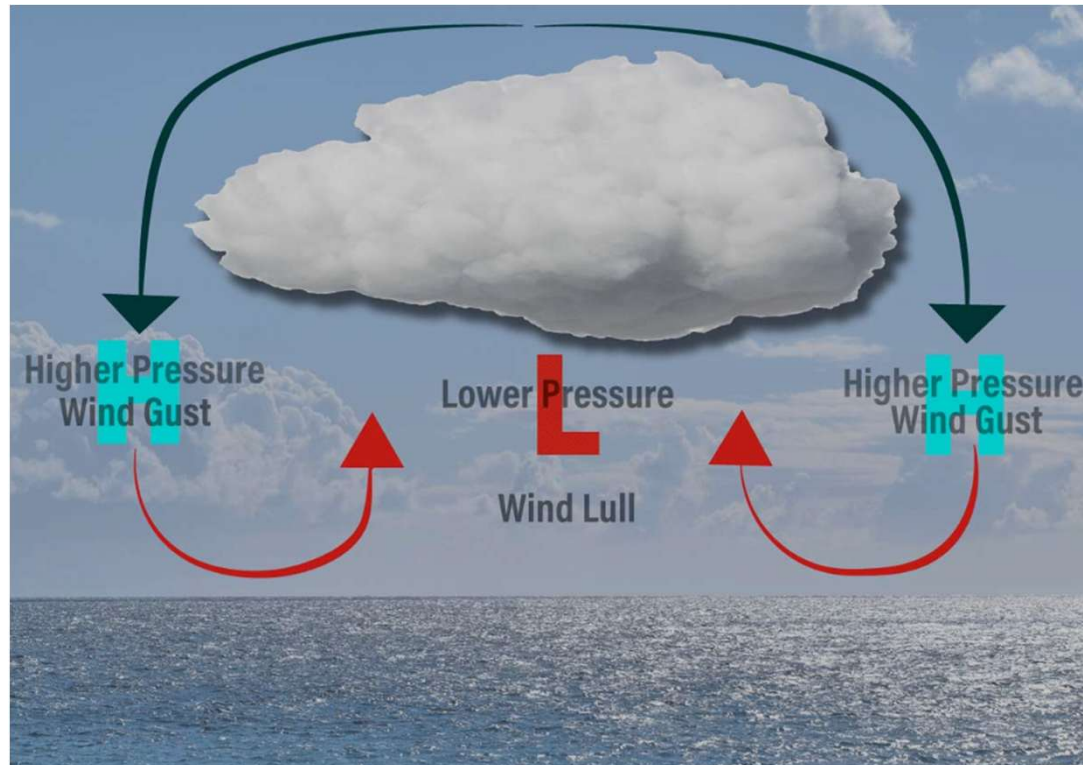
- Moist air, often from the sea, rises over coastal mountains
- Rising air cools, water vapour condenses bringing rain on the windward side
- Dry air continues to the leeward side of the mountains

Cloud Types



- Clouds names based on their height, their appearance and the type of weather they bring
- Cirro; high, curly • Alto; mid height • Strato: layered • Nimbo: rain • Cumulo: lumpy

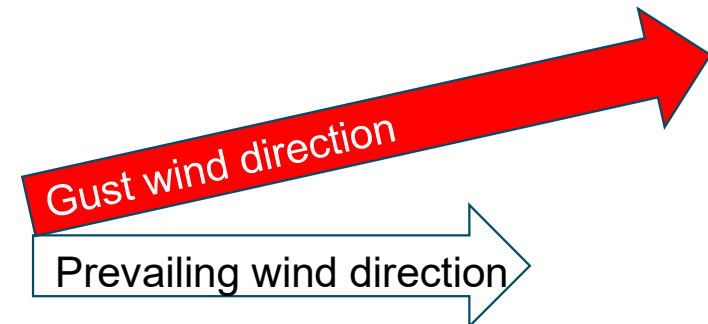
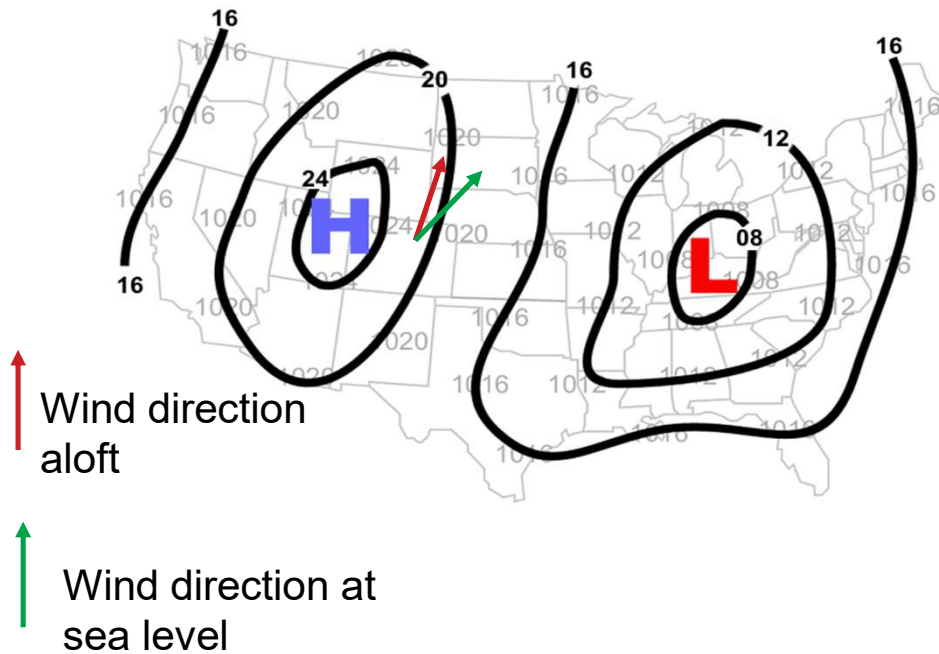
Gusts and Lulls



- Rising air near the cloud centre (low pressure) produces lulls
- Downdraft near the cloud edge (higher pressure) produces gusts
- Short in duration and shift in direction

Gusts and Lulls

- Gusts involves air coming from aloft
- The higher air has been rotated more by the Coriolis force due to the lack of surface friction
- Gust direction moves anticlockwise (Southern hemisphere)

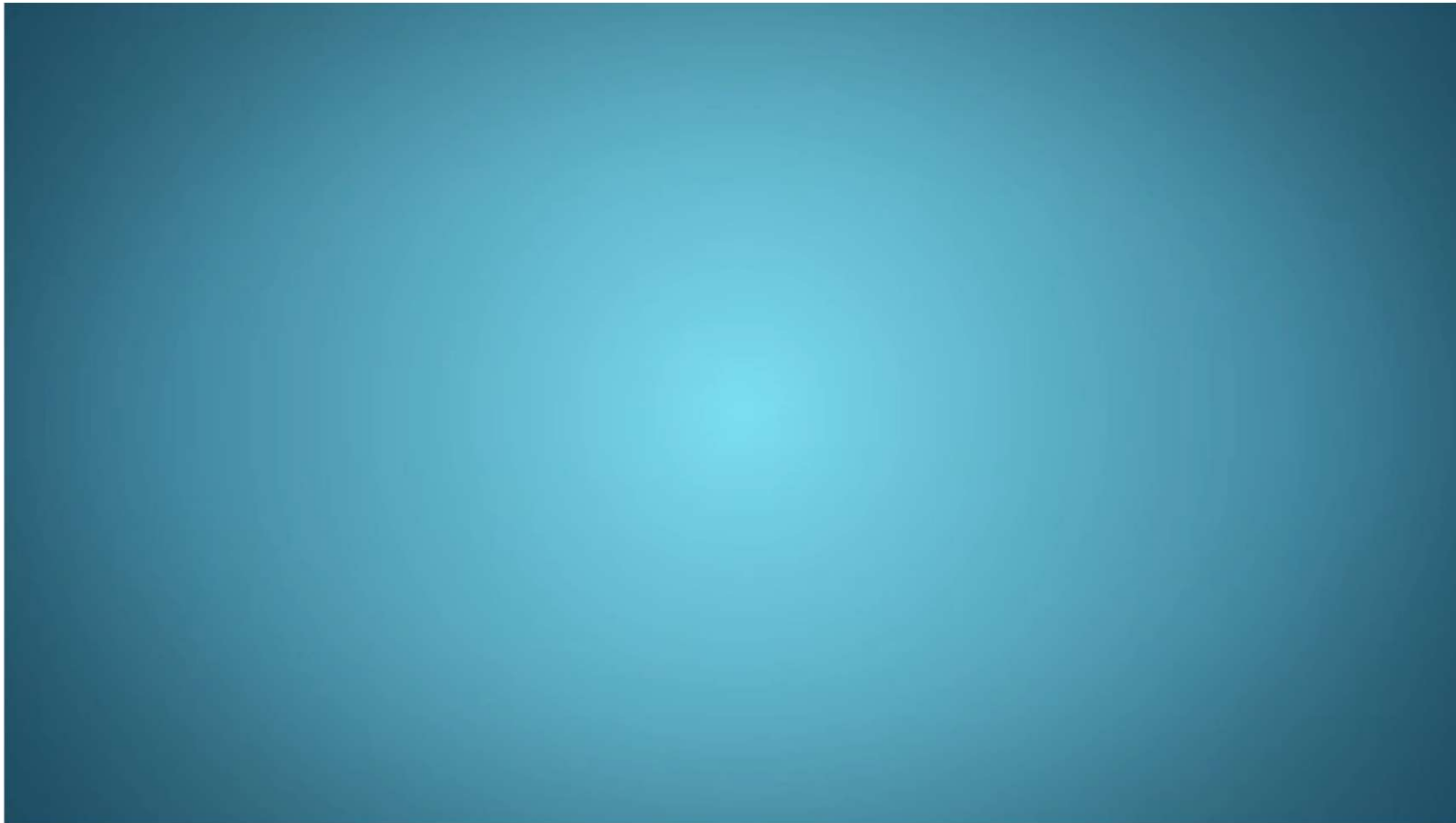


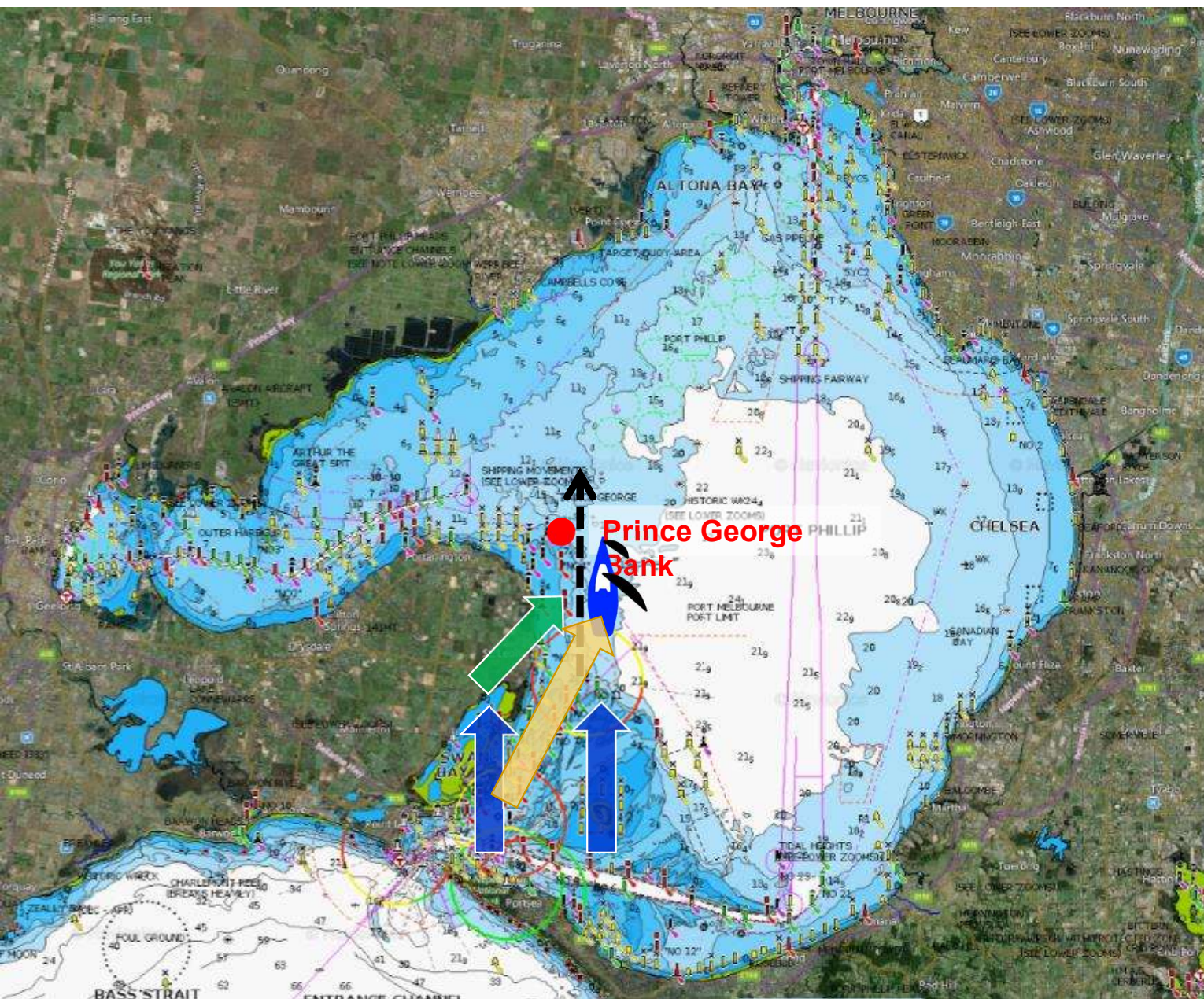
Squalls

 Met Office

WEATHER SNACKS

Thunderstorms





Part 1: When you are Adjacent to Headland

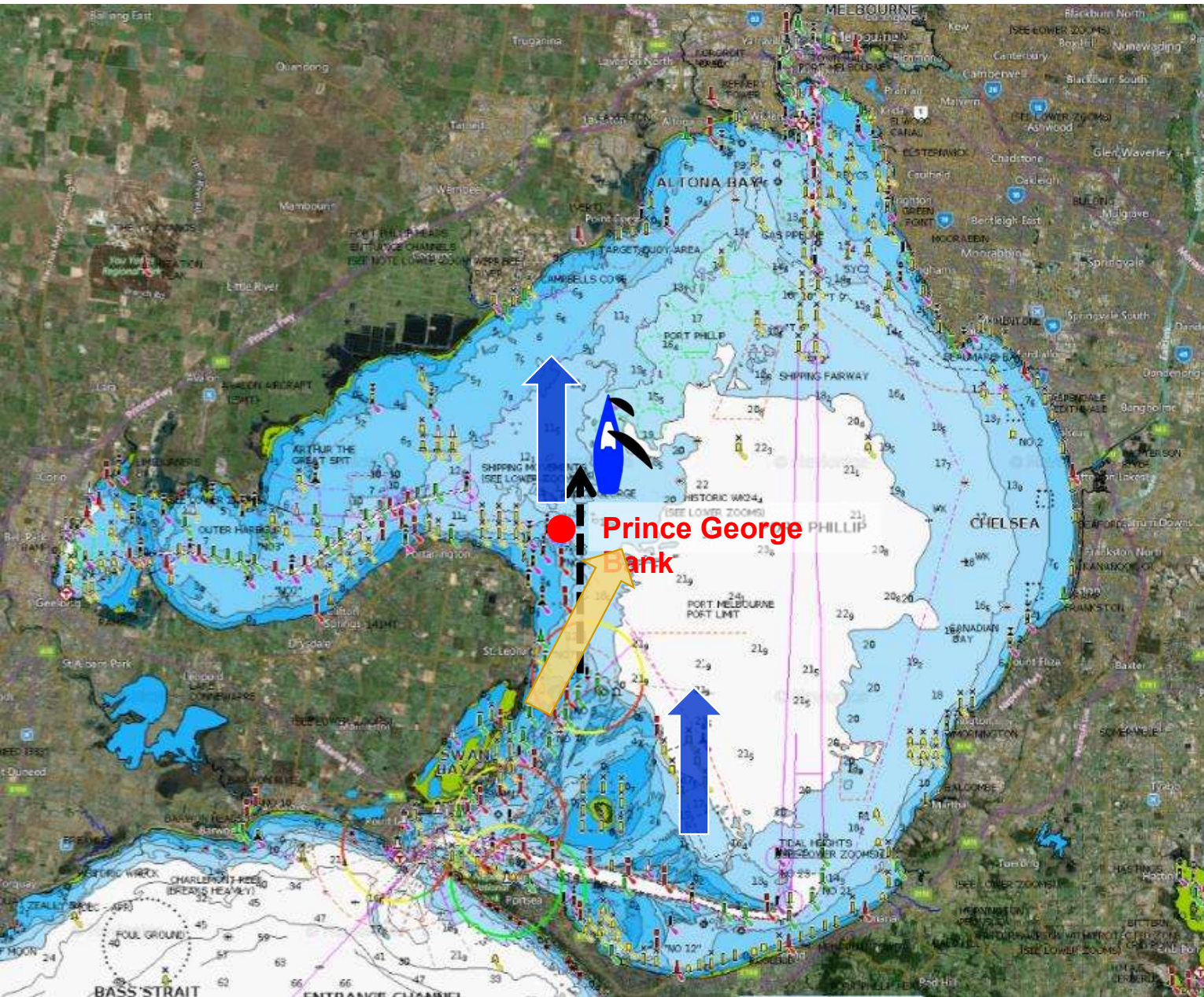
SW Wind **Veered**
over land
Reinforces with
Gradient Southerly
wind to become
South South
Westerly and
stronger
Wind **Veers** over land
and **slows** becomes
South Westerly

Gradient
Southerly Wind

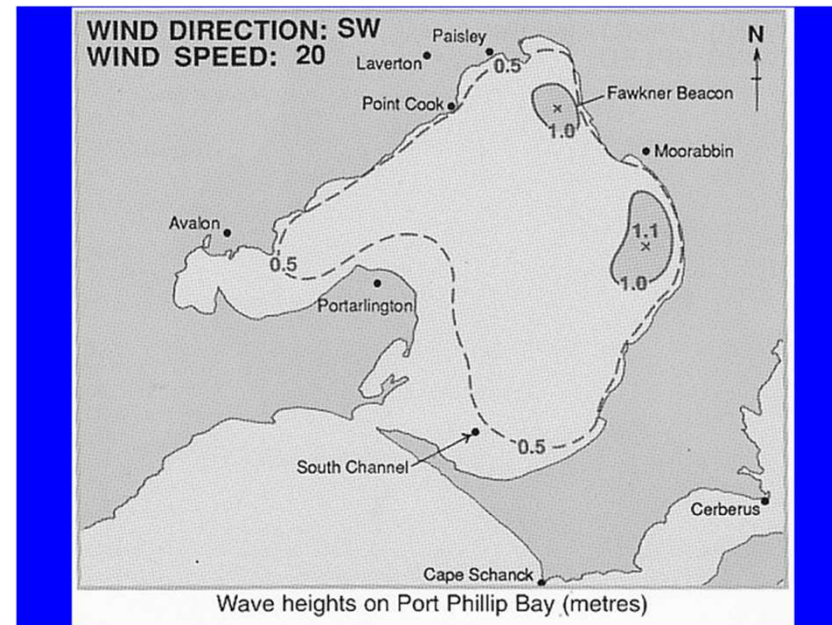
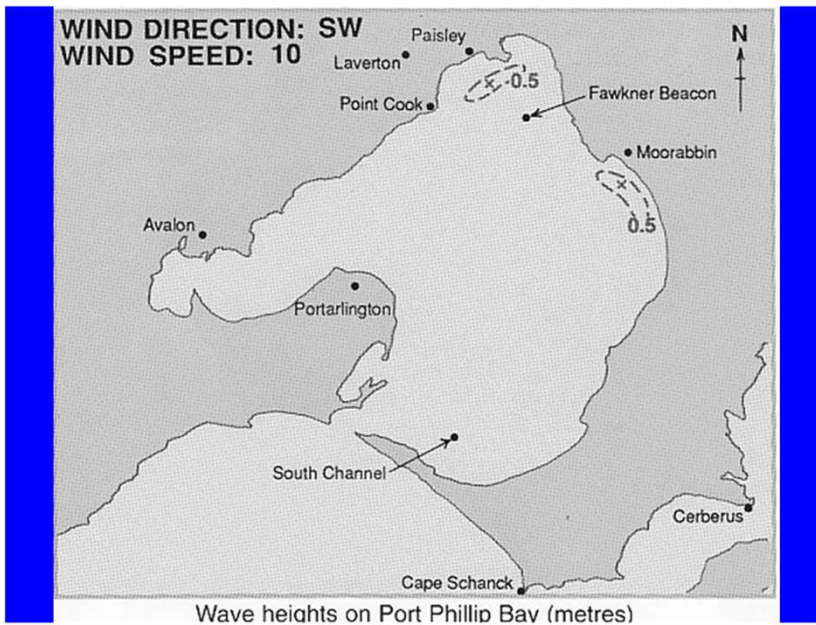


Part 2: You are Past Headland

South South Westerly
wind **Backs** and
softens to Gradient
Wind Strength and
Direction

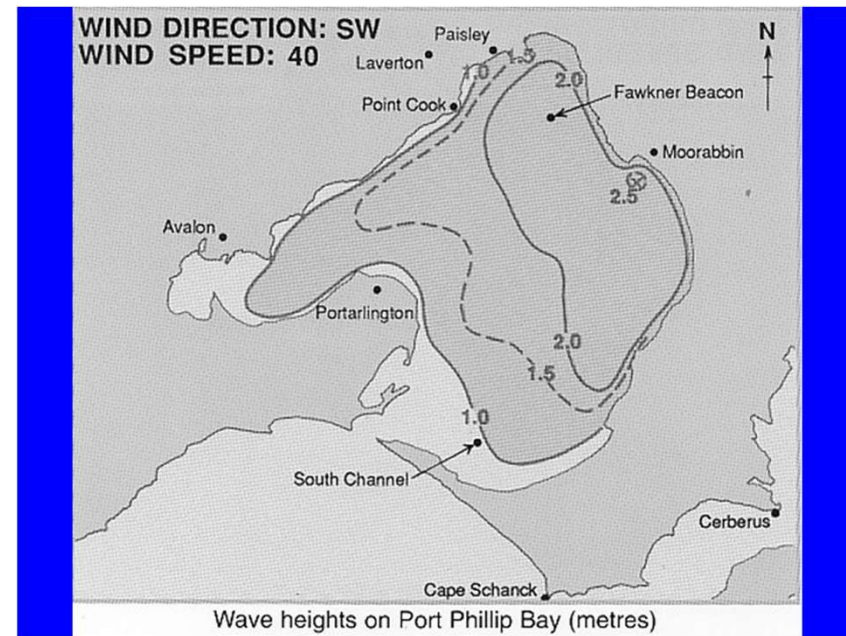
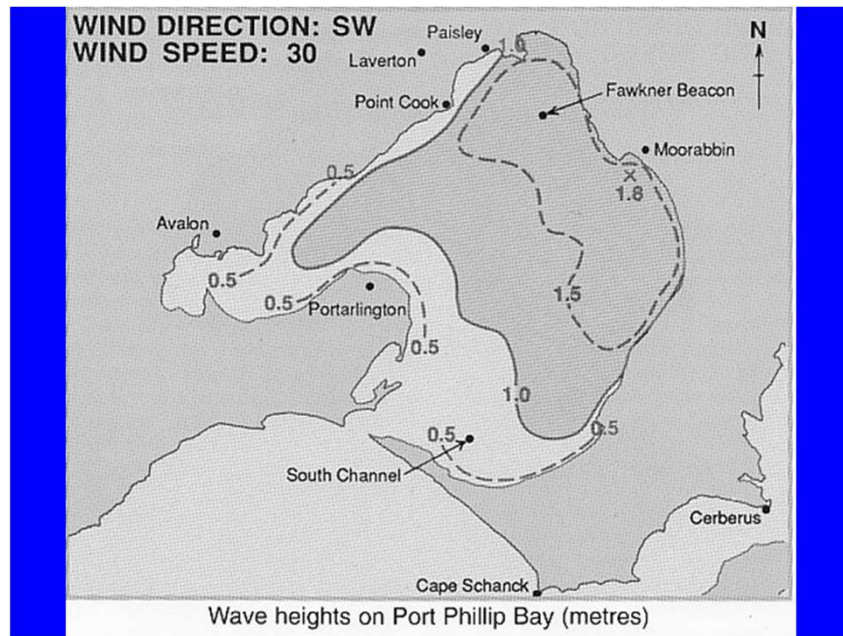


Effect of Wind on Sea State



- Wave heights depend on wind strength and the distance over which the wind has been blowing (fetch)
- Also depends on how long the wind has been blowing

Effect of Wind on Sea State



- SW Wind of 30-30 knots

Effect of Wind on Sea State

- Winter NW Gales on Port Phillip



Poll

- What determines the effect of wind on the sea state?

Break/Questions

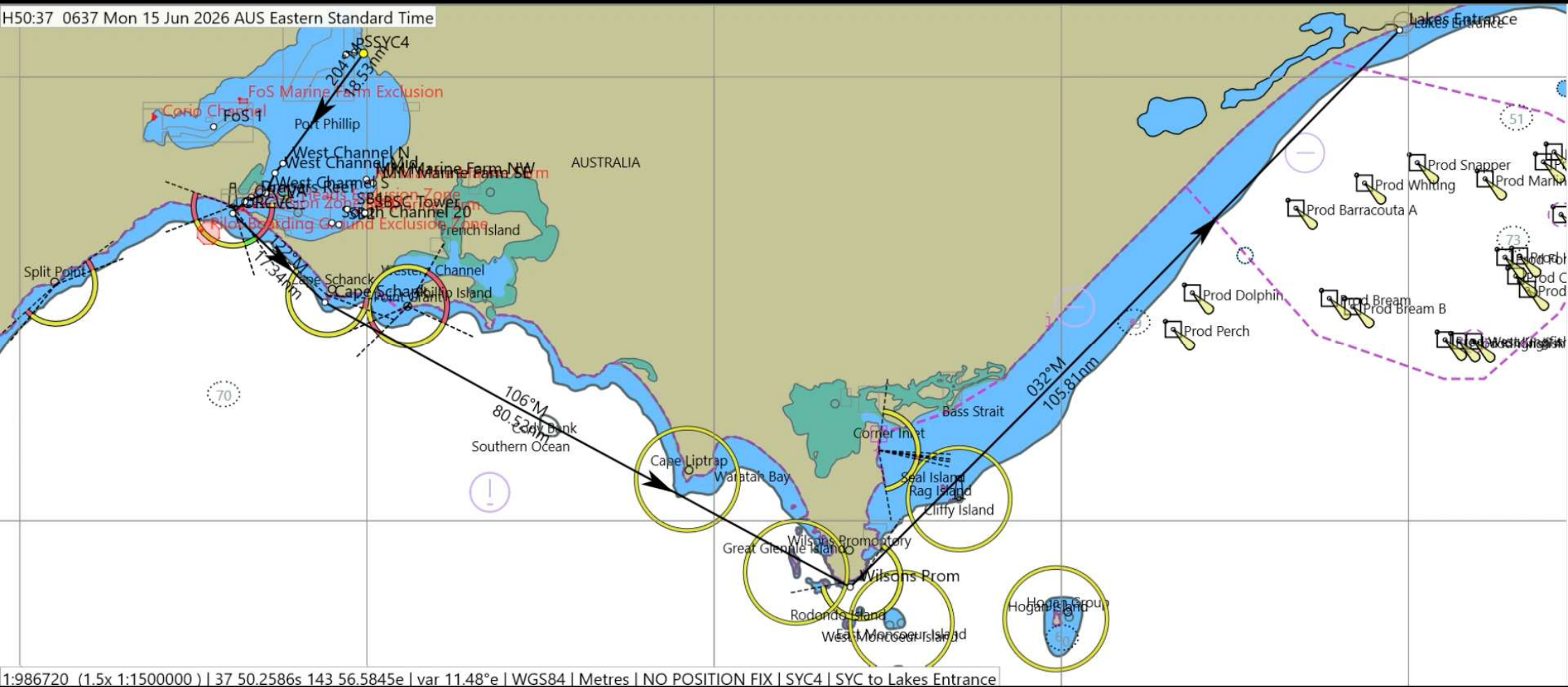


Weather for Sailors

The Fundamentals-Enclosed Waters



H50:37 0637 Mon 15 Jun 2026 AUS Eastern Standard Time



1:986720 (1.5x 1:1500000) | 37 50.2586s 143 56.5845e | var 11.48°e | WGS84 | Metres | NO POSITION FIX | SYC4 | SYC to Lakes Entrance

Search location...



Menu

Weather radar

Satellite

Wind

Rain, thunder

Temperature

Clouds

Waves

Rain accumul...

Thunderstorms

PM2.5

More layers...

Altitude

particles animation pressure

+ - 3D

1004 1006 1008

ECMWF 9km GFS 22km ACCESS 12km

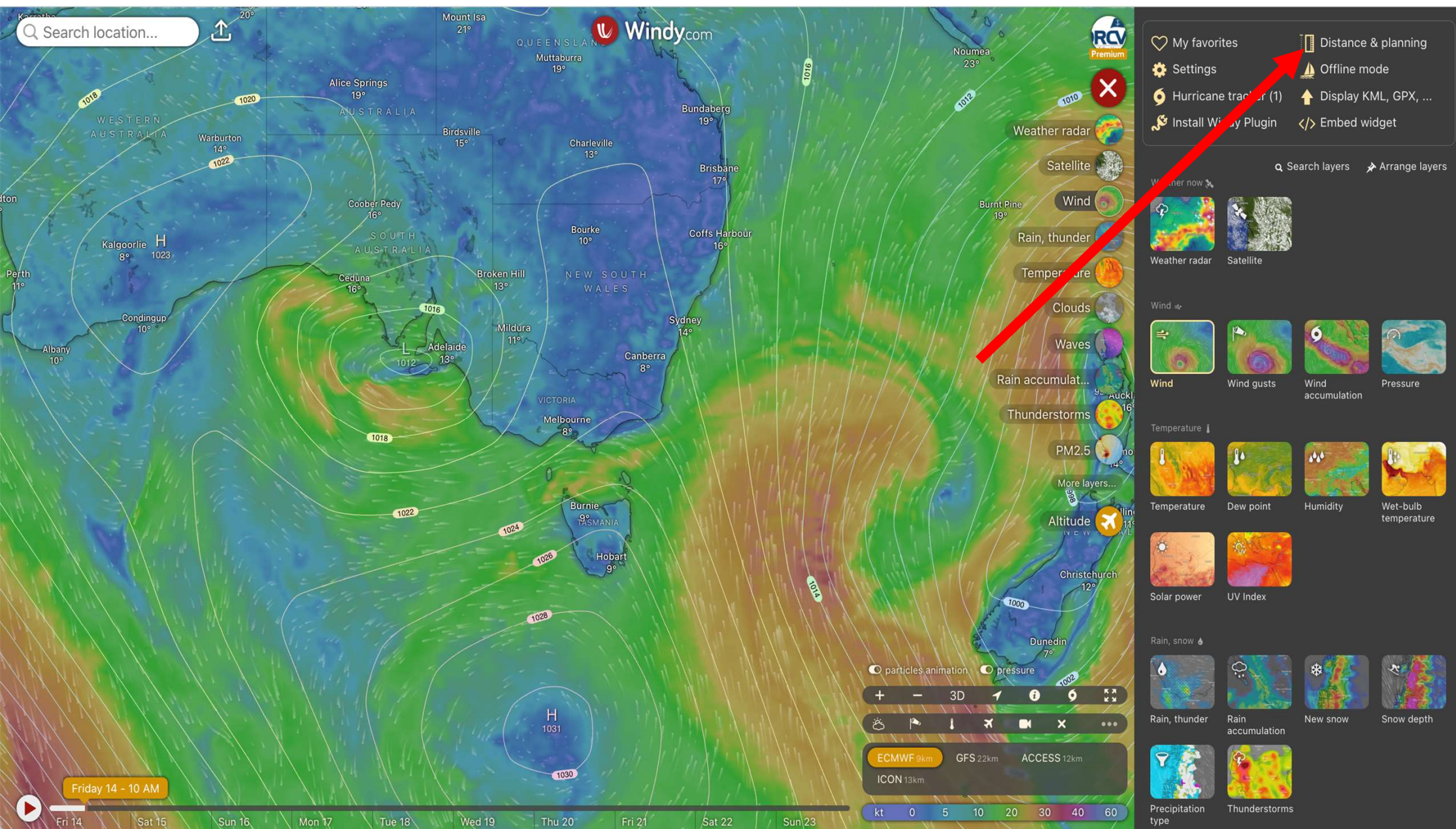
ICON 13km

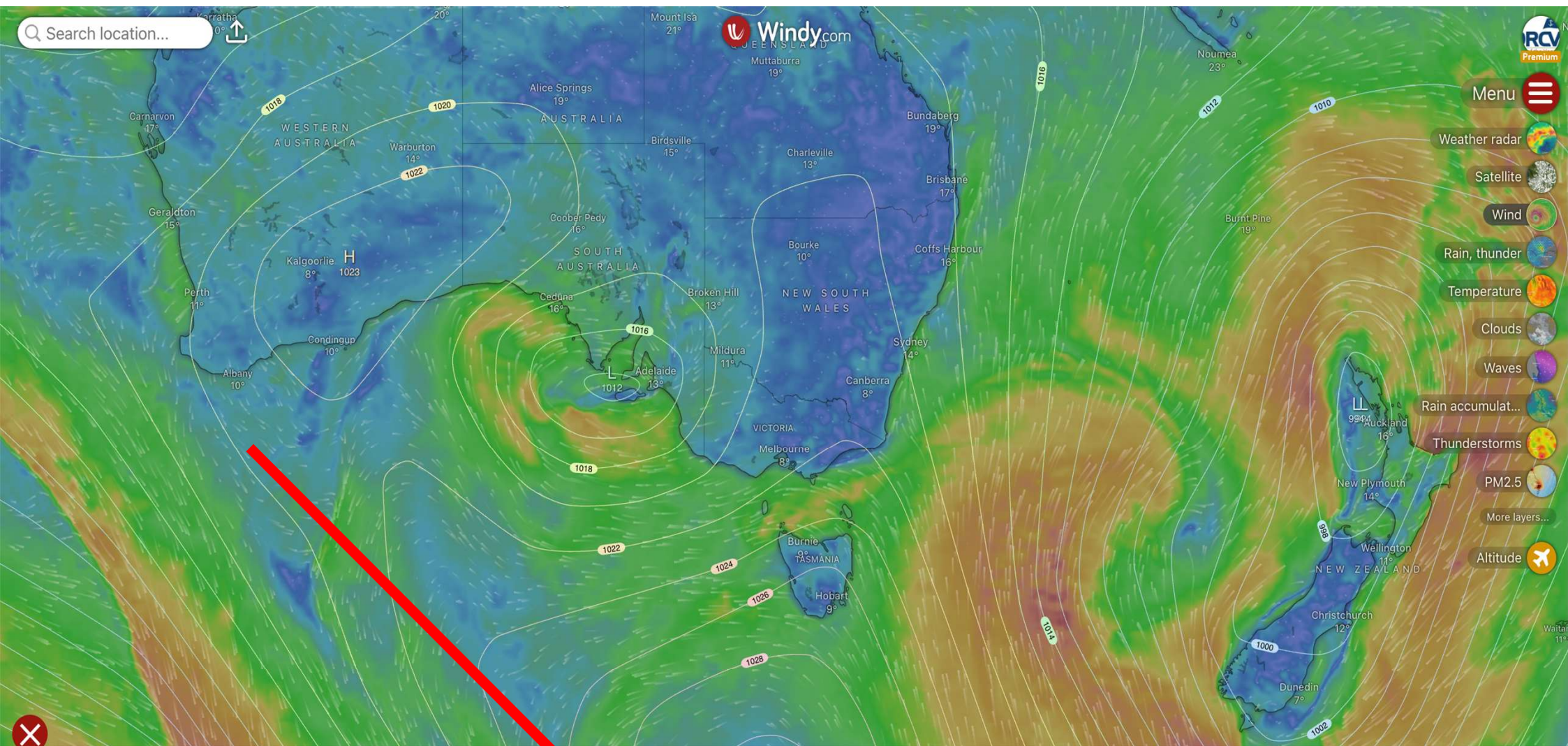
kt 0 5 10 20 30 40 60

© OpenStreetMap contributors

Friday 14 - 10 AM

Friday 14 Saturday 15 Sunday 16 Monday 17 Tuesday 18 Wednesday 19 Thursday 20 Friday 21 Saturday 22 Sunday 23





Click on the map to add more waypoints

Or to import route (you can also drop file here).

Search location...



Menu

Weather radar

Satellite

Wind

Rain, thunder

Temperature

Clouds

Waves

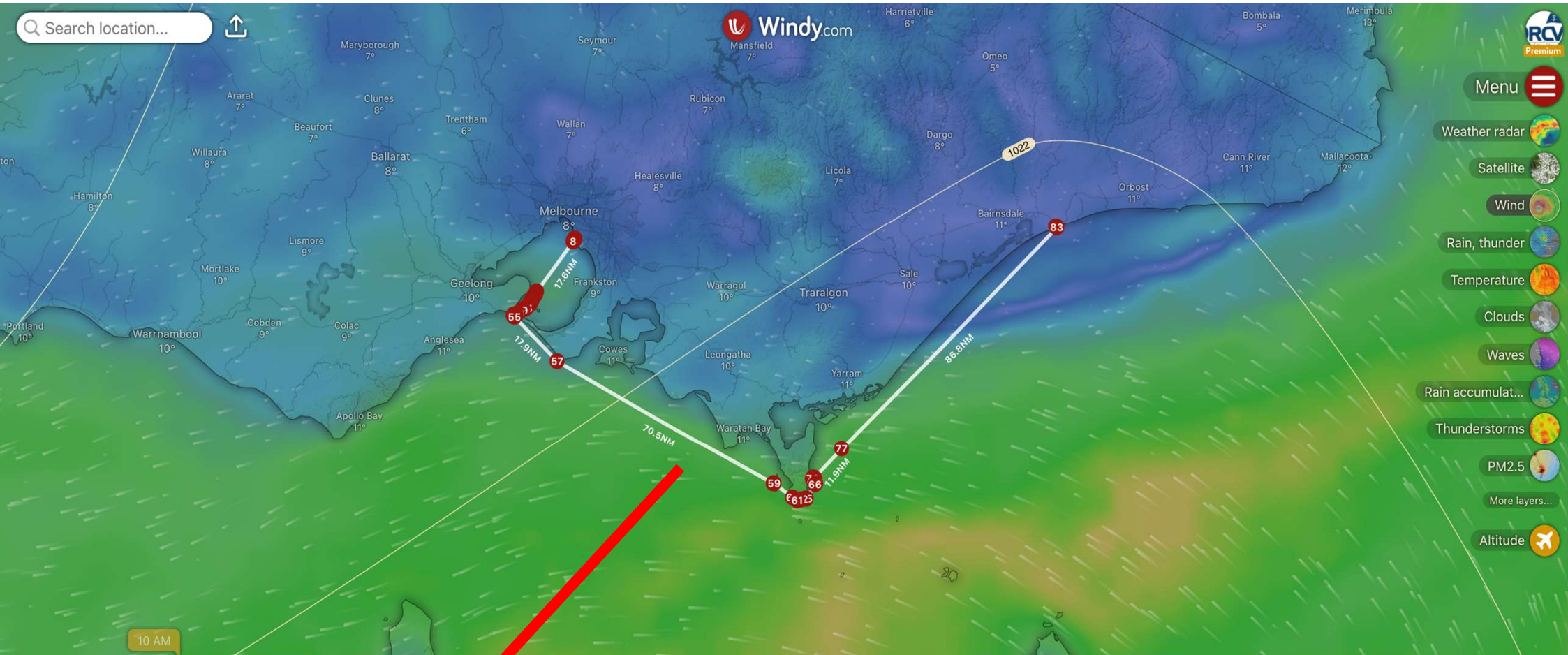
Rain accumul...

Thunderstorms

PM2.5

More layers...

Altitude



10 AM



235 NM

↑ 0 m
↓ 4 m
▲ 4 m
≈ 0 m

More options...

Elevation

Car/hike

Boat

VFR

IFR

Airgram

Speed: 0 kt

Save route to favorites

Search location...



Menu

Weather radar

Satellite

Wind

Rain, thunder

Temperature

Clouds

Waves

Rain accumulat...

Thunderstorms

PM2.5

More layers...

Altitude



Start: 10 AM

Finish: 8 PM (1d 10h)

Fri 14 Sat 15 Sun 16 Mon 17 Tue 18 Wed 19 Thu 20 Fri 21 Sat 22 Sun 23

235 NM

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

More options...

Elevation Car/hike Boat VFR IFR Airgram Speed: 7 kt Save route to favorites

Search location...



Menu

Weather radar

Satellite

Wind

Rain, thunder

Temperature

Clouds

Waves

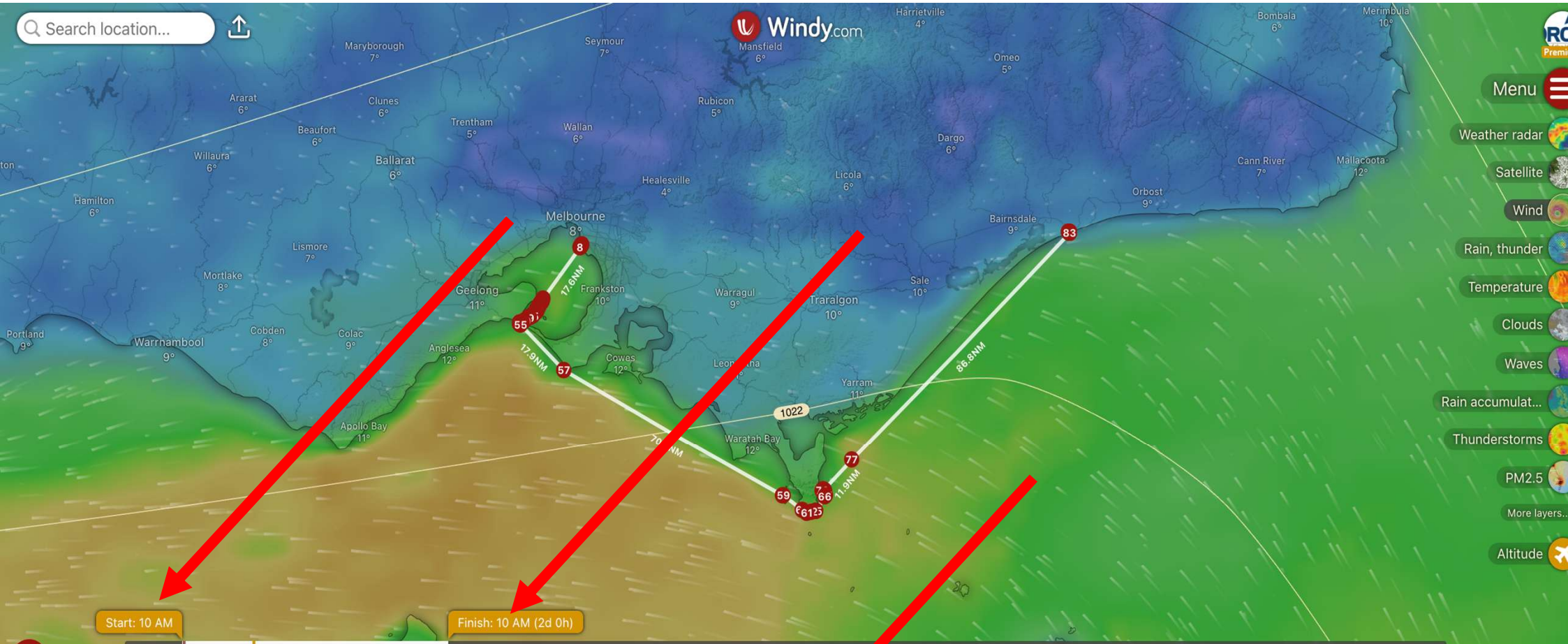
Rain accumul...

Thunderstorms

PM2.5

More layers...

Altitude



Start: 10 AM

Finish: 10 AM (2d 0h)

Fri 14 Sat 15 Sun 16 Mon 17 Tue 18 Wed 19 Thu 20 Fri 21 Sat 22 Sun 23

235 NM

	Fri 14			Sat 15			Sun 16			Mon 17			Tue 18			Wed 19			Thu 20			Fri 21			Sat 22			Sun 23															
Temperature	7°	10°	10°	11°	12°	12°	12°	12°	12°	12°	12°	12°	12°	12°	12°	12°	12°	12°	12°	11°	11°	12°	12°	13°	13°	13°	12°	12°	12°	12°	11°	11°	11°	11°	10°	10°	10°	9°	10°				
Rain, snow	mm														0.1	0.1	0.1	0.1	0.1	0																							
Wind	kt	4	3	2	3	17	14	13	13	12	12	14	14	15	16	15	15	15	14	14	15	14	12	11	9	11	12	14	16	16	14	11	11	12	13	14	16	18	16	1			
Wind gusts	kt	9	10	12	13	24	20	19	21	21	22	22	22	21	21	21	21	20	20	20	19	19	19	17	14	16	18	20	21	20	18	18	18	18	17	19	19	19	20	21	24	22	2
Wind dir.	🌀	→	↖	↘	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖				
Waves	m	0.5	0.5	0.5	0.6	0.8	1.1	1.2	1.4	1.5	1.6	1.5	1.5	1.5	1.4	1.4	1.3	1.3	1.2	1.2	1.1	1	1	1	1.1	0.9	0.9	0.9	0.9	1	1.2	1.3	1.5	1.7	1.8	1.8	1.8	1.8	1.8	2	2		

More options...

Elevation Car/hike Boat VFR IFR Airgram Speed: 5 kt Save route to favorites

Search location...



Windy.com



Menu

Weather radar

Satellite

Wind

Rain, thunder

Temperature

Clouds

Waves

Rain accumul...

Thunderstorms

PM2.5

More layers...

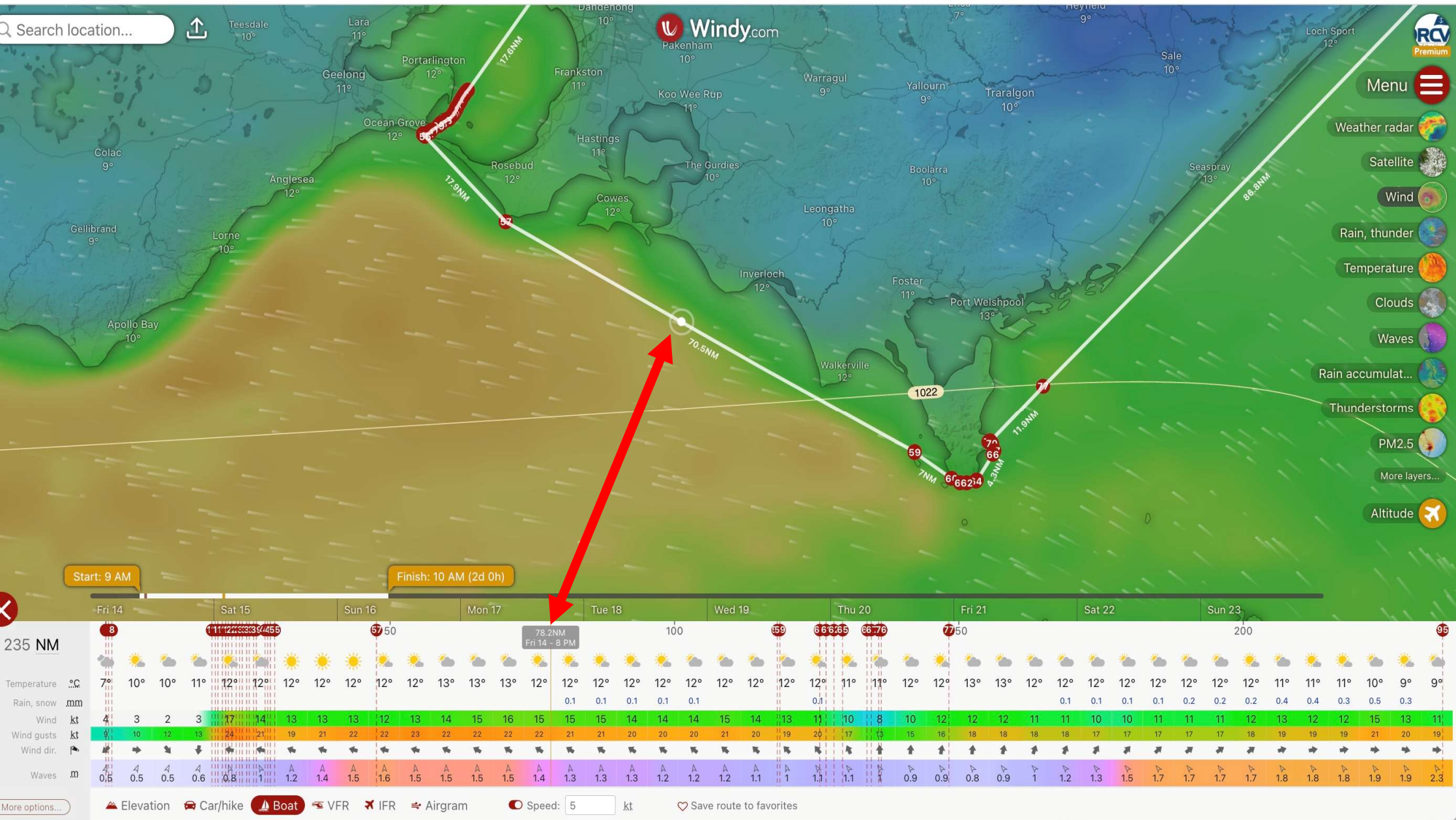
Altitude



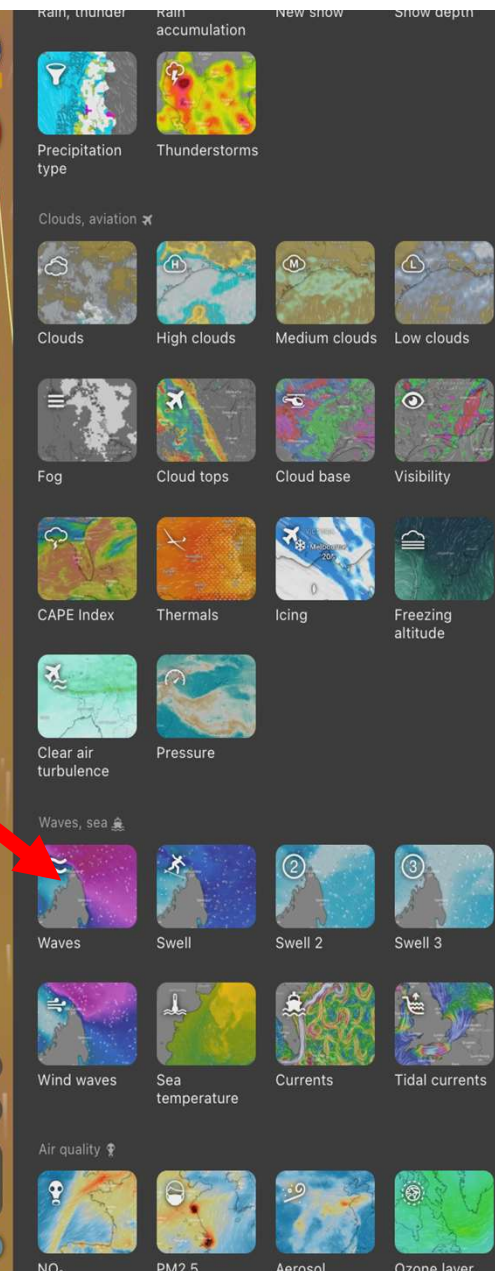
235 NM

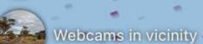
	Fri 14	Sat 15	Sun 16	Mon 17	Tue 18	Wed 19	Thu 20	Fri 21	Sat 22	Sun 23
Temperature	8°	10°	11°	11°	12°	12°	12°	12°	12°	11°
Rain, snow	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Wind	5	3	4	7	12	16	12	11	12	10
Wind gusts	12	10	10	11	17	25	25	25	25	25
Wind dir.	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖
Waves	0.4	0.4	0.4	0.4	0.5	1.2	1.7	2	2.1	2.8

More options... Elevation Car/hike Boat VFR IFR Airgram Speed: 5 kt Save route to favorites









About location

S37°53'45", E147°58'37"

Australia/Melbourne (+10:00)

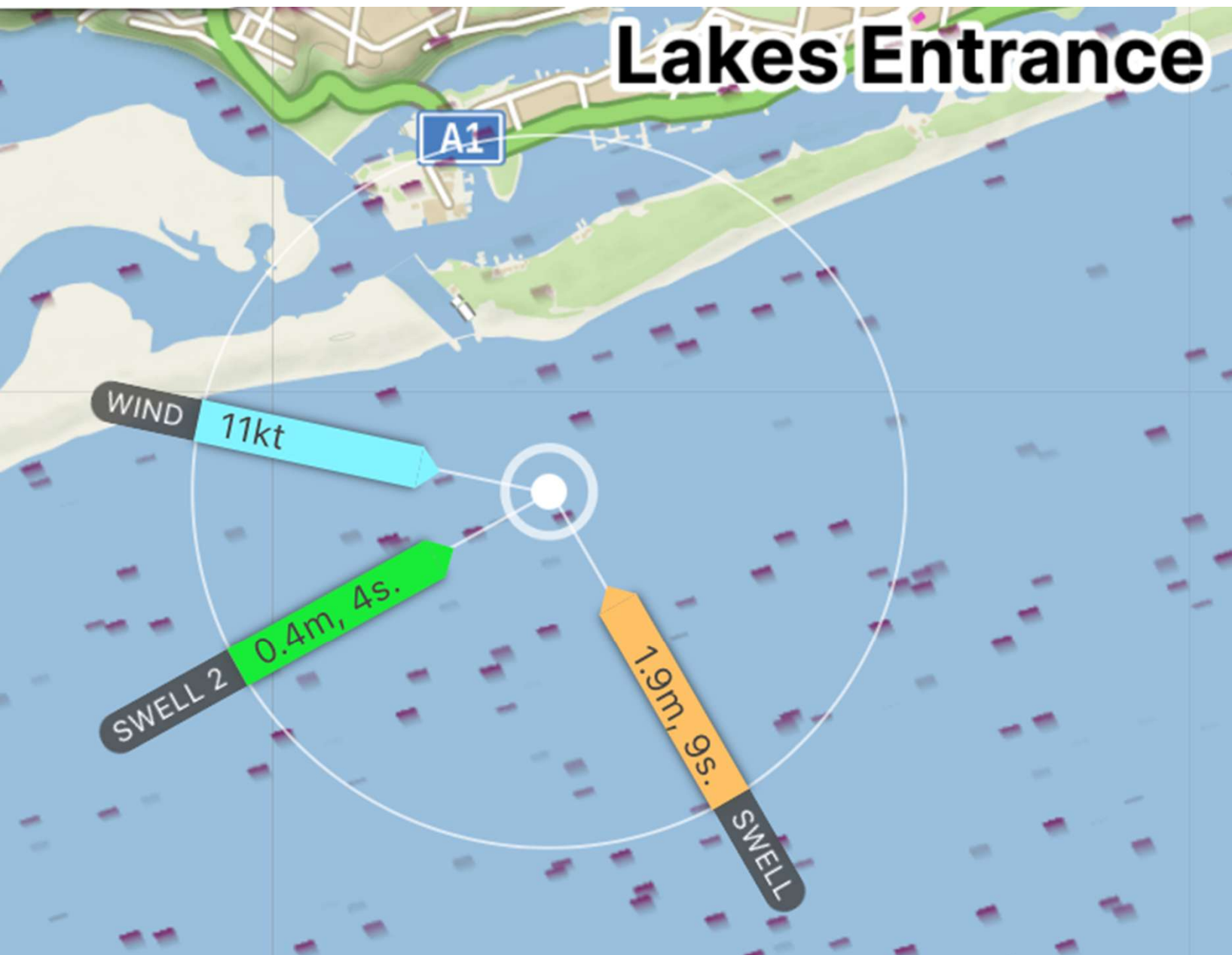
Sunrise: 7:23 AM

Sunset: 4:56 PM

Dusk: 5:25 PM

Elevation: 0m (0ft)

Lakes Entrance

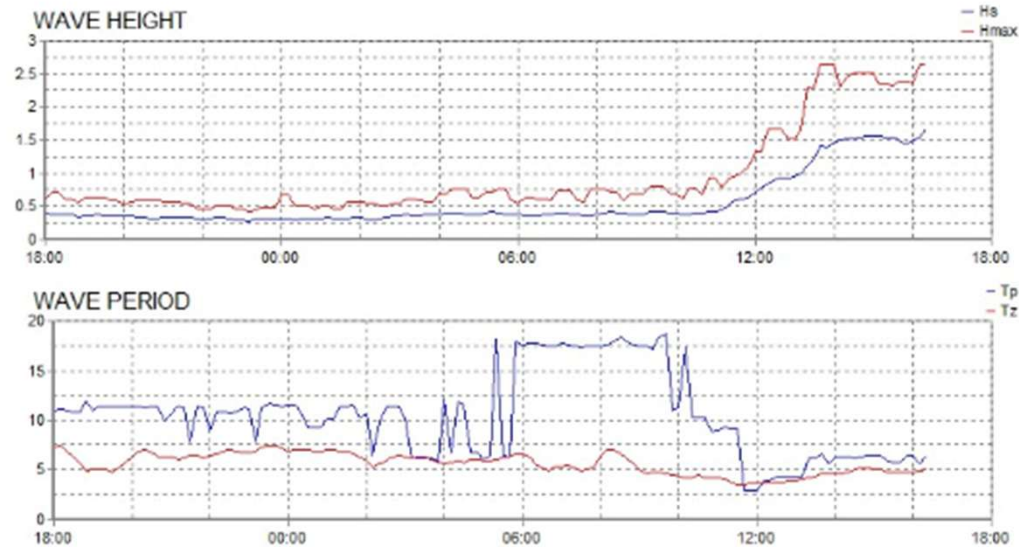


Gippsland Ports

Waves

Offshore Wave Buoy

Significant Wave Height (Hs)	Maximum Wave Height (Hmax)	Peak Wave Period (Tp)	Average Wave Period (Tz)	Wave Direction	Water Temperature (°C)
1.7 m	2.7 m	6.5 sec	5.1 sec	213°	14.7°

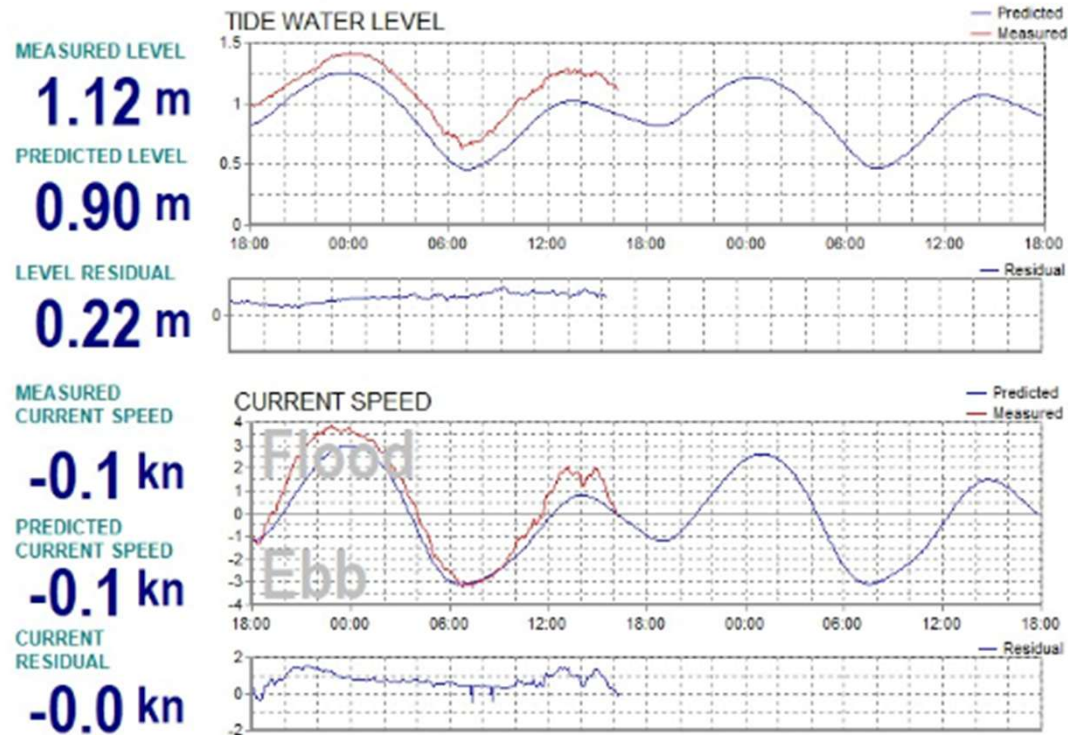


Data last updated: Tuesday, 17 June 2025, 16:20:00

Gippsland Ports

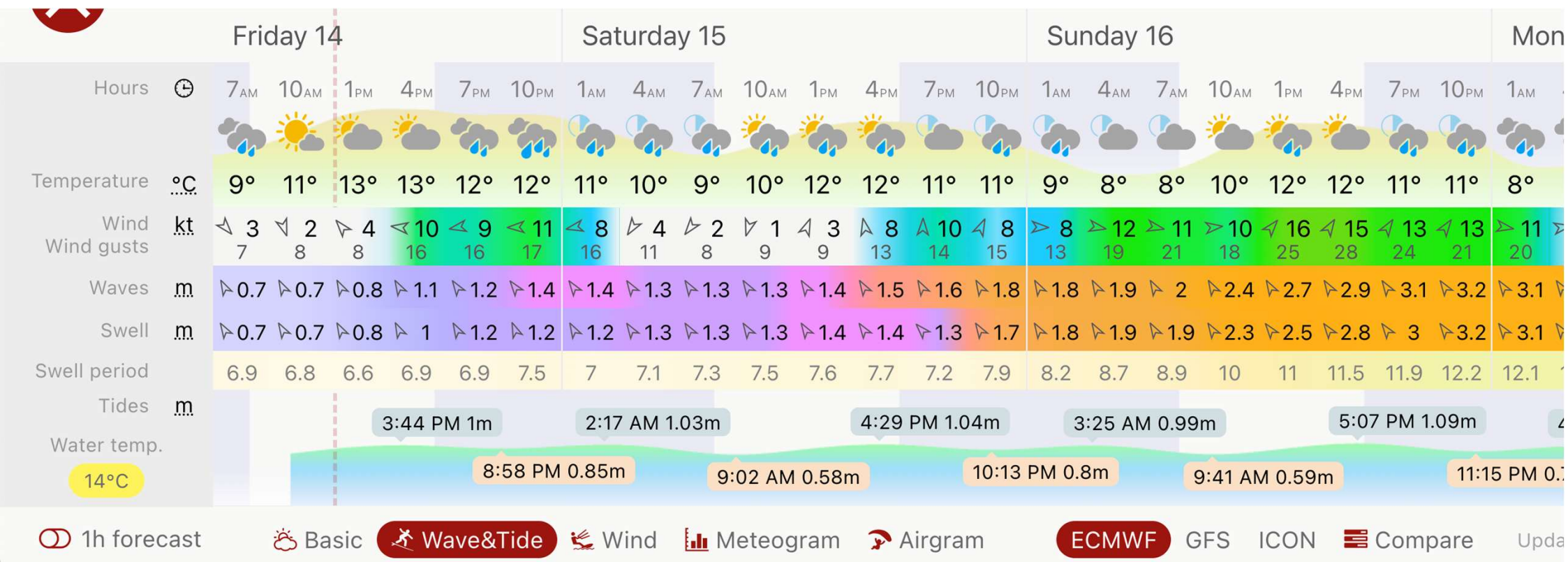
Tides

Lakes Entrance – Entrance Channel

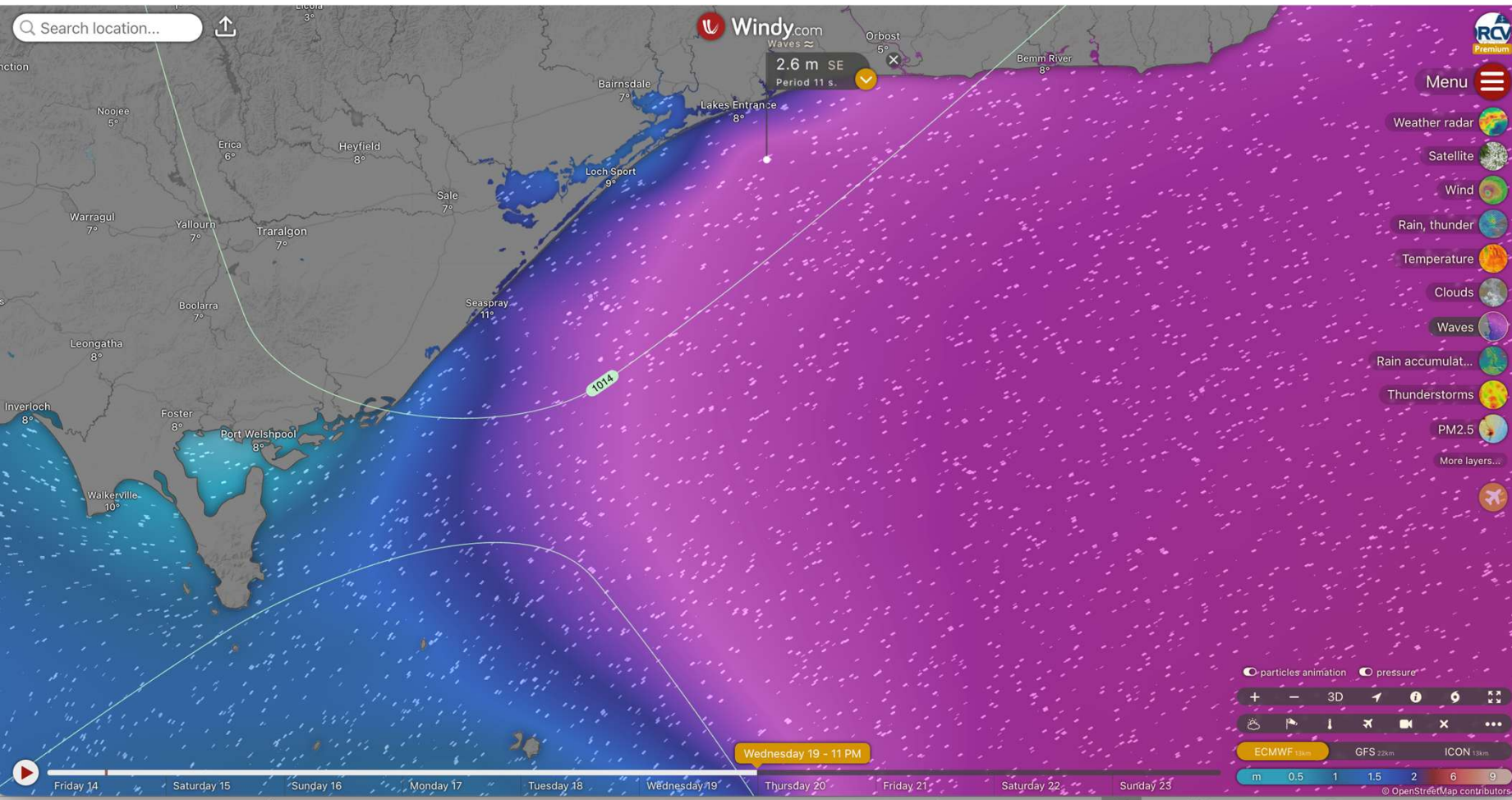


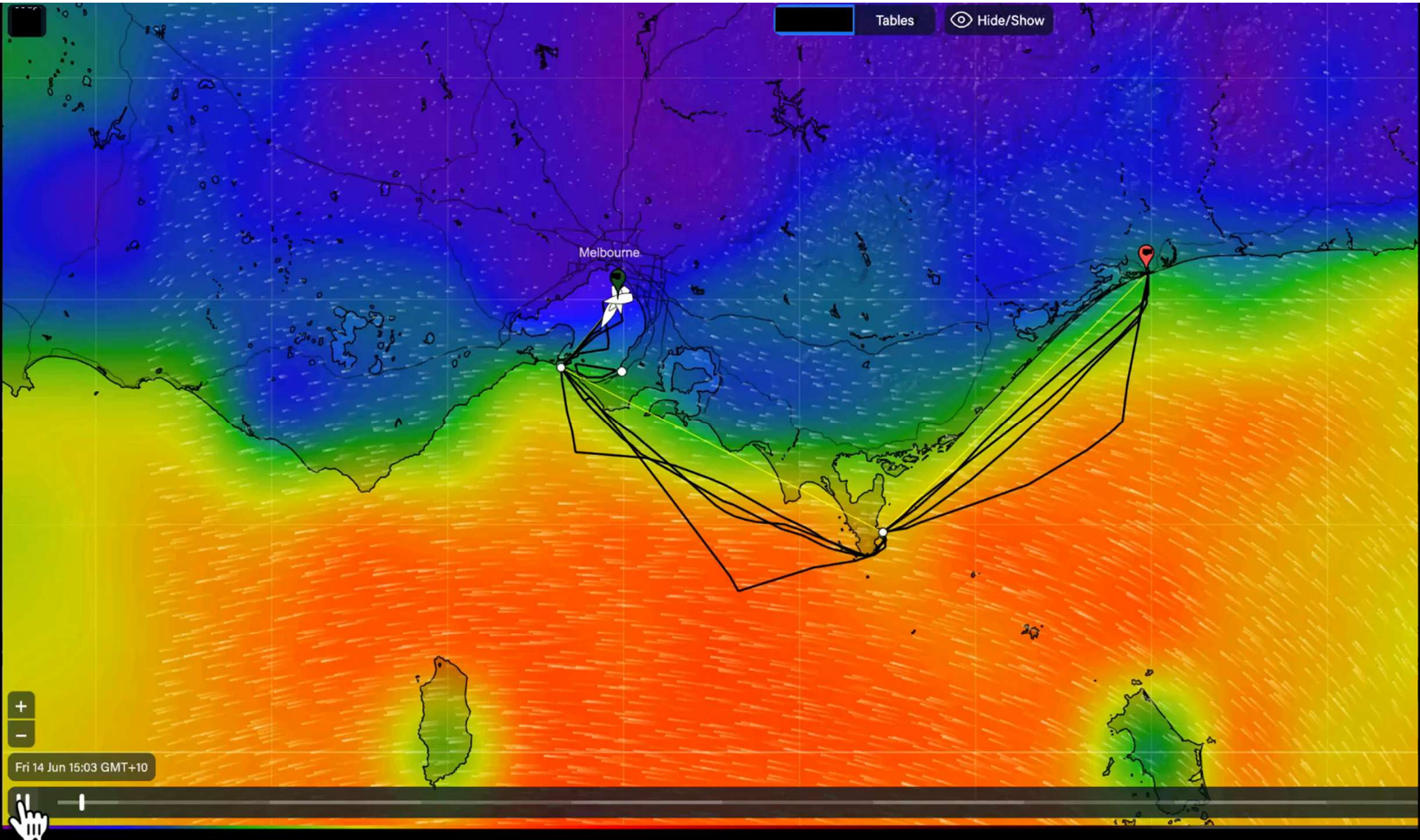
Data last updated: Tuesday, 17 June 2025, 16:21:00

Don't forget the
Coast. Guard.
0448 420 704
for local information



Windy Waves





Tables

Hide/Show

Melbourne

+

-

Fri 14 Jun 15:03 GMT+10



Navigation Planning

Safe Harbours

- How easy is it to enter?
- What winds is it safe for?
- Is tide a factor?
- Is sea state a factor?
- Are we being unrealistic in our departure time?

0.0 kts

182.4 NM 122°T



Route Start Menu

182.4 NM



0.0 kts

182.4 NM 122°T



HAZARDS

Mount Amos

Mount Dove

Mount Baudin

Mount Parsons

SLEEPY BAY

THOUIN BAY

WINEGLASS BAY

CRUISE SHIP AREA
VESSELS MUST NOT ANCHOR WITHIN OR IMPEDE
ACCESS TO THIS AREA WITHOUT FIRST RECEIVING
CLEARANCE FROM HOBART VTS ON VHF CH12
TEL 63903013
E: RADIO.ROOM@TASPORTS.COM.AU

64 m



0.2 NM



182.4 NM

Route

Start

Menu



0.0 kts

182.4 NM 122°T



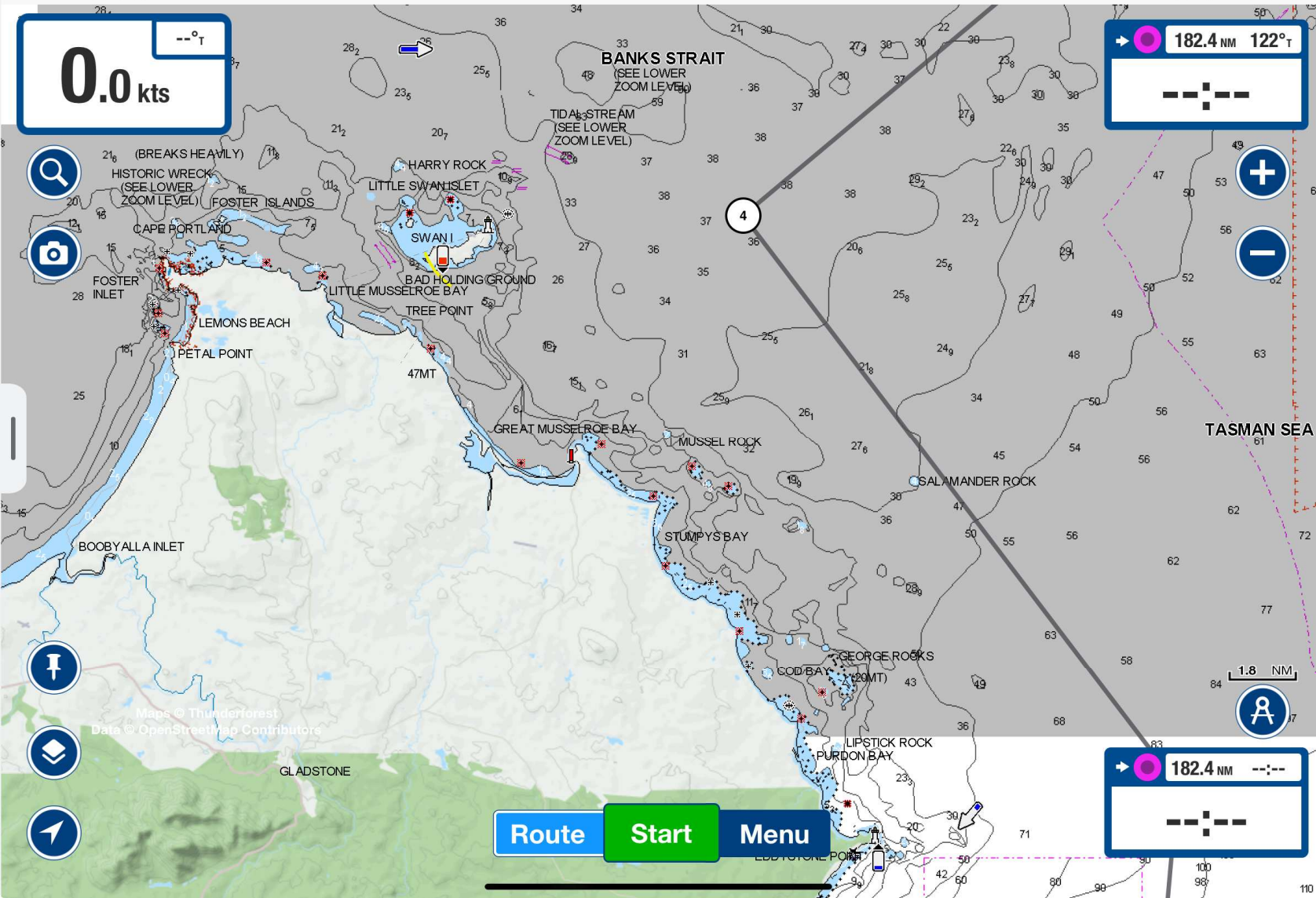
Route Start Menu

182.4 NM



0.0 kts

182.4 NM 122°T



Route Start Menu

182.4 NM



0.0 kts



182.4 NM 122°T

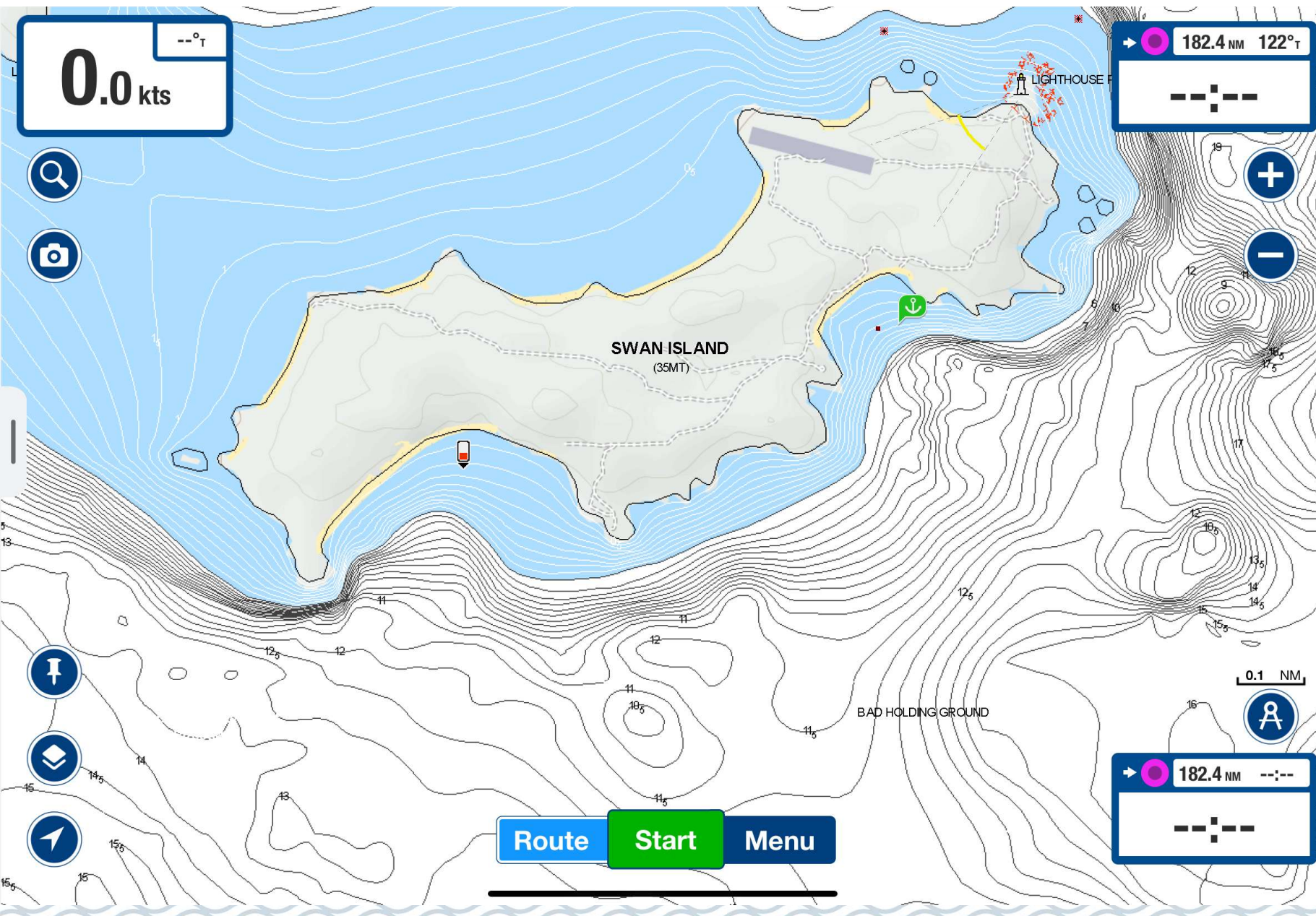


182.4 NM



Route Start Menu





What ChatGPT has to say about the Island

Pros

1. **Shelter:** The island can provide some shelter from prevailing winds, particularly from the west. However, the level of protection may vary depending on weather conditions.
2. **Scenery and Wildlife:** The island offers beautiful natural scenery and abundant wildlife, making it an interesting spot for nature enthusiasts.

Cons

1. **Exposure to Weather:** The island is exposed to the elements from the Bass Strait, especially easterly and northeasterly winds, which can make anchoring challenging.
2. **Limited Facilities:** There are no facilities or services available on the island for boats or visitors.
3. **Depth and Holding Ground:** The anchoring depths and holding ground around Swan Island might not be ideal. It's essential to have good anchoring equipment and to be cautious about the seabed conditions.



ChatGpt's Recommendations

Recommendations

- **Weather Check:** Always check the weather forecast before planning to anchor near Swan Island, as conditions can change rapidly.
- **Good Anchoring Gear:** Ensure you have reliable anchoring equipment suitable for potentially challenging conditions.
- **Navigation Charts:** Use detailed navigation charts to understand the depths and seabed conditions around the island.
- **Alternative Anchorages:** Consider nearby alternatives for anchoring, such as Waterhouse Island or the sheltered bays along Tasmania's northeastern coast, which might offer better protection and conditions.

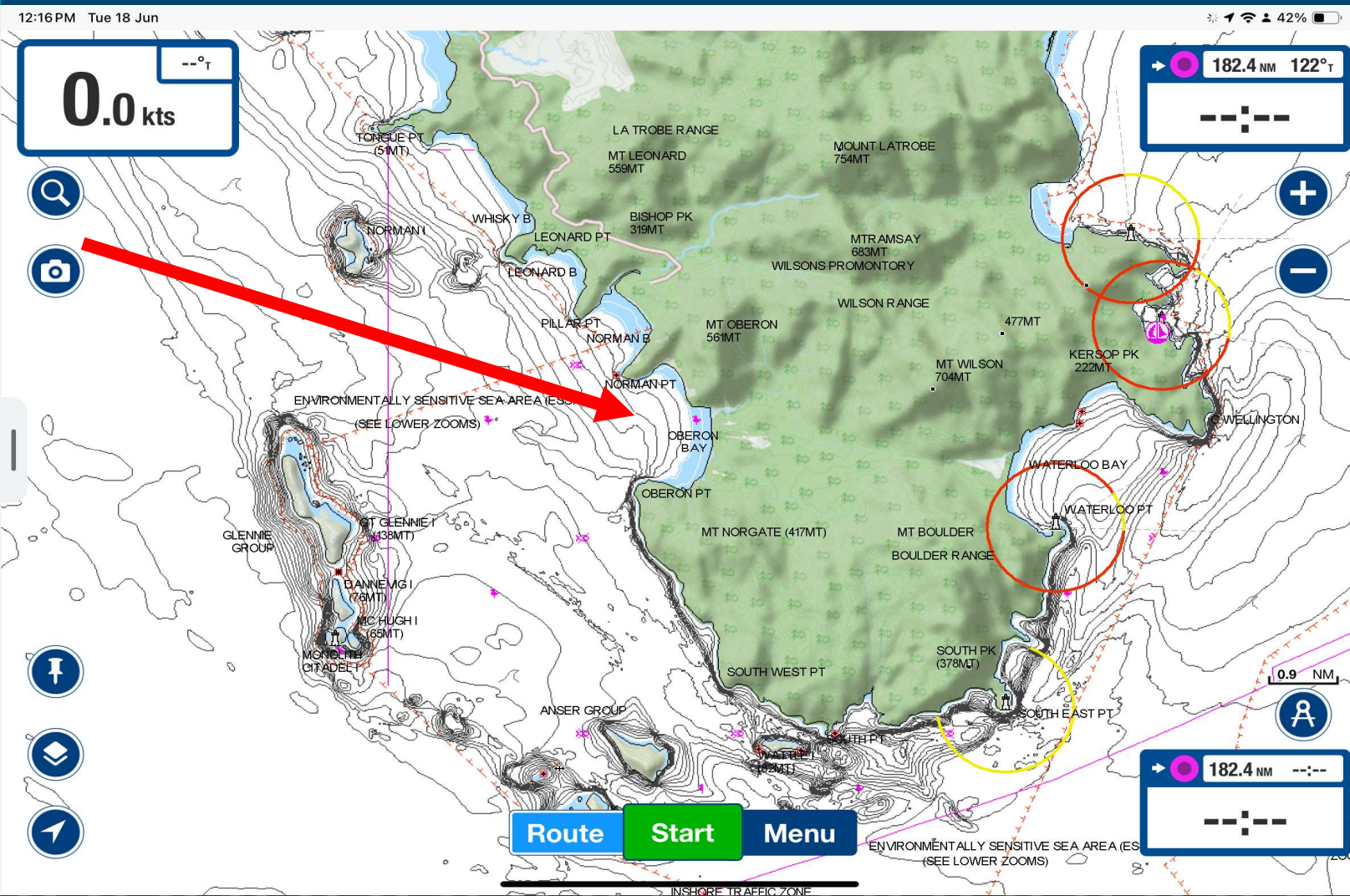
In summary, while Swan Island can provide a unique and scenic anchoring experience, it may not be the best spot for all conditions due to exposure to the elements and limited facilities. Careful planning and preparation are essential.



What are or options for Safe Harbors on our way to Lakes Entrance

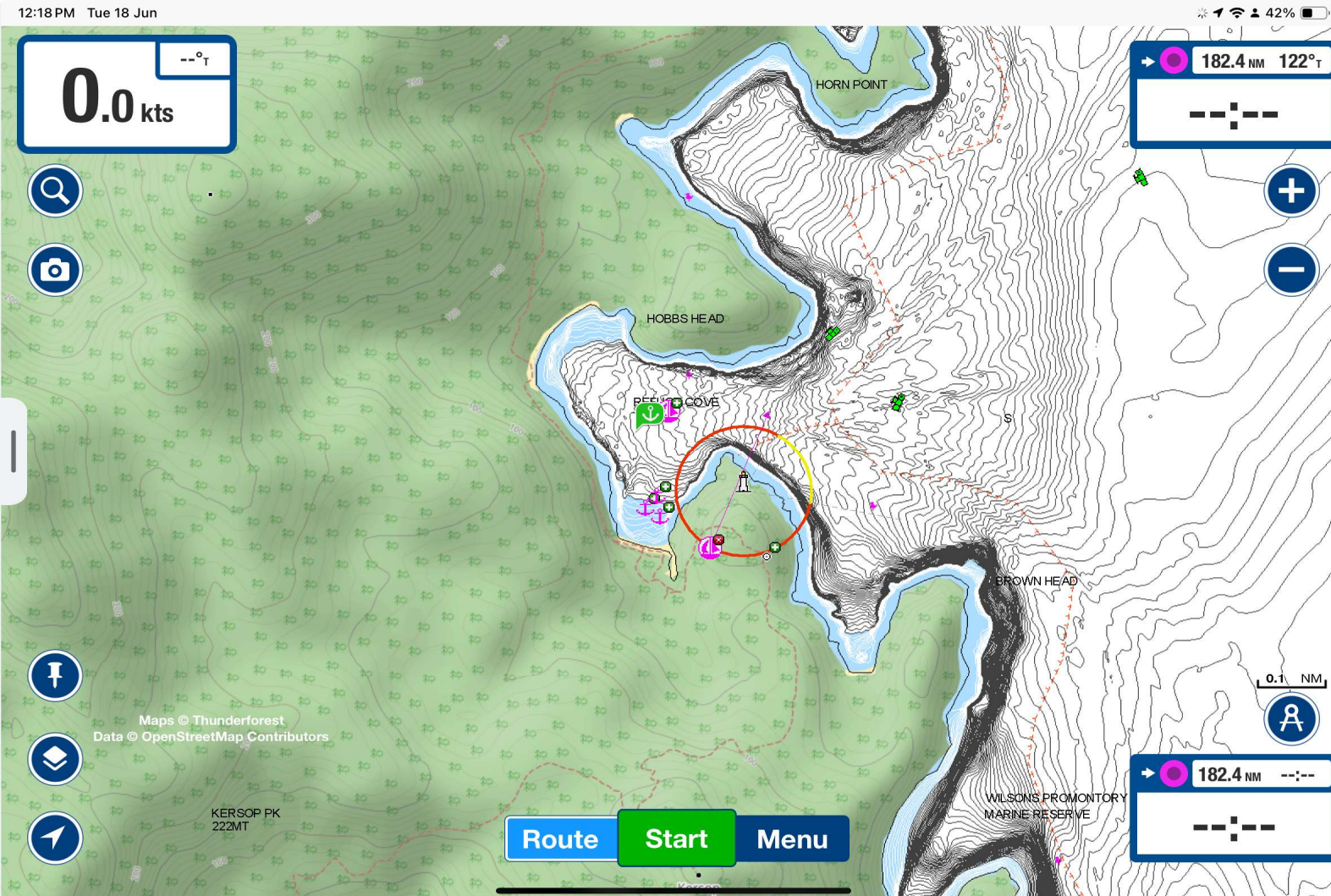


Oberon Bay



ORCV

Refuge Cove



ChatGPT says

Refuge Cove at Wilsons Promontory is a well-known anchorage spot and is generally considered safe for anchoring, especially during favorable weather conditions. Here are some key points to consider for anchoring safely at Refuge Cove:

1.Shelter: Refuge Cove offers good protection from most winds, particularly from the west to north sectors. It is relatively sheltered from the southeast but can be exposed to winds from the south to east sectors.

2.Holding Ground: The cove has a sandy bottom which provides good holding ground for anchors. It's important to ensure your anchor is well set.

3.Depth: The depths in Refuge Cove vary, but there is ample room to anchor in depths suitable for most recreational vessels. Mariners should check their charts and depth sounders to find an appropriate spot.

4.Crowding: During peak times, such as holiday periods and weekends, the cove can become crowded. Early arrival can help secure a good anchoring spot.

5.Weather: Always check the weather forecast before anchoring. Sudden weather changes can affect the safety of the anchorage.

6.Navigation: Approach Refuge Cove with caution, as there are some rocks and shallow areas near the entrance. Proper navigation and adherence to nautical charts are essential.

7.Amenities and Regulations: Refuge Cove is part of Wilsons Promontory National Park. Boaters should be aware of and comply with any park regulations and guidelines to preserve the natural environment.

By taking these factors into account and exercising caution, Refuge Cove can be a safe and pleasant anchorage spot for recreational boating.



WEATHER

Windy &
PredictWind



ROUTE

Best course



BOAT

Sails & speed



CREW

Clothing, food &
safety



BONUS: Create a crew briefing video
and share your race plan.

Weather for Sailors

The Fundamentals-Enclosed Waters

