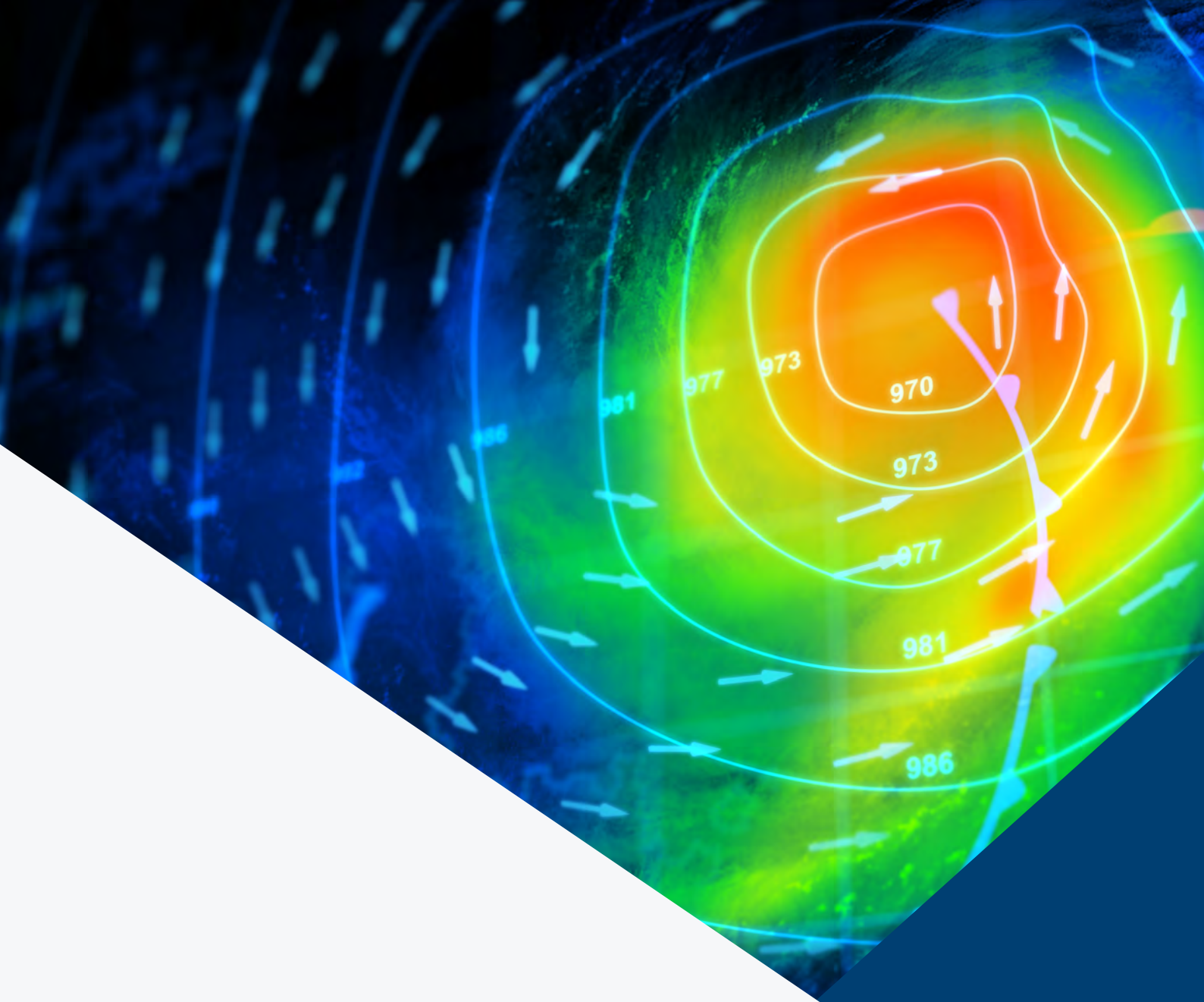




OCEAN RACING CLUB OF VICTORIA

WEATHER FOR SAILORS

MODULE 3 - TRANS OCEANIC (COURSE NOTES)
SESSION 1 AND 2




Weather Course

Module 3: Trans Ocean
Session 1

1

Your Instructors and Moderators






Robin Hewitt Neville Rose Simon Dryden Delma Dunoon



2

Trans Ocean

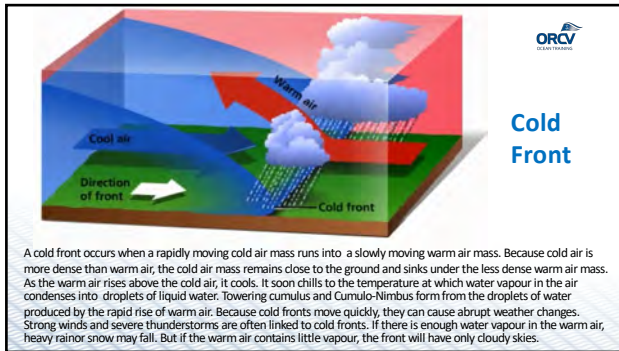


Races/cruises of extended duration or well offshore

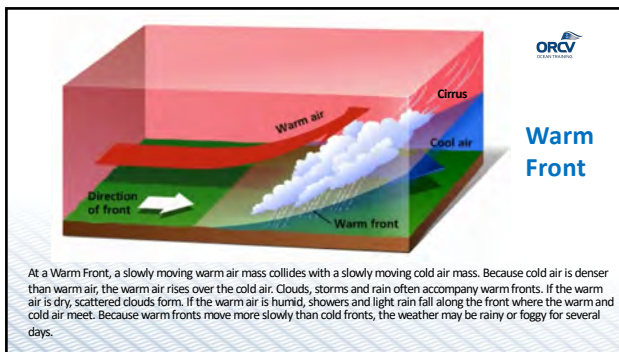
Planning

- Climatology-seasonal-outlooks
- Planning tools-eg COGOW
- Currents
- Comms – Internet capability ashore vs. offshore
- Weather Fax
- Weather awareness
- Contingency plans

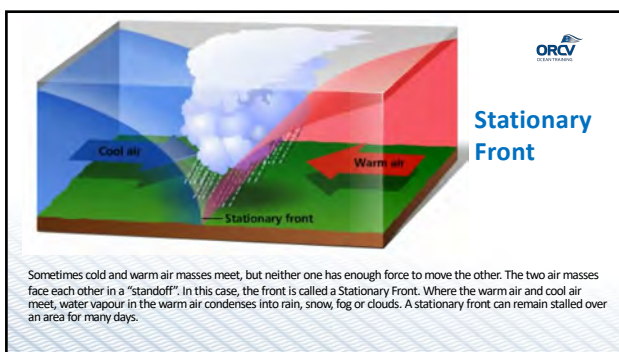
3



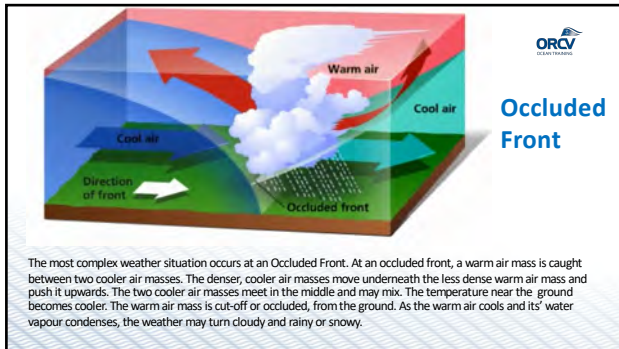
4



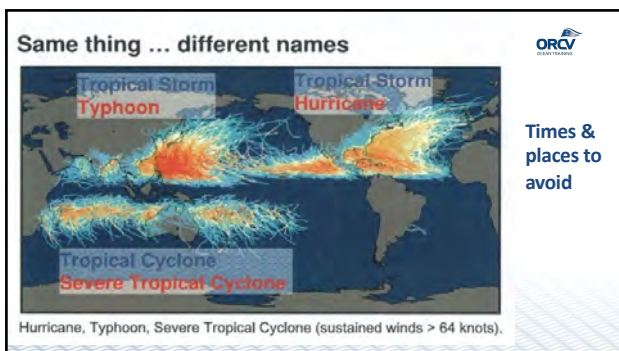
5



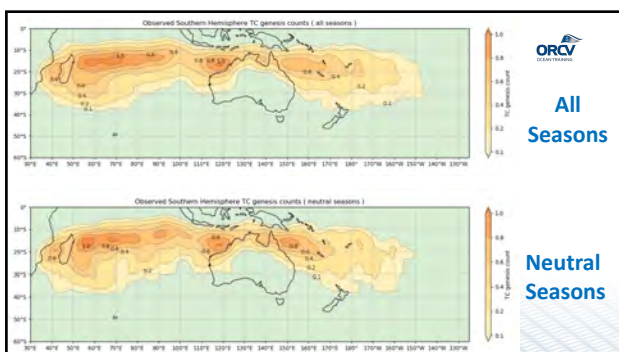
6



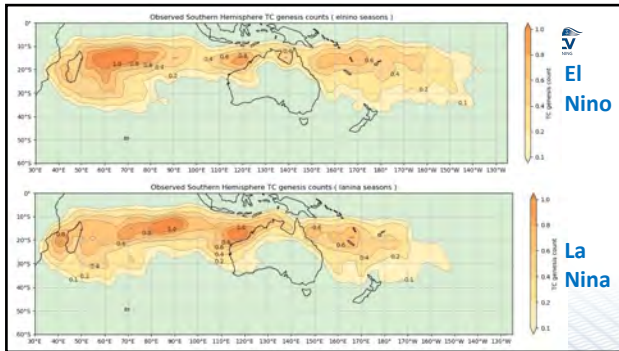
7



8



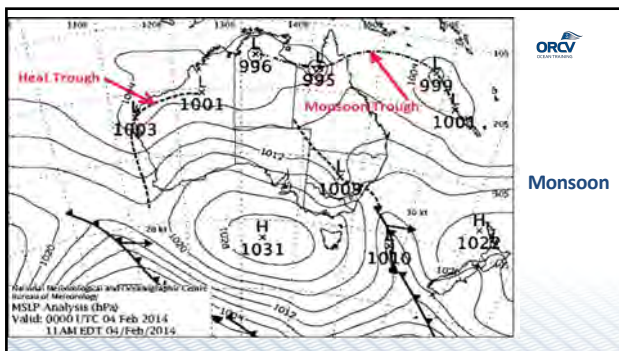
9



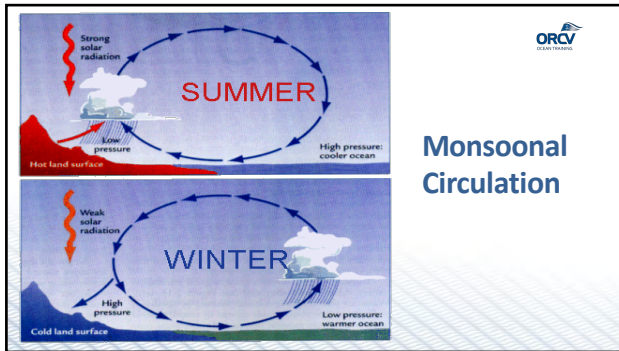
10



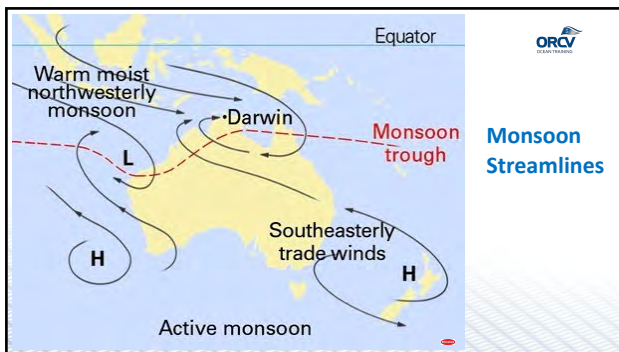
11



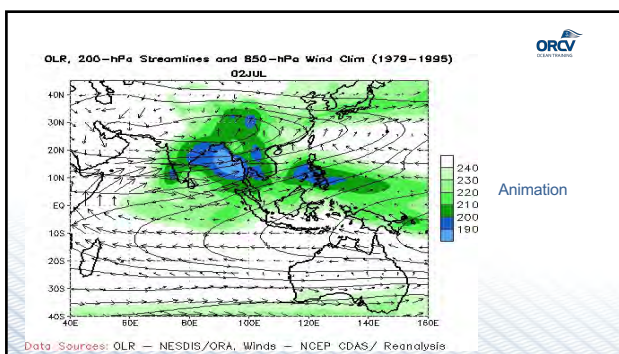
12



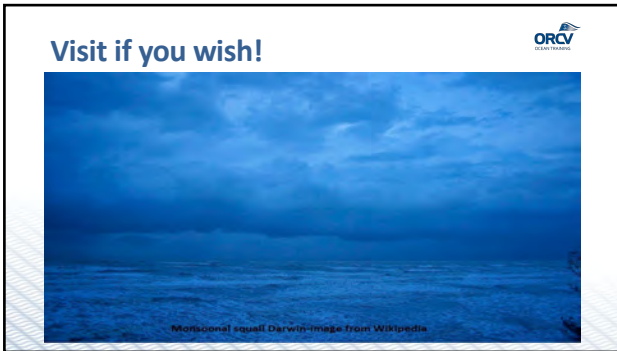
13



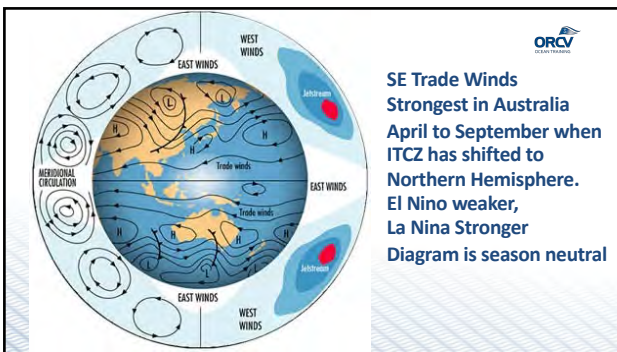
14



15



16



17



18

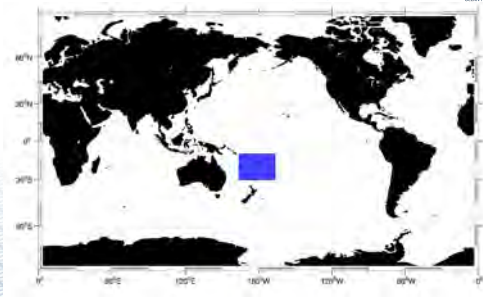
Planning tools.

- Ocean Passages of the world
- Admiralty pilots
- Climatology of global ocean winds
- <http://cioss.coas.oregonstate.edu/cogow>

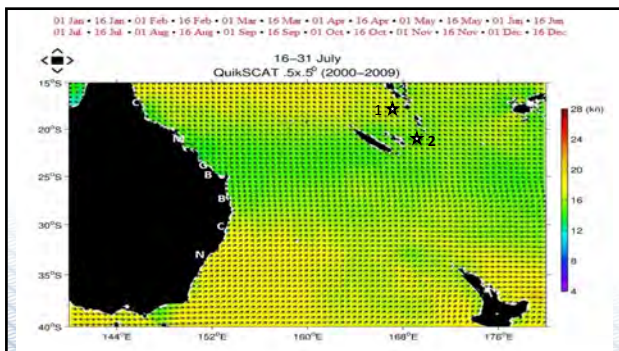


19

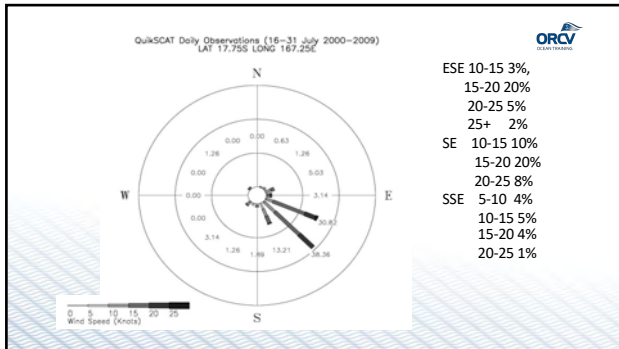
COGOW Start page



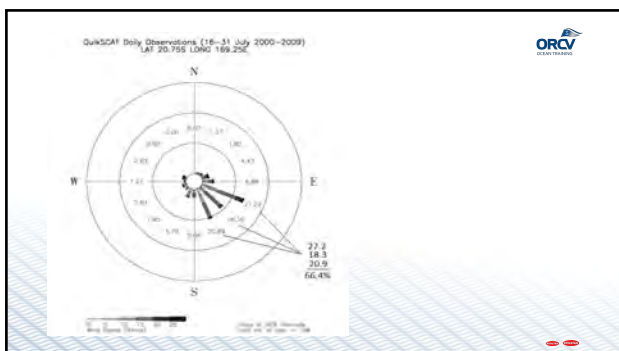
20



21



22



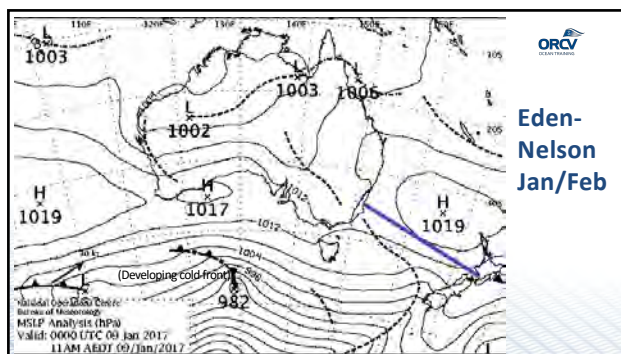
23



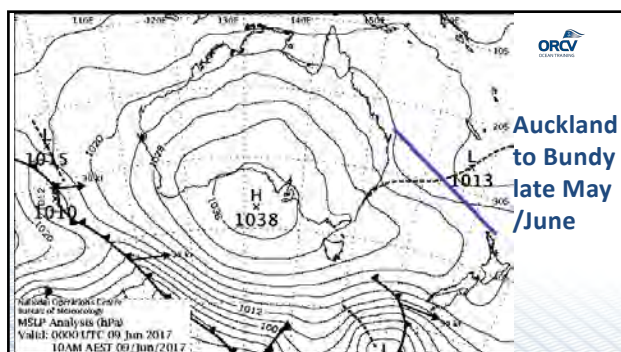
24



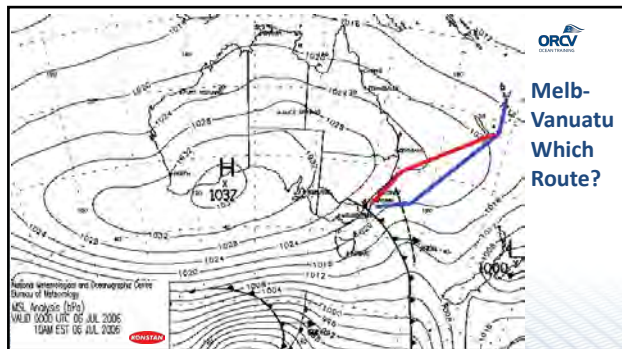
25



26



27



28

Poll – Exercise

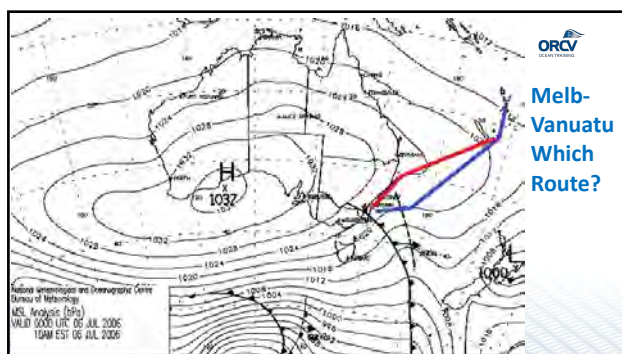
Which route would you choose?

1 Red

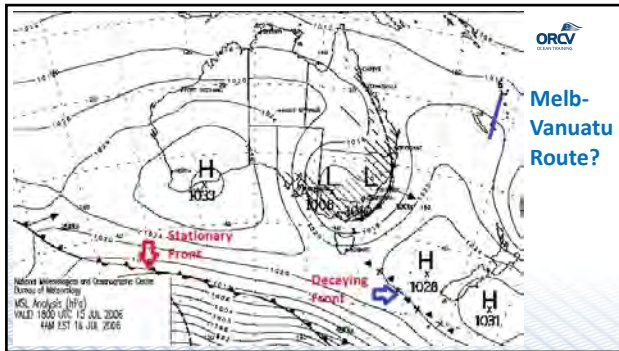
2 Blue



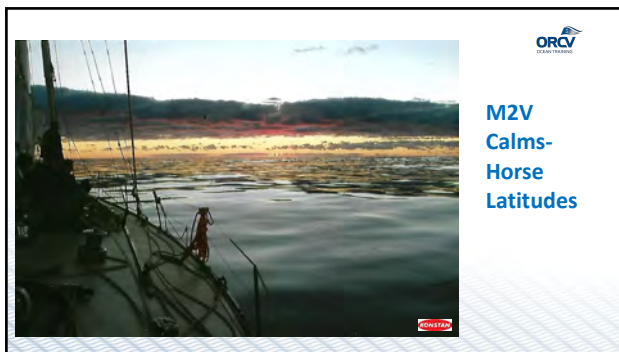
29



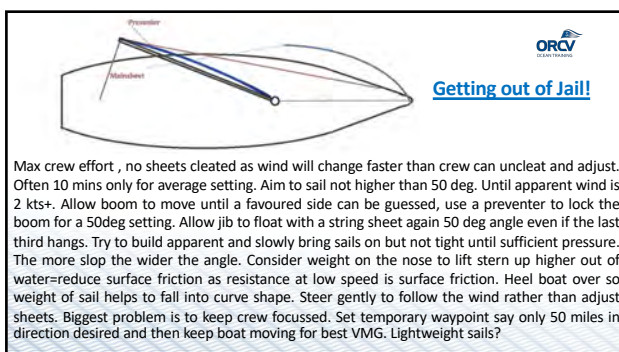
30



31



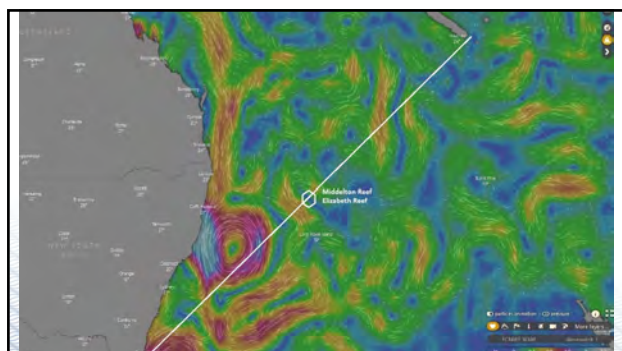
32



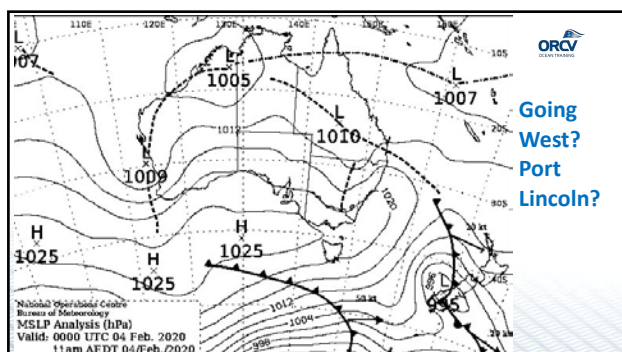
33



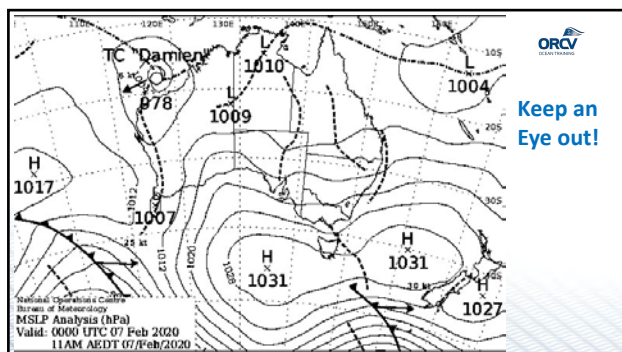
34



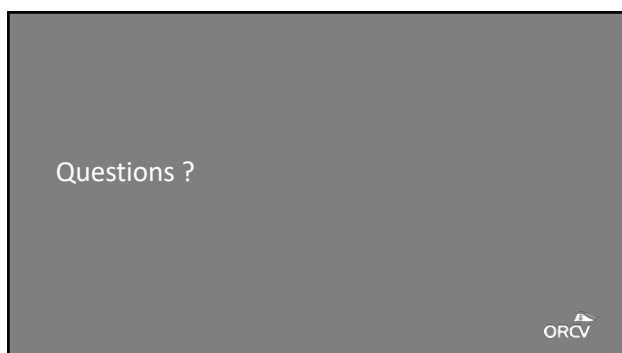
35



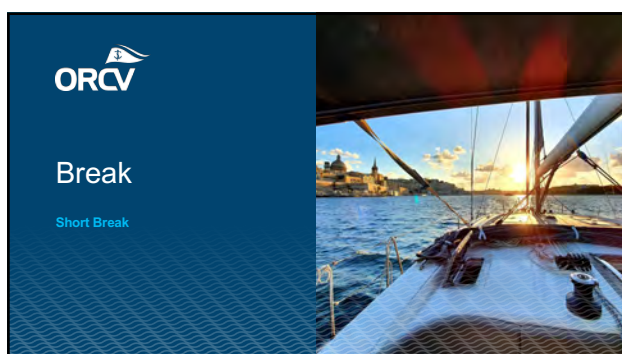
36



37



38



39

Bathymetry



- Which way to go?
 - Big wide ocean!
- No!-Undersea mountains
- Undersea valleys
 - Rifts
 - Reefs
- Currents follow features

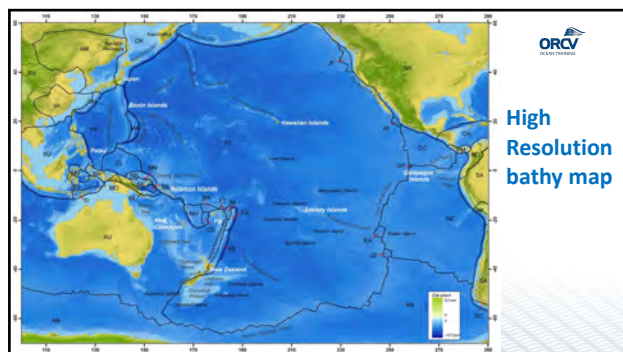
40



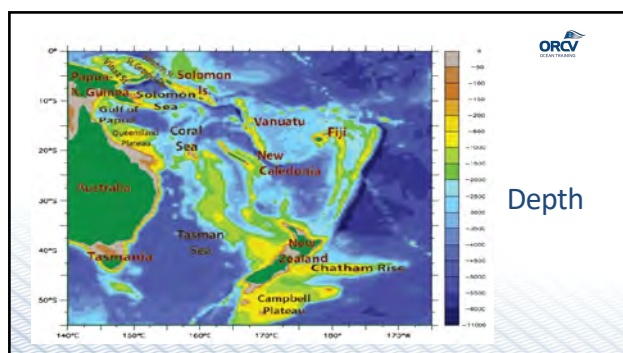
41



42



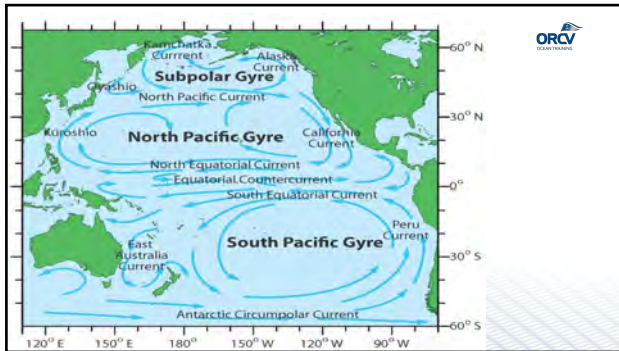
43



44



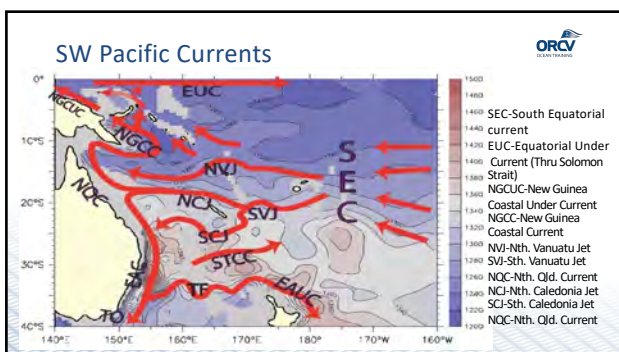
45



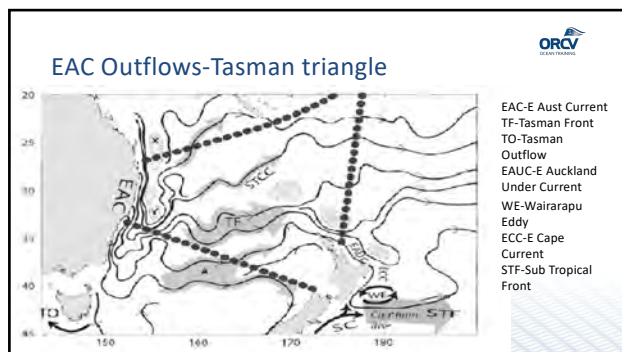
46



47



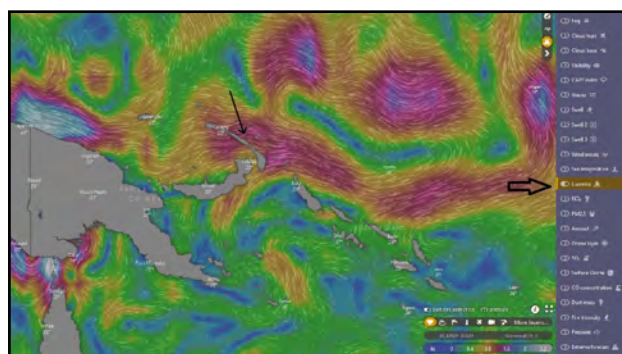
48



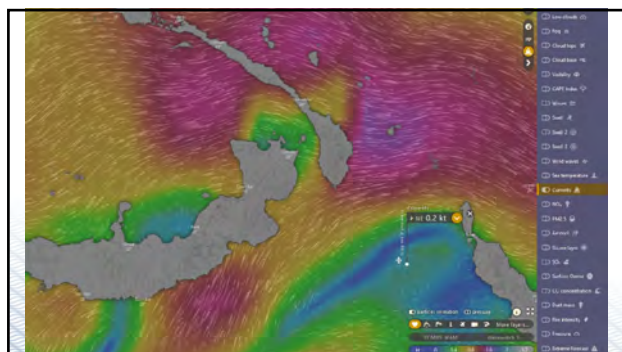
49



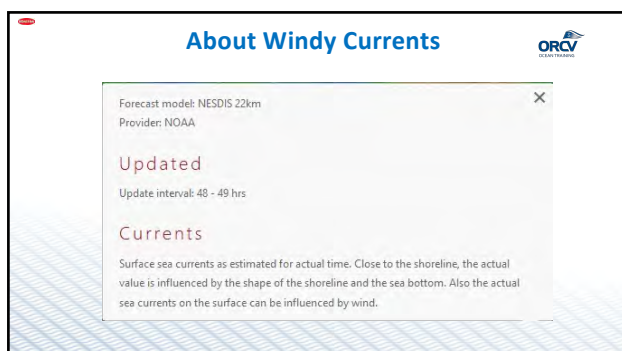
50



51



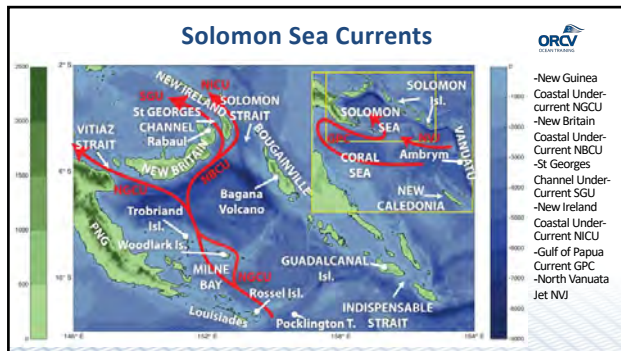
52



53



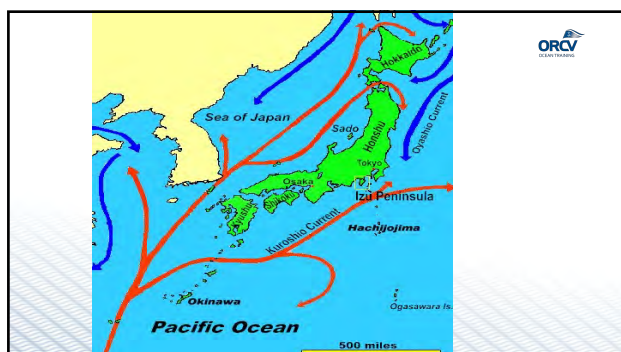
54



55

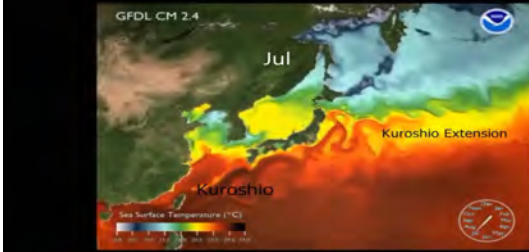


56

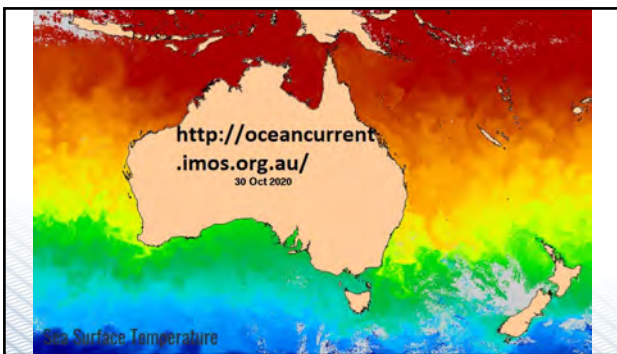


57

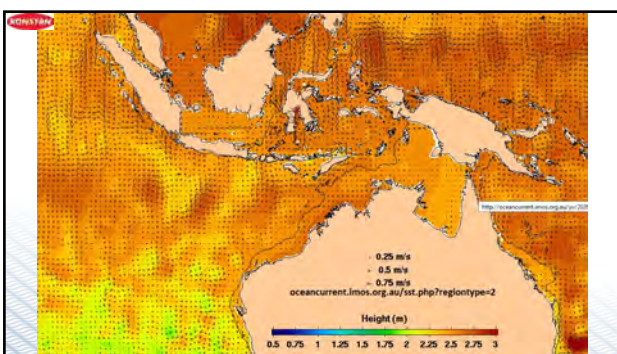
Kuroshio Eddies



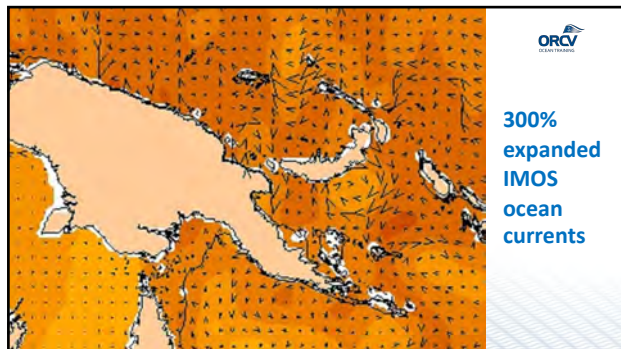
58



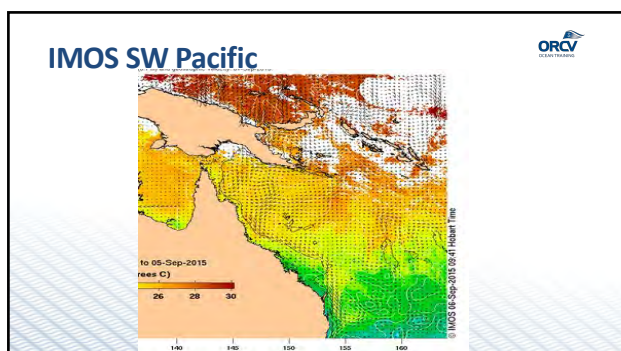
59



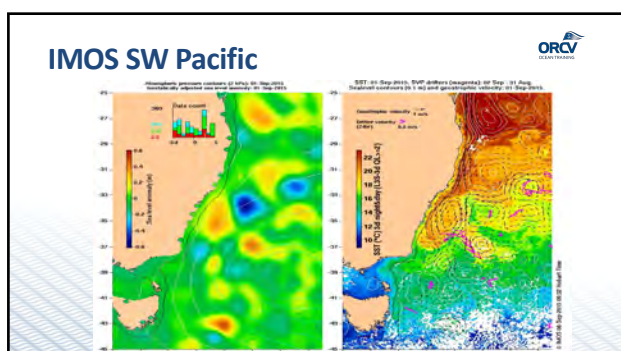
60



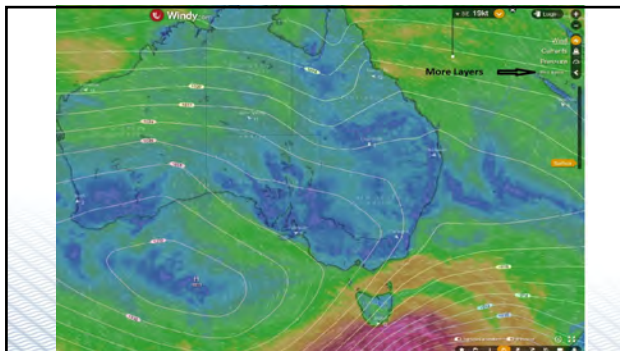
61



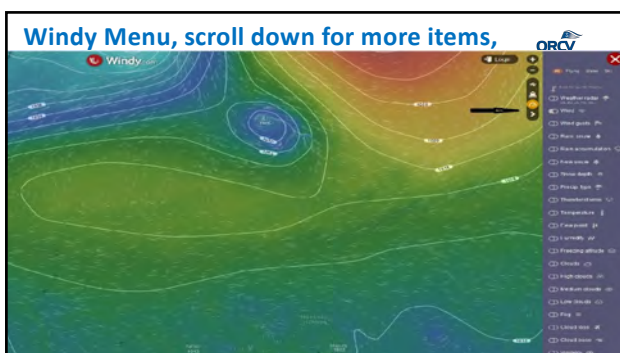
62



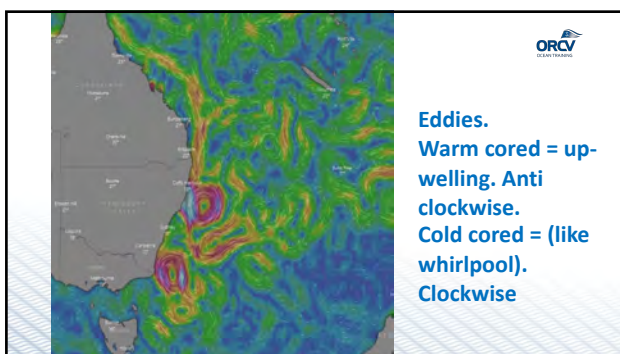
63



64



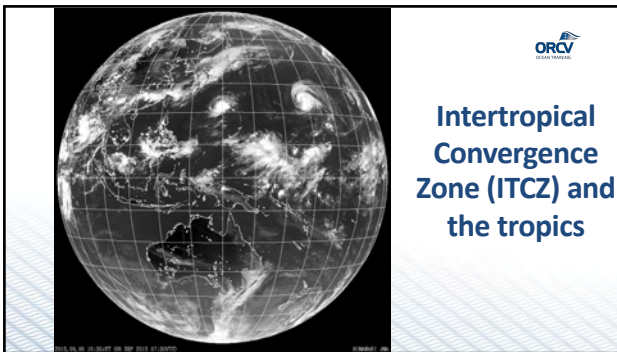
65



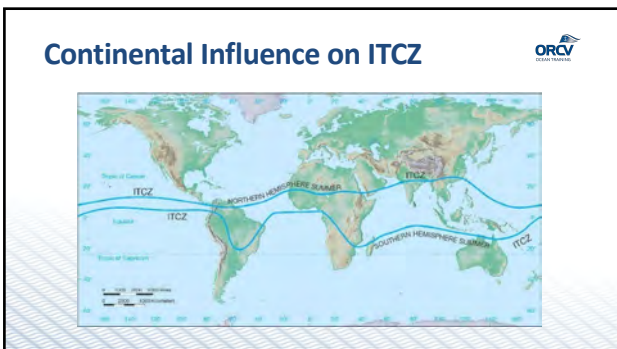
66

Questions ?

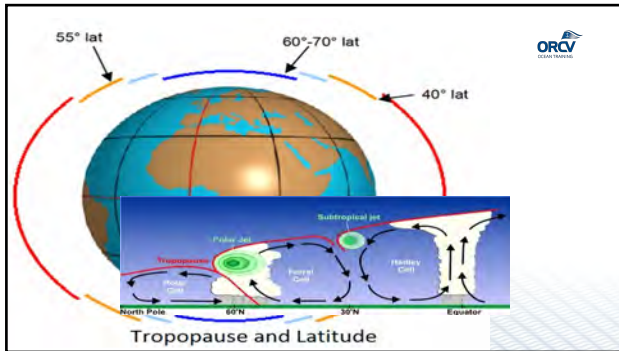
67



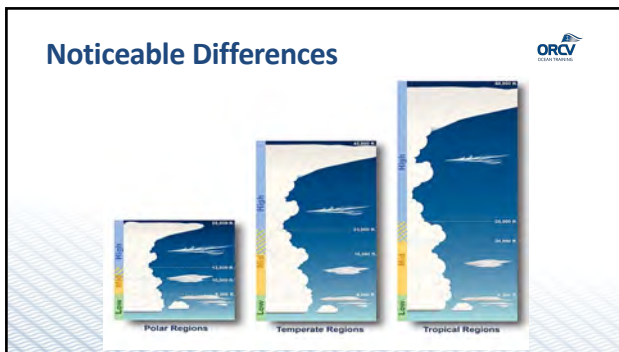
68



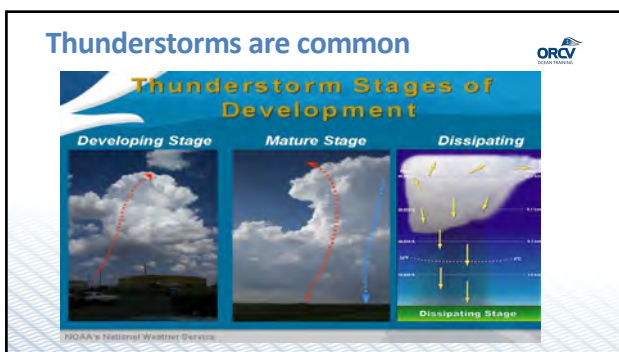
69



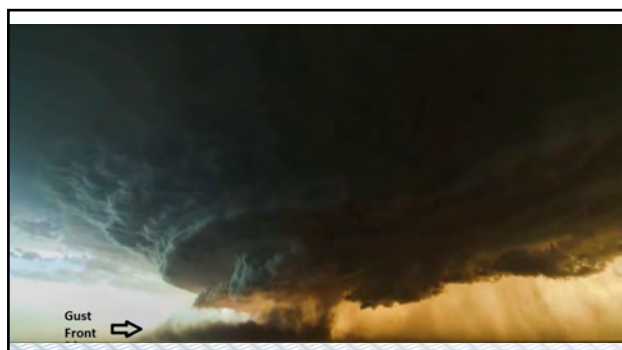
70



71



72



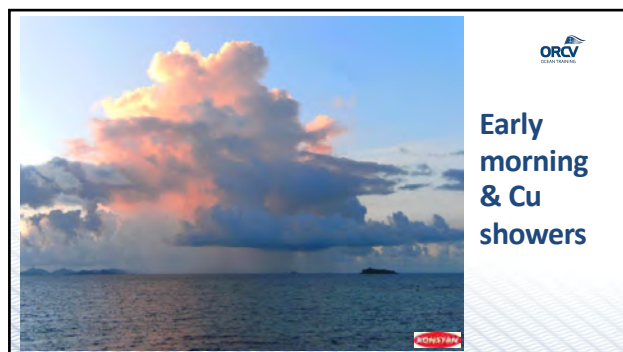
73



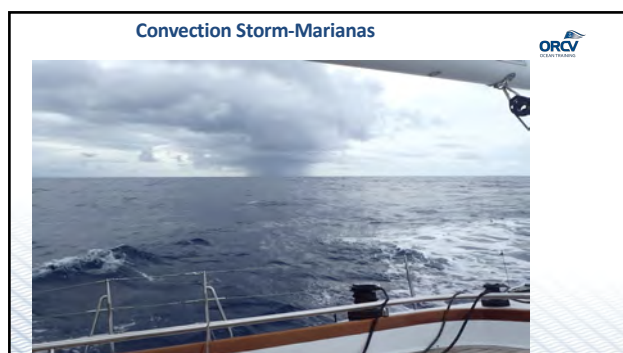
74



75



76



77

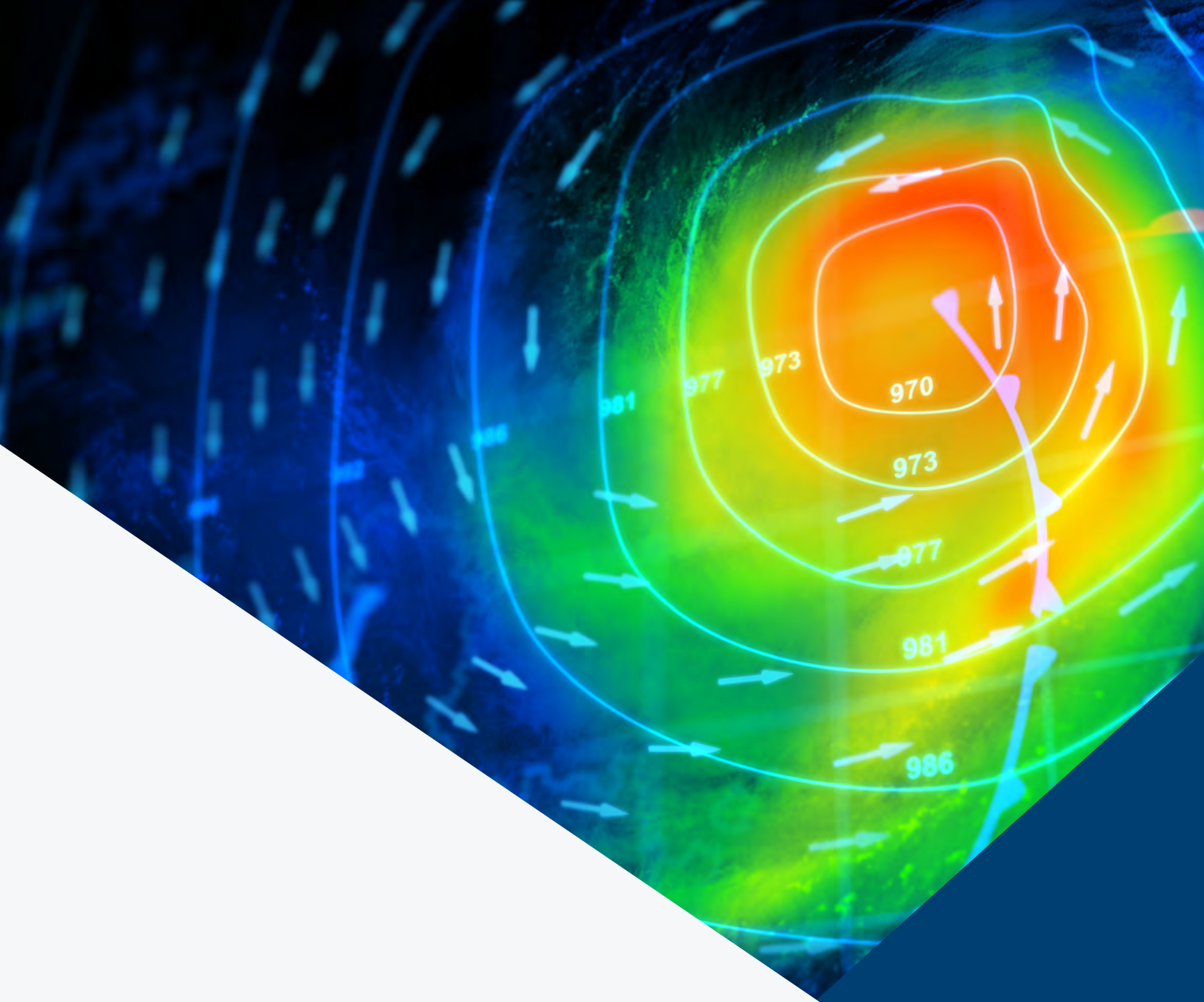


78

Questions ?



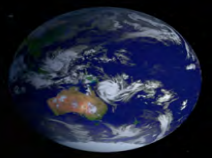
79



OCEAN RACING CLUB OF VICTORIA

WEATHER FOR SAILORS

MODULE 3 - TRANS OCEANIC (COURSE NOTES)
SESSION 2




Weather Course

Module 3: Trans Ocean
Session 2

1

Your Instructors and Moderators






Robin Hewitt Neville Rose Simon Dryden Delma Dunoon



2



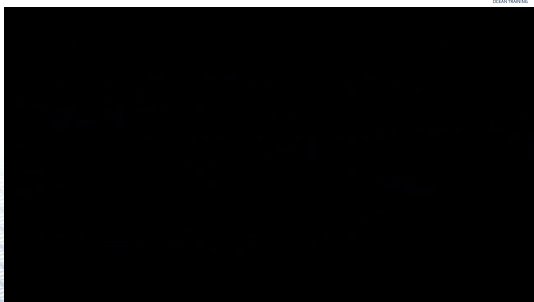
Some Reminders Getting Underway

- o Main Channel is "Chat"
- o Please use the Everyone OR Organisers, The presenters channel is NOT monitored
- o ? Question Breaks
- o Limit video / mic (we will mute you)



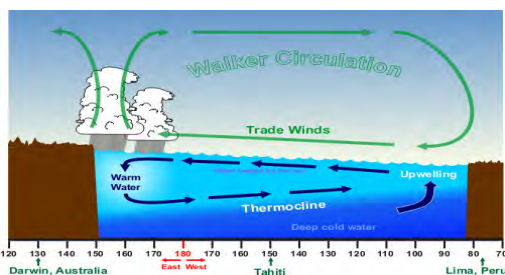
3

Understanding Enso/Iod



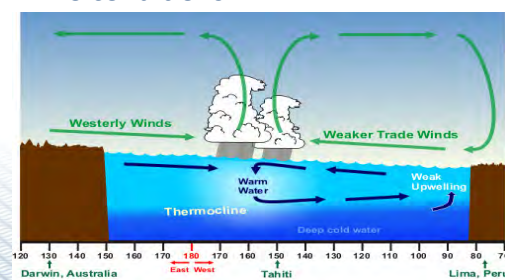
4

ENSO in the Pacific-Normal



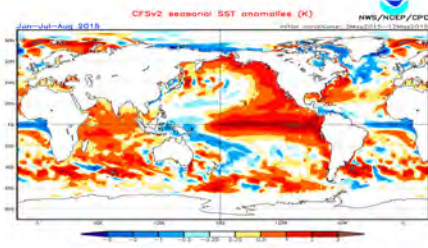
5

El Nino conditions



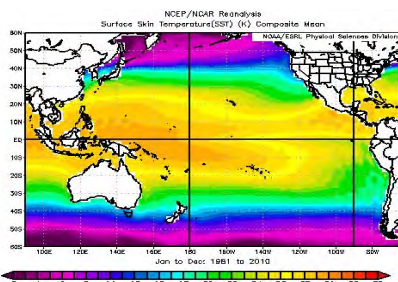
6

El Nino SST 2015



7

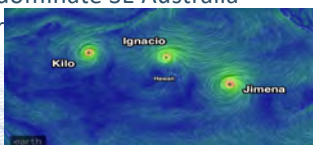
Normal SST



8

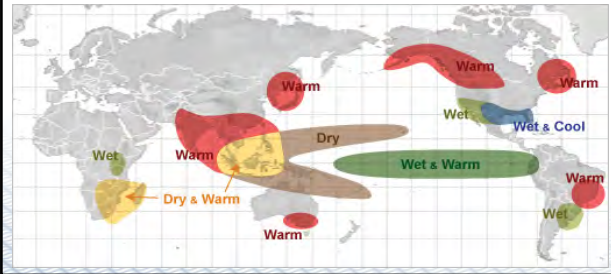
El Nino – Weather Influences

- Trade Winds are weakened
- Cyclone potential less in SH, higher in NH
- High Pressure can dominate SE Australia - dry, stable weather



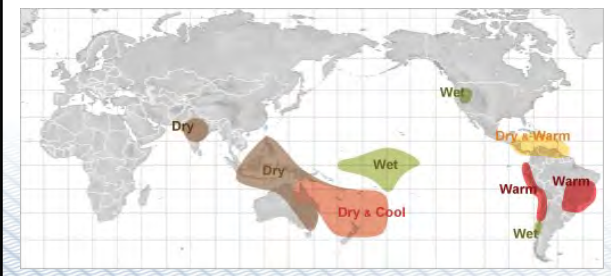
9

El Nino December-February



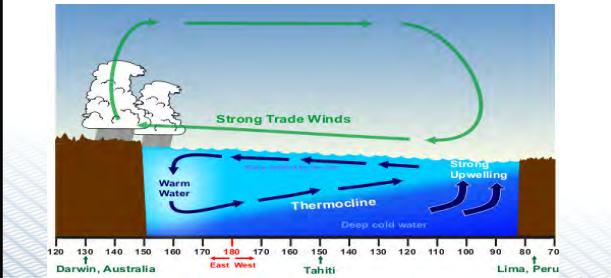
10

El Nino June-August



11

La Nina Conditions



12

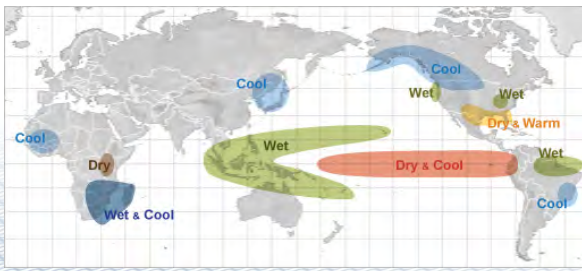
La Nina – Weather Influences



- Trade Winds are strengthened
- Cyclone potential more in SH – eg. Yasi, also high in Northern Hemisphere.
- Low pressure 'troughy' weather can persist on eastern seaboard – high rainfall, unstable weather - i.e. Qld Floods 2011
- Higher East Coast Low potential

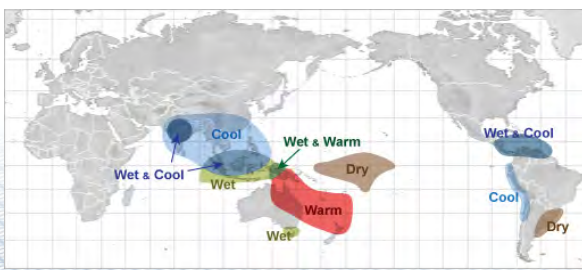
13

La Nina December-February

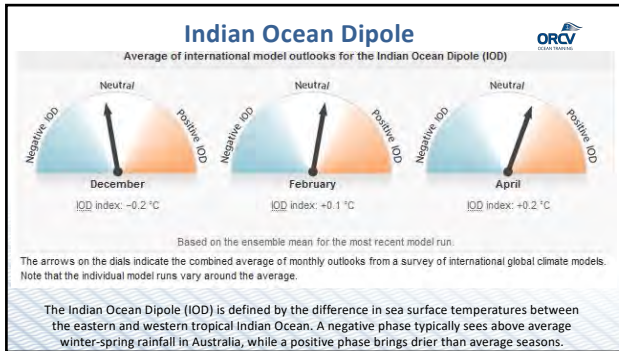


14

La Nina June-August



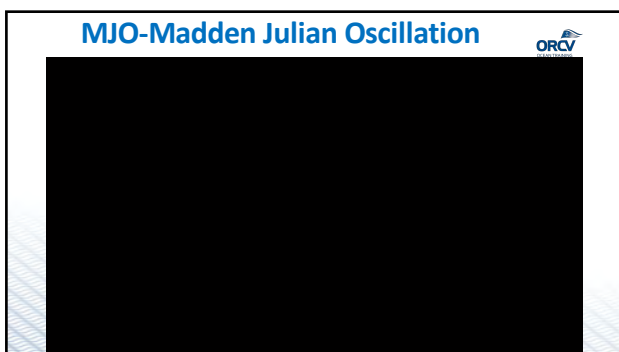
15



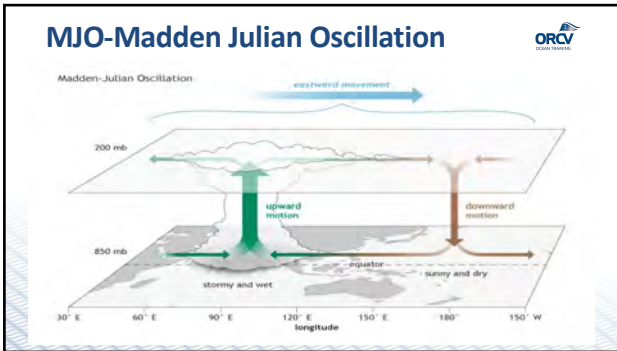
16



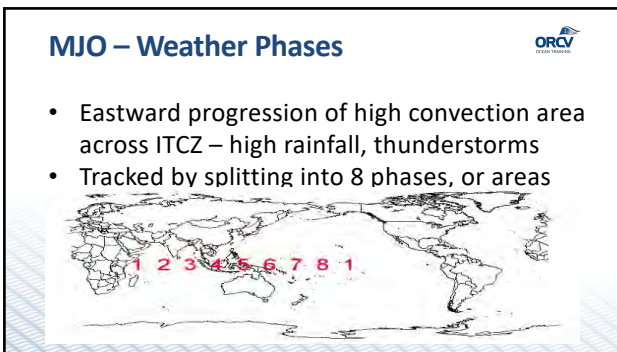
17



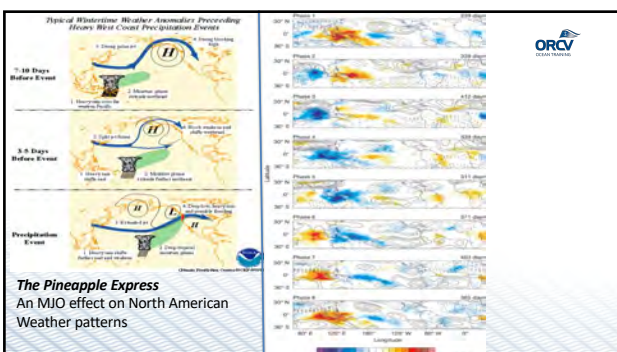
18



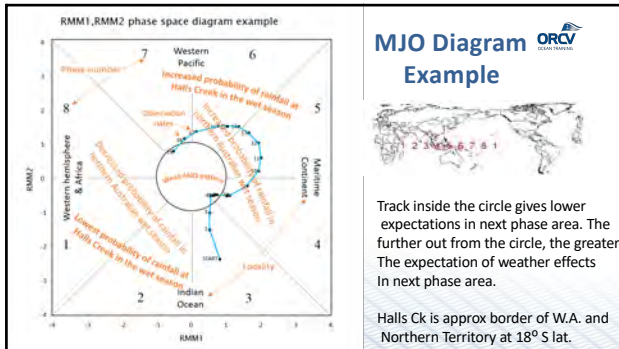
19



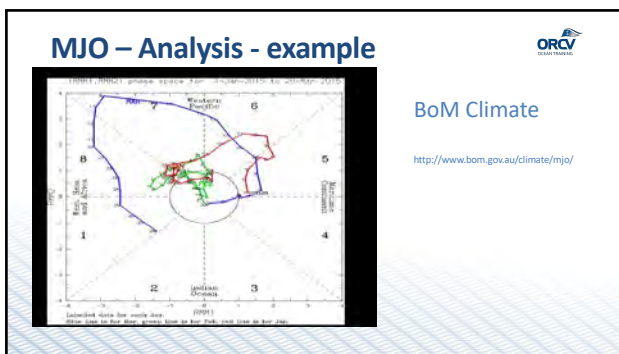
20



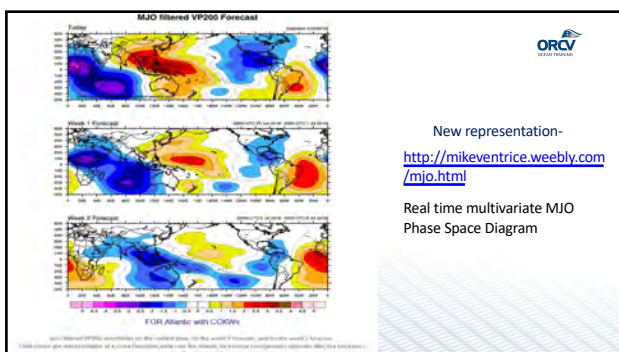
21



22



23



24

MJO – Weather Influence

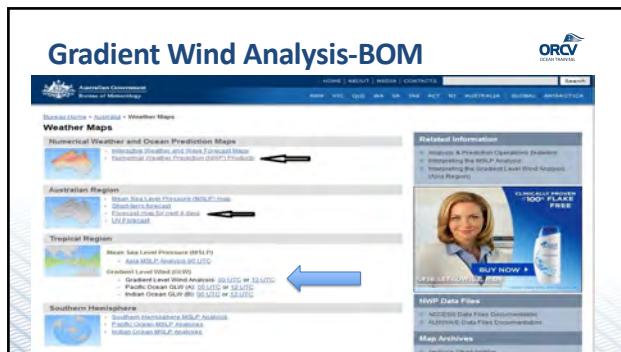


Phases 5-7 of most interest for eastern seaboard/SW Pacific sailors

- More difficult (more thunderstorms), flukier winds if crossing ITCZ (i.e. Osaka Race)
- Assist cyclone development in Coral Sea
- Assist El Nino – sending Kelvin waves west – March 2015 example
- Not just tropics – Phases 5-6 can weaken subtropical High over continent, westerly band can move up over SE Australia

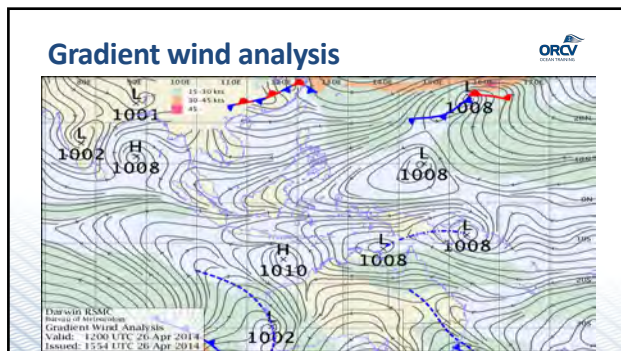
25

Gradient Wind Analysis-BOM

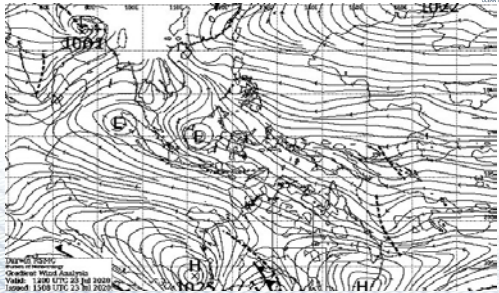
26

Gradient wind analysis



27

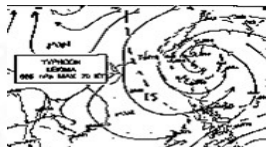
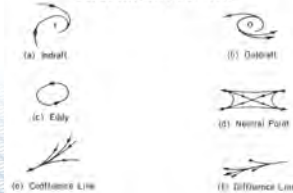
Mid-latitude West, ITCZ-East



28

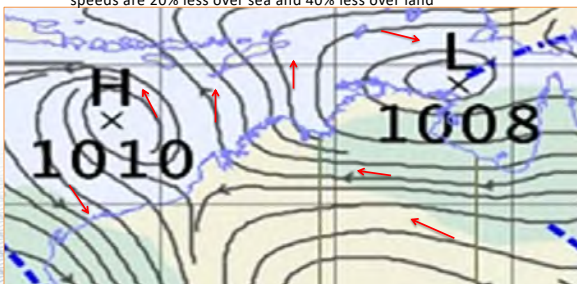
Streamline features

Streamline Patterns

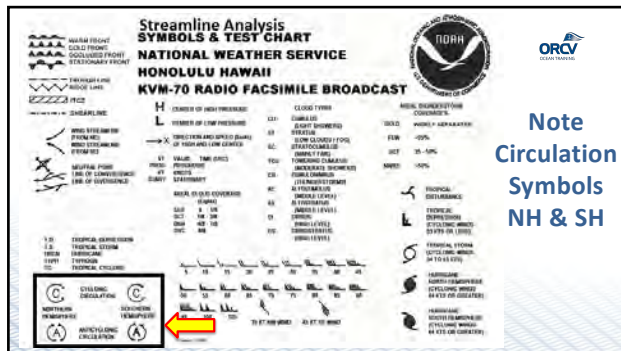


29

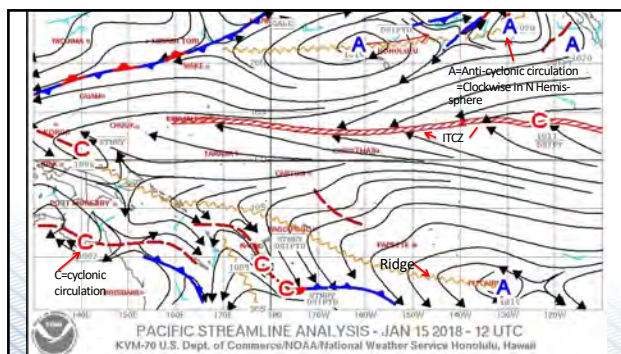
Look along streamline direction, wind deflection is to right in southern hemisphere (lower pressure). To left northern hemisphere. Wind speeds are 20% less over sea and 40% less over land



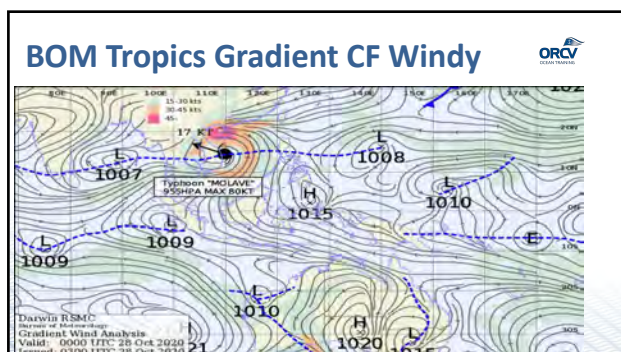
30



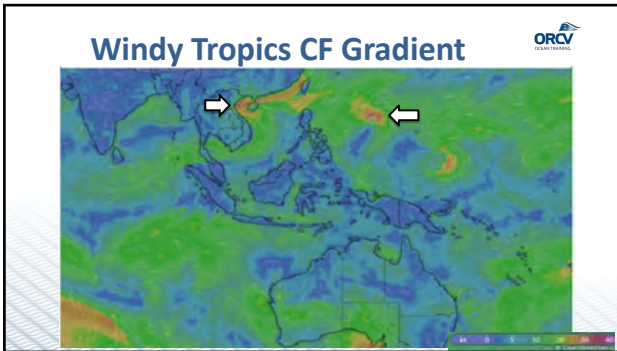
31



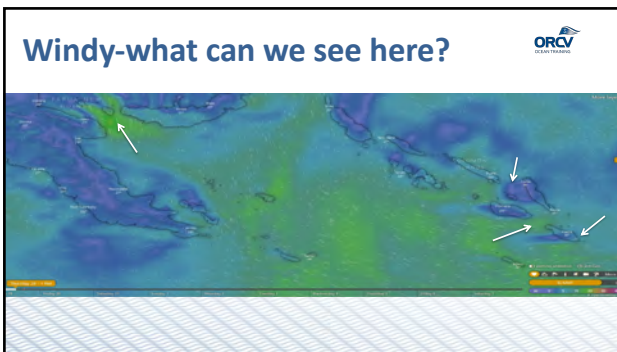
32



33



34



35



36

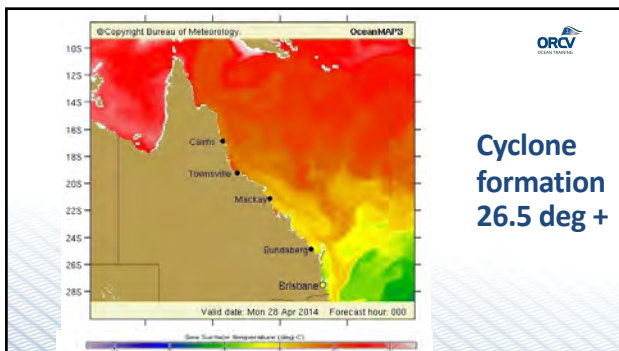
Questions ?

37

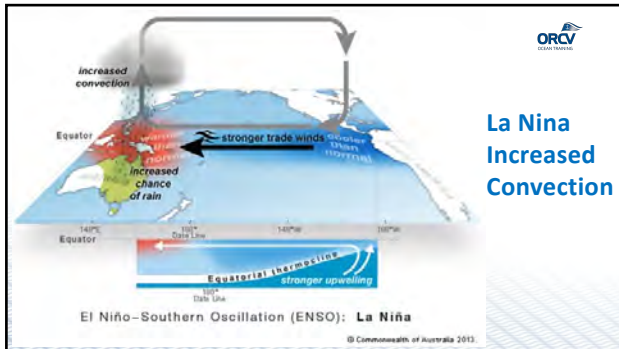
Assisting Factors for tropical storm formation

- Sea Temperature > 26.5°C
- Enso La Nina
- Monsoon
- MJO phase
- Latitude 5°-10° for coriolis
- Low upper wind shear

38



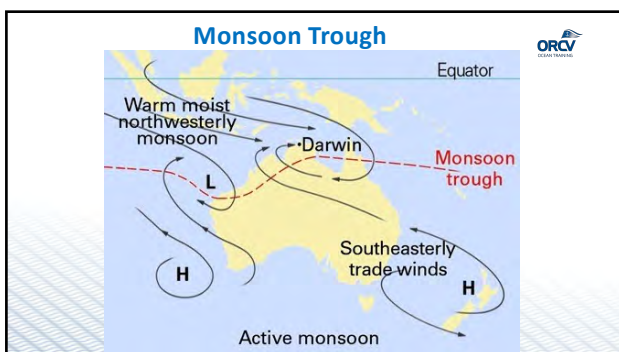
39



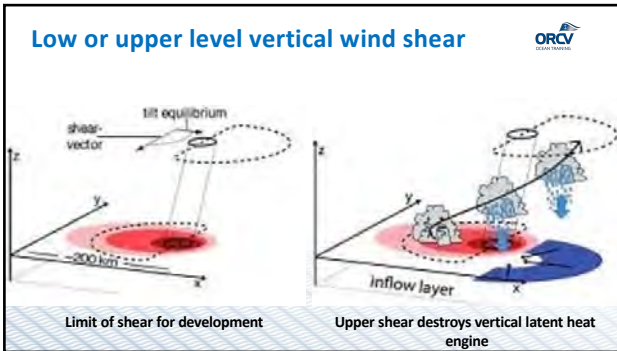
40



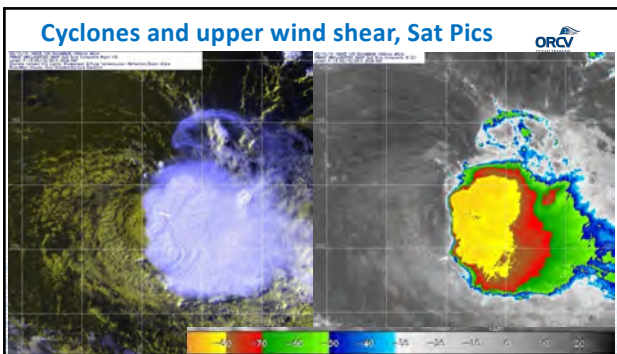
41



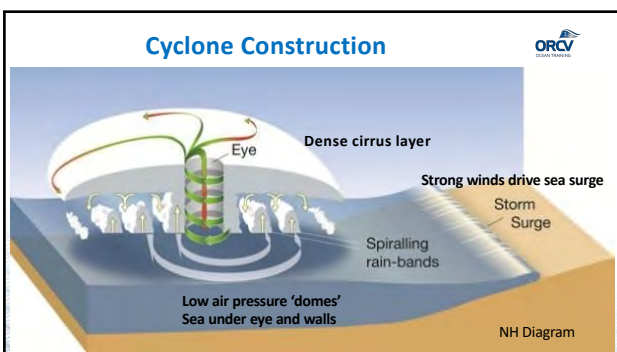
42



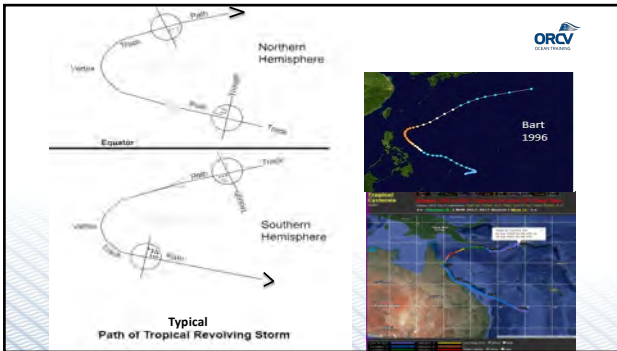
43



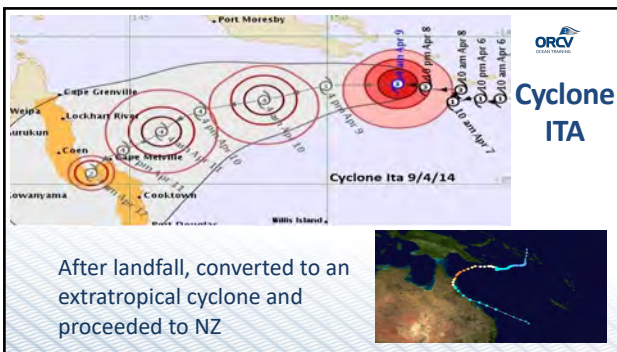
44



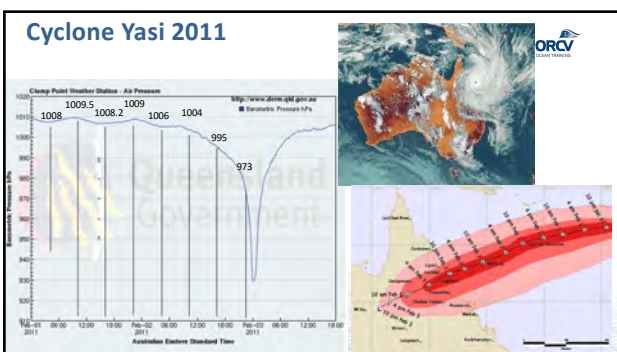
45



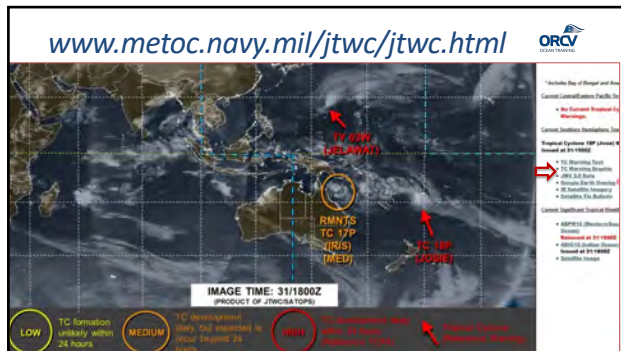
46



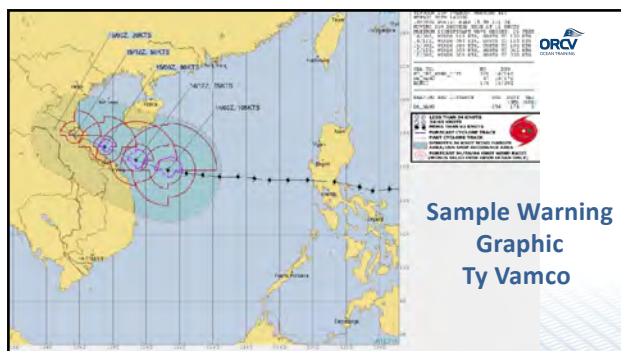
47



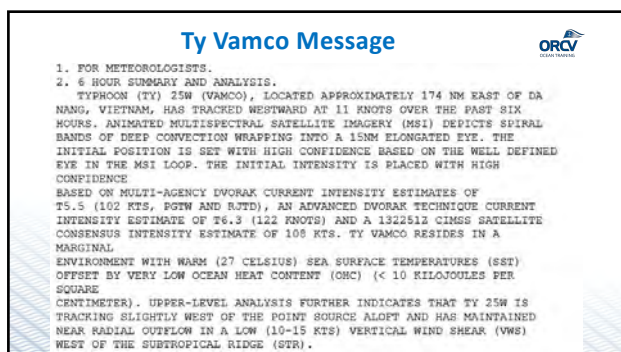
48



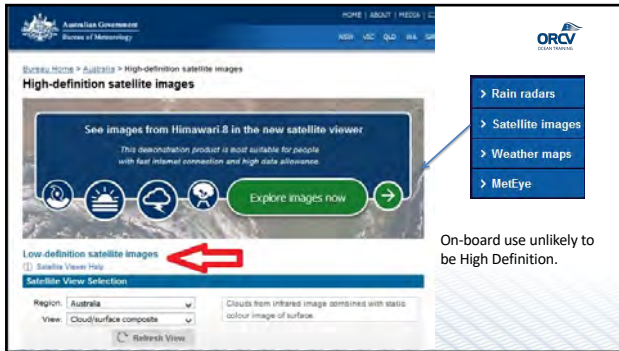
49



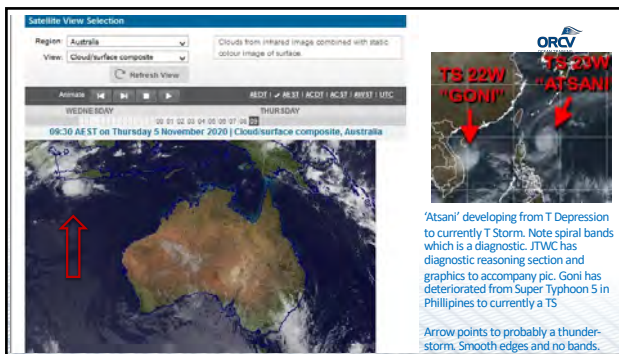
50



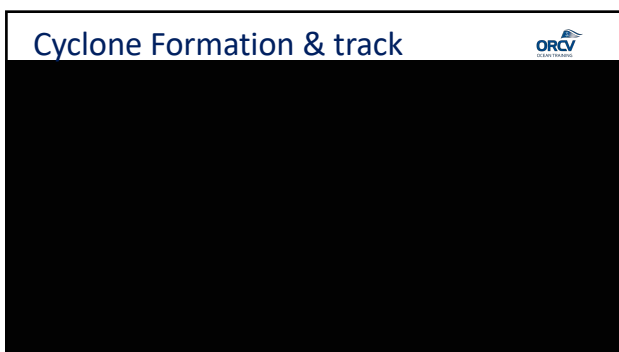
51



52

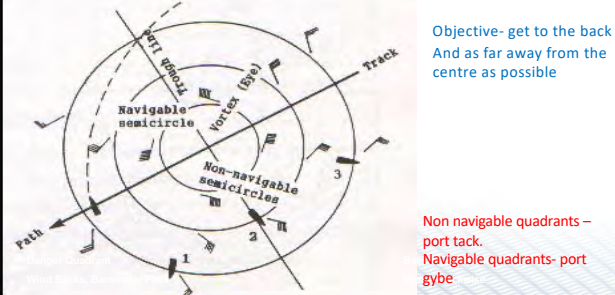


53



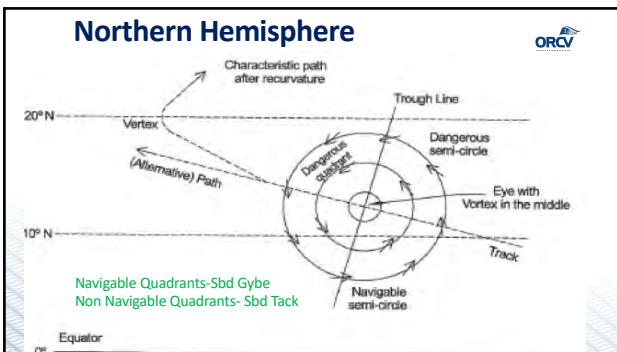
54

Action Required Southern Hemisphere



55

Northern Hemisphere



56

Australian tropical cyclone intensity scale



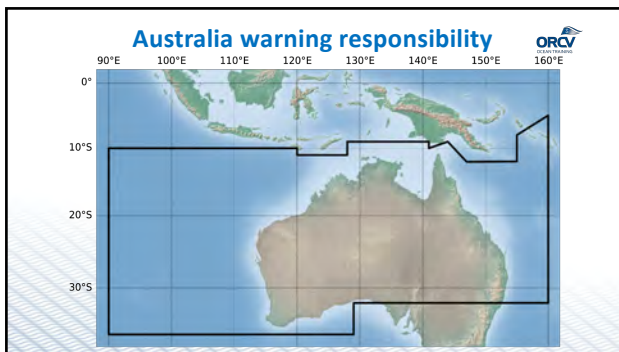
Category	Sustained winds	Gusts
Five	>107 kt >198 km/h	>151 kt >280 km/h
Four	86–107 kt 158–198 km/h	122–151 kt 226–280 km/h
Three	64–85 kt 118–157 km/h	90–121 kt 167–225 km/h
Two	48–63 kt 89–117 km/h	68–89 kt 126–166 km/h
One	34–47 kt 63–88 km/h	49–67 kt 91–125 km/h



57

Phillipines		America	
PAGASA's Tropical Cyclone Wind Signals (TCWS) (2014)		New Saffir-Simpson Hurricane Scale	
Warning Signal	Meaning	DESIGNATION	WIND SPEED
TCWS #1	winds of 30-60 km/h (20-37 mph) are prevailing or expected to occur within 36 hours	Tropical Depression	38 mph or less
TCWS #2	winds of 61-120 km/h (38-73 mph) are prevailing or expected to occur within 24 hours	Tropical Storm	39 - 73 mph
TCWS #3	winds of 121-170 km/h (74-105 mph) are prevailing or expected to occur within 18 hours	Category 1	74 - 95 mph
TCWS #4	winds of 171-220 km/h (106-137 mph) are prevailing or expected to occur within 12 hours	Category 2	96 - 110 mph
TCWS #5	winds greater than 220 km/h (137 mph) are prevailing or expected to occur within 12 hours	Category 3	111 - 129 mph
		Category 4	130 - 156 mph
		Category 5	157 mph or greater

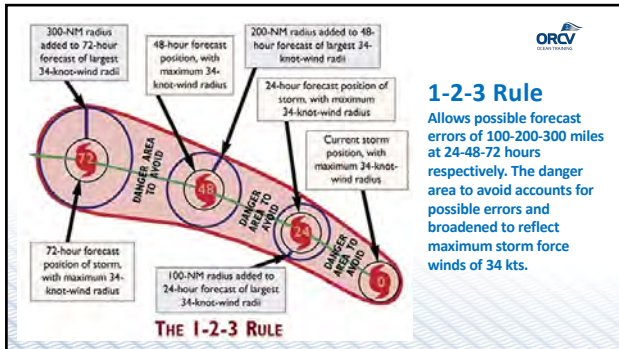
58



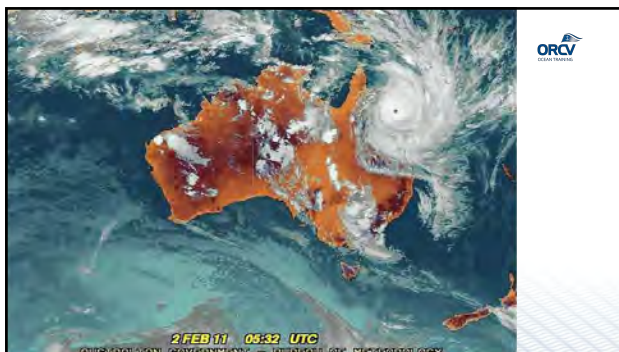
59



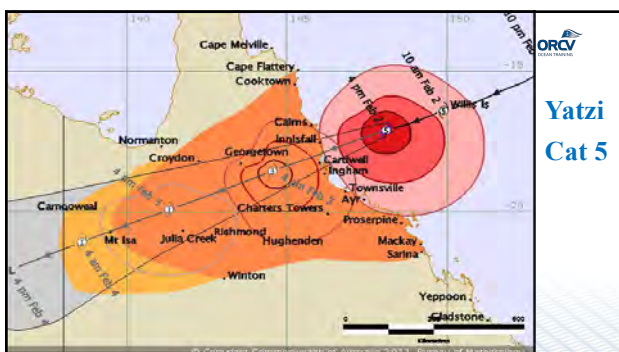
60



61



62



63

CAUTION

- LA NINA +
- MONSOON FRONT LOW
- MJO



64

Break

Short Break



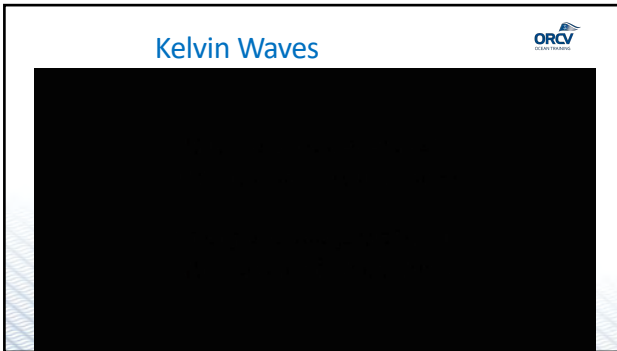


65

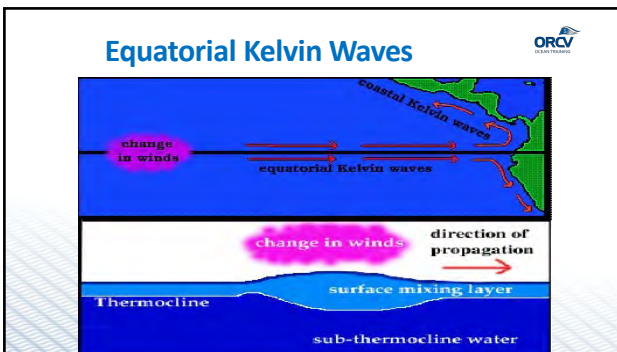
Questions ?



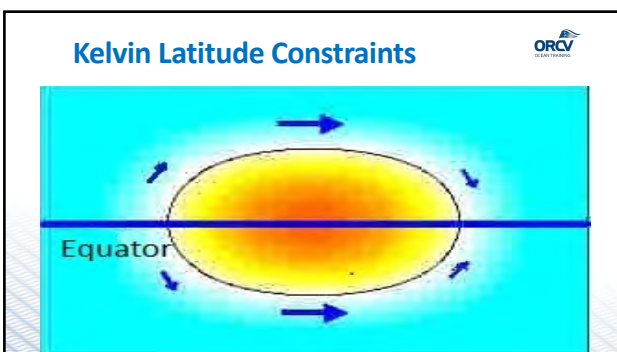
66



67

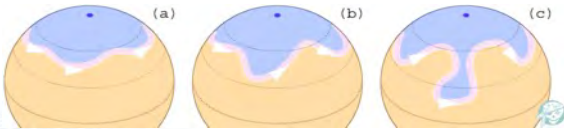


68



69

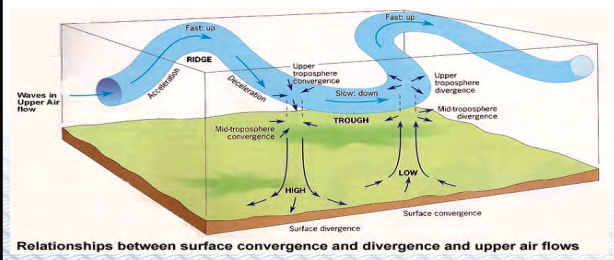
Rossby waves



Meanders of the [northern hemisphere's jet stream](#) developing (a, b) and finally detaching a "drop" of cold air (c). Orange: warmer masses of air; pink: jet stream

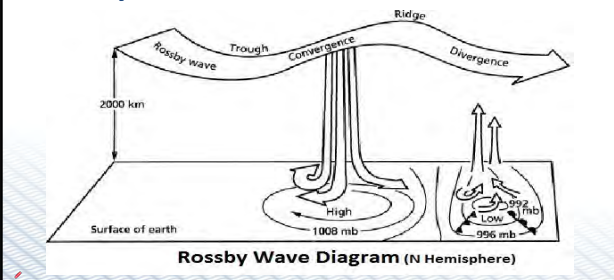
70

Rossby waves



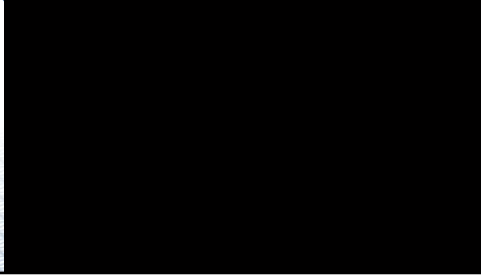
71

Rossby waves



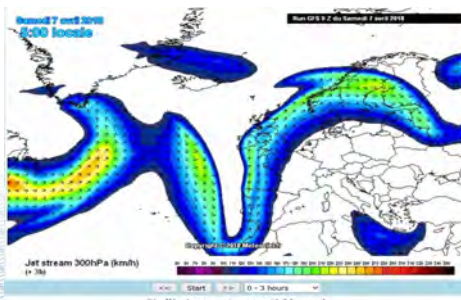
72

How does the jet stream work? Video — Jet Streams & Rossby waves



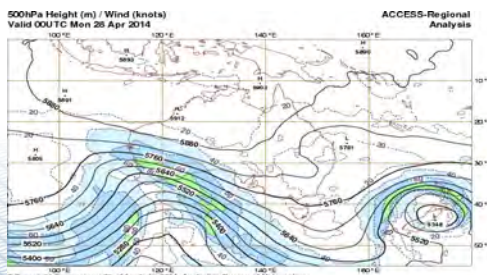
73

Jet Stream sequence

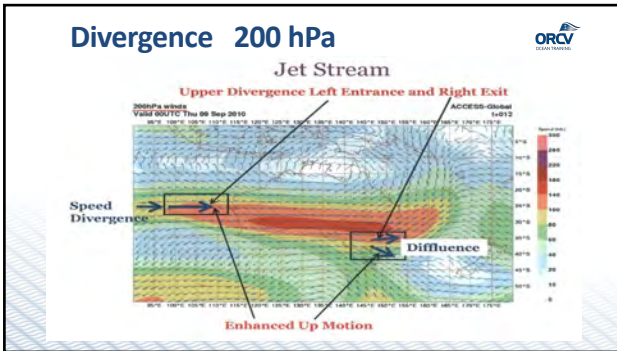


74

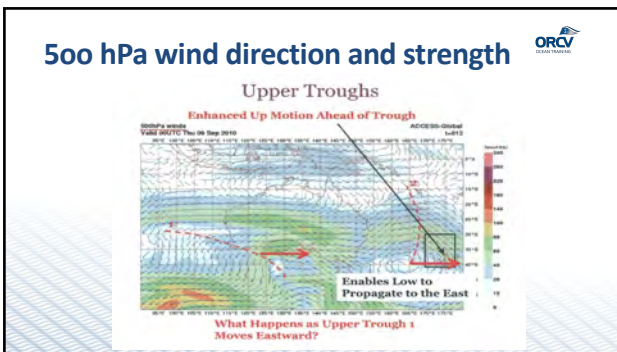
The upper atmosphere



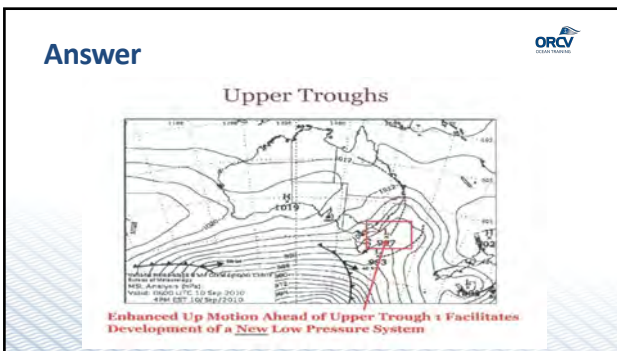
75



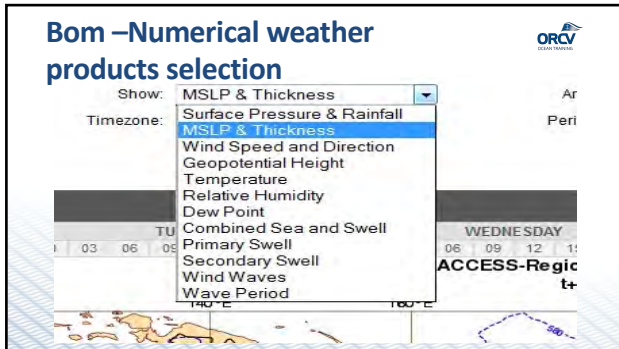
76



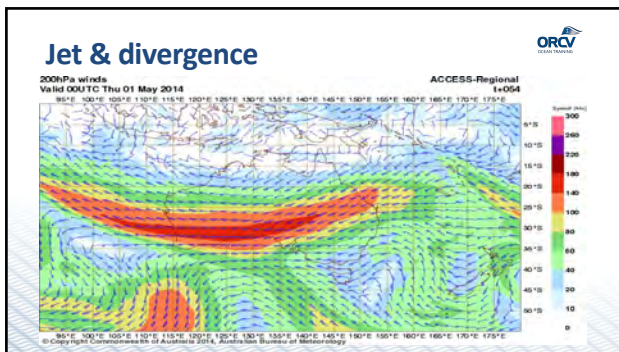
77



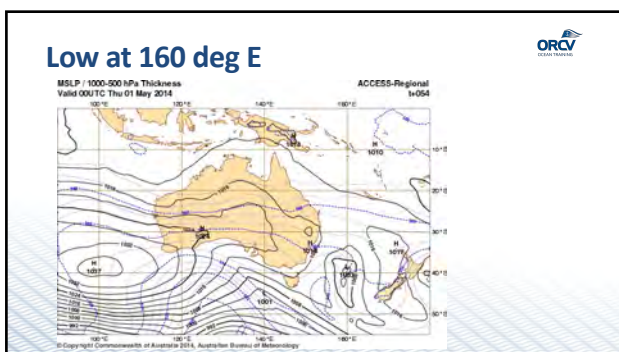
78



79

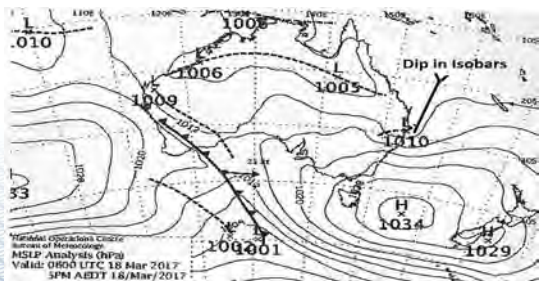


80



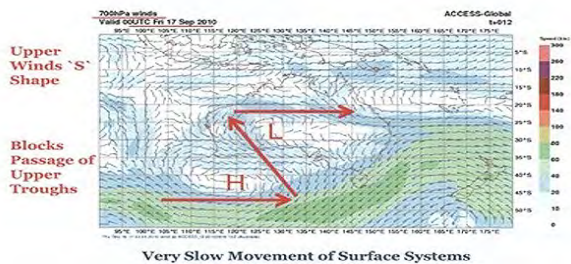
81

Blocking High Patterns



82

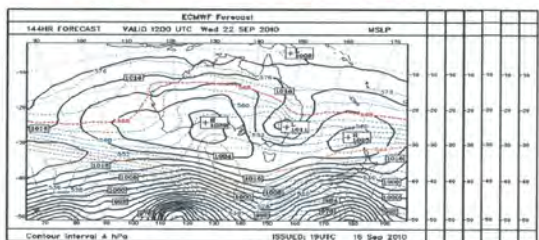
Upper Blocking Pattern



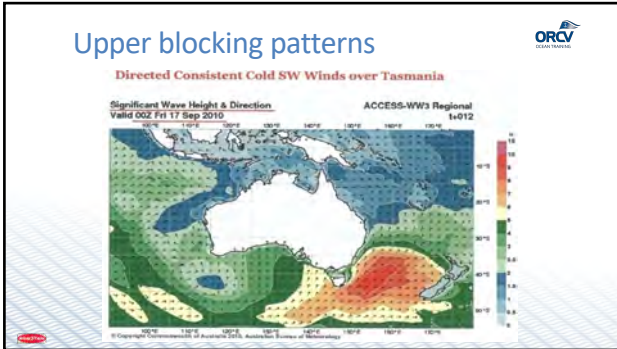
83

Upper Blocking Patterns

Low Level High Persisted to South of WA for over a Week !



84



85

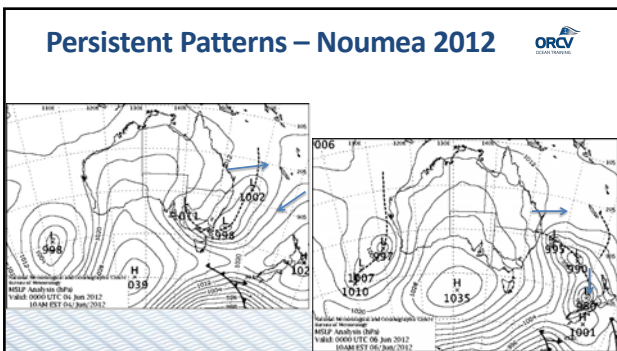
Persistent Patterns – Noumea 2012

Brisbane/Auckland to Noumea Race June 2012 - tale of two fleets - Tasman low pressure system

- Brisbane fleet – dream downwind run
- Auckland fleet – relentless bash to windward

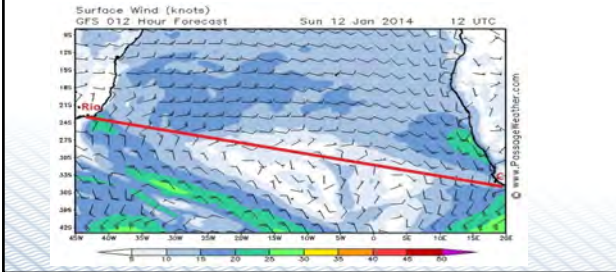


86



87

Cape to Rio – skirting the High



88

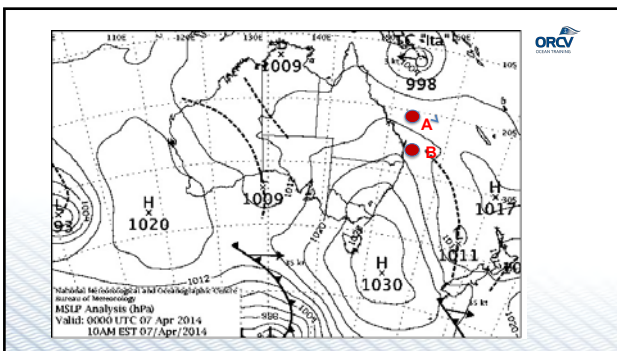
Cyclone Ita



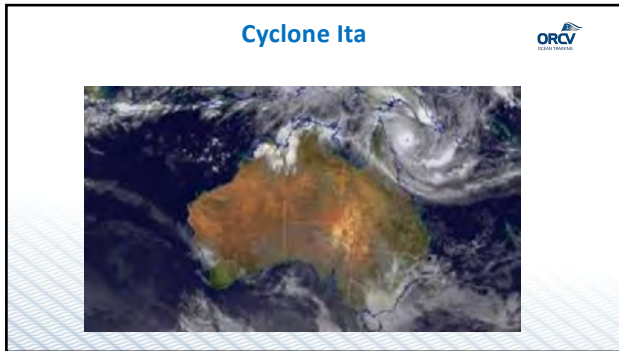
Sailing in Osaka Race – Cyclone Ita forms - which way do you go if:

- You are at A?
- You are at B?
- Make a poll

89



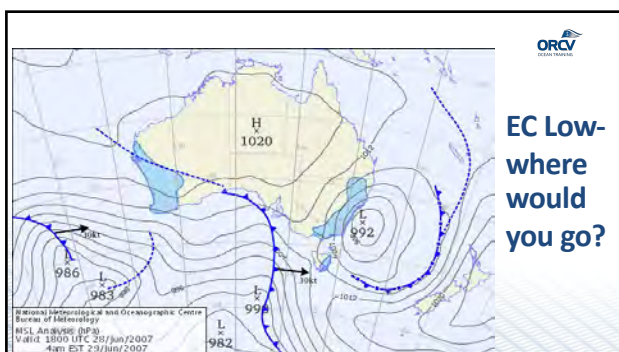
90



91



92



93

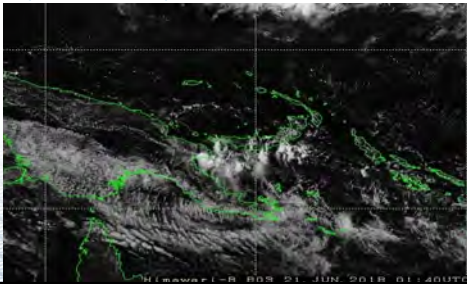
Routing Software



- Use of GRIB (Gridded Binary) files overlaid on electronic charts, eg.
 - Expedition navigation software
 - PredictWind GRIB
- Download pre-race ashore and update during race/cruise as internet connection(s) allow

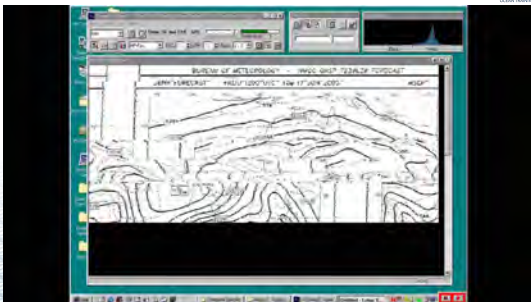
94

saildocs.com- Sample Image mail, weather, grib
etc. (sail mail.com)



95

Weather Fax



96

Contingency plans



Possible difficulties

- Cyclones
- East Coast Lows
- Persistent (adverse) patterns

System avoidance, passage comfort, adjusting passage plans, use of sea room.

97

Thank you



ORCV Volunteer Project Team members who developed this course

- Tony Duckmanton, CFA
- Don Fraser
- Robin Hewitt
- Andrew Roberts
- Neville Rose
- Ray Shaw
- Martin Vaughan

Australian Bureau of Meteorology

- Kenn Batt, Senior Forecaster
- Others noted in Reference Material



98

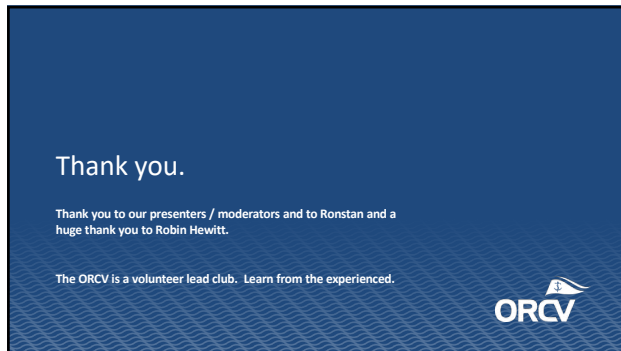
Generous Support



- PredictWind
www.predictwind.com
- It & Beyond
www.itandbeyond.com.au
- Nick White, Expedition Navigation and yacht racing solutions. www.expeditionmarine.com
- Ronstan www.ronstan.com.au
 - Please check out their new catalogue recently out



99



100



ORCV is dedicated to promoting ocean sailing, growing its participation, providing sea safety programs and value to our members.

Support the ORCV by joining as a member
www.orcv.org.au/join

Learn more about the ORCV Programs

[Racing Calendar](#)
[Safety & Sea Survival Courses](#)
[Weather Courses](#)
[Navigation Courses](#)
[Bowman Course](#)
[Other Courses](#)
[Membership](#)
[plus more](#)

Follow us on



COPYRIGHT 2020 - OCEAN RACING CLUB OF VICTORIA

ORCV Office 3 Aquatic Drive Albert Park VIC 3206
orcv@orcv.org.au