

# Passage planning notes and observations – Fiji to Marshall Islands

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Earlier this year we put together some notes on heading to the Marshall Islands for South Pacific cyclone season (Ref. "Pacific Cyclone Season: North instead of South"). Since then we have heard of a number of boats who are planning to head north for the 2013/14 cyclone season. However there seems to be some uncertainty about timing the departure & journey north from Fiji.

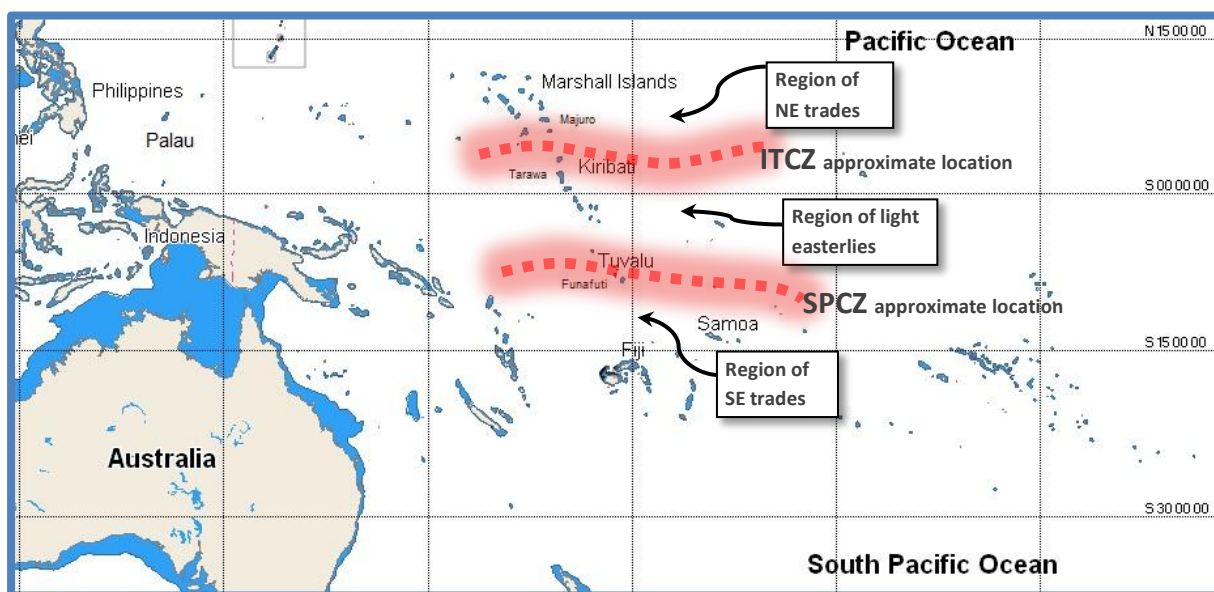
Consequently I have put together some notes on planning for this passage. I have based these notes on our experience, our observations, plus our broad research of relevant sailing guides, pilot books, charts and sailing directions. This is not yet a well-travelled path, so the current body of anecdotal experience is small and does not represent the range of conditions that might be experienced.

We sailed 'Streetcar' from Fiji to the Marshall Islands during October - January 2012/13, and then back to Fiji in April –May 2013.

## The 3 weather regions

Sailing from Fiji to the Marshall Islands you are essentially crossing 3 weather regions and 2 convergence zones. The weather regions are:

- the SE trades (usually Fiji to around Funafuti)
- the intermediate light easterlies (usually Funafuti to Butaritari in Kiribati)
- the northeast trades (usually just the last 200 or 300 miles, Butaritari onwards north)



## **Convergence zones**

The convergence zones between these weather regions move around extensively and vary in their intensity. My observation is that the stronger the converging trade wind, the more intense the convergence zone activity. But this does not always hold true and is a bit of a simplification of the complex 3-dimensional influences at work. The convergence zones are:

- South Pacific Convergence Zone (SPCZ) or branches of this (anywhere between Fiji and mid/northern Tuvalu)
- Inter Tropical Convergence Zone (ITCZ) (anywhere between Tarawa and Majuro)

## **Passage planning**

In planning the trip, it is best to consider the journey split into 3 sections:

- 1) Fiji to Funafuti
- 2) Funafuti to Tarawa
- 3) Tarawa to Majuro

Although it won't always be necessary to stop on route, Funafuti and Tarawa are good places to stop and wait for the weather on the next leg to come into phase. Also there are opportunities to explore the outer islands, and currently you will be required to be in the capital (Funafuti for Tuvalu, Tarawa for Kiribati) to complete initial inbound clearance and final outbound clearance.

The main considerations relevant to timing for us were:

- getting out of the South Pacific cyclone area before activity starts
- crossing convergence zones at the best time and in the best place
- arriving in Majuro after the ITCZ has drifted south to avoid too much rain
- keeping an eye out for the 'feared' westerlies
- keeping an eye out for northern hemisphere tropical activity before the end of December (Majuro was once hit by a Typhoon)
- a desire to cruise to some of the outer islands of Tuvalu and Kiribati

These were a balance between strategic (seasonal) considerations and tactical (weather) considerations (i.e timing the crossing of the convergence zones).

## **Strategic considerations – timing**

For us, strategic considerations pointed towards a late October departure from Fiji. We left Funafuti late November and departed Tarawa for Majuro in early January. However we know of boats which left earlier and others as late as the end of November.

The only northerly or north-easterly winds we met were when emerging on the north side of convergence zones and over the last 24 hours into Majuro (ENE trades, satisfyingly sailable after the vagaries of the convergence zones). By timing legs carefully we only very occasionally ran out of wind and this was usually within or close to convergence. These observations reflect the wider body of experience reported in pilot books.

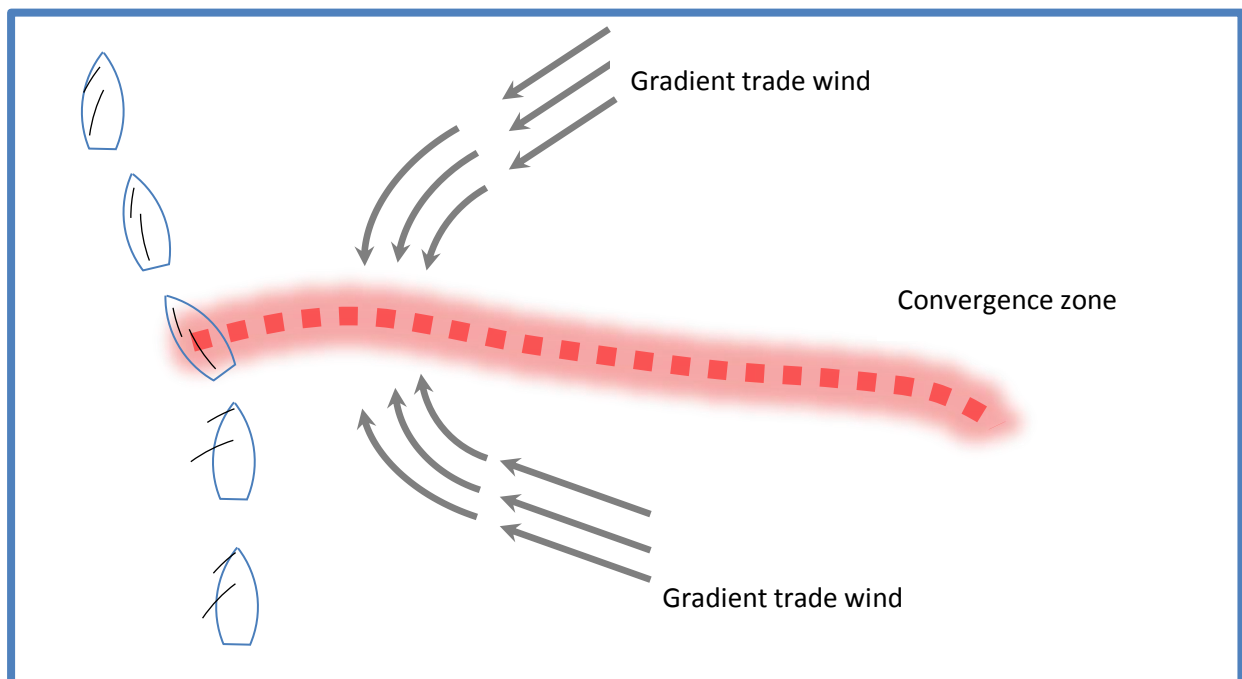
You may also want to cruise the outer islands of Tuvalu and Kiribati. My observation is that it is better to be well north of Funafuti by the time cyclone activity begins in the South Pacific. I have heard (first hand) experience that the anchorage here can become extremely unpleasant when there is cyclone activity to the south. However I also know of one boat that spent the entire 2012/13 cyclone season in Funafuti.

We stayed in Kiribati for nearly 2 months over December and January and found the weather to be mostly pleasant. There is good cruising to the south and north of Tarawa. We deliberately stayed in Kiribati until we saw the ITCZ drift south of Majuro.

### Tactical considerations - crossing convergence zones

Choosing how and when to cross convergence zones is difficult and riddled with uncertainty. I have crossed convergence zones in the Pacific, Atlantic, Red Sea and Indian Oceans. I found that the basic pattern is repeated for the trip north to the Marshall Islands:

- as you approach from the south the E or SE wind veers and moves aft;
- inside the convergence short period seas come from several directions;
- moving across the convergence the squalls intermittently bring in NE, N and even NW winds, & as you progress north these northerlies become more persistent;
- often there is even some form of localised circulation driven by the dominant trade wind;
- at this point it is usually imperative to strap in the sails and beat your way north out of the other side, otherwise you sail along the convergence and never get out of it;
- as you get north gradually the squalls fade and a more consistent N or NE wind settles in;
- as you get free of the convergence the wind starts to drop and back - the 'gradient' direction for the new weather region settles in



In this part of the Pacific the convergence zones seem to be quite narrow and predictable. But you still want to make sure that you cross the convergence zone when it is relatively inactive and stationary. Both of the convergence zones move north and south as the winds push against each other. For example, I have observed that when a strong trade wind surge develops north of the equator this pushes the ITCZ south towards Tarawa. As the wind eases the ITCZ drifts north again.

We made the mistake of leaving Tarawa for Majuro when the ITCZ was located well south (in fact we were very keen to get to a good supermarket.). We crossed the ITCZ around 4 degrees N and thought we were on our way with ENE winds. Unfortunately the ITCZ was ready to move north again and it jumped over the top of us and reformed just south of Majuro. So we crossed it again. On the plus side it was during a phase of low activity, although we did get 4 hours of strong westerlies in the second crossing.

The Pacific satellite images show the location and extent of the convergence zones. Once you are familiar with examining them, you will find they also show where along the convergence the main areas of convection are. These convection storms seem to move east to west along the line of convergence. Using sequences of satellite images it was possible for us to time our drive north through the convergence to avoid the worst areas of convection. Whether this was luck or not I am not sure but it did seem to work.

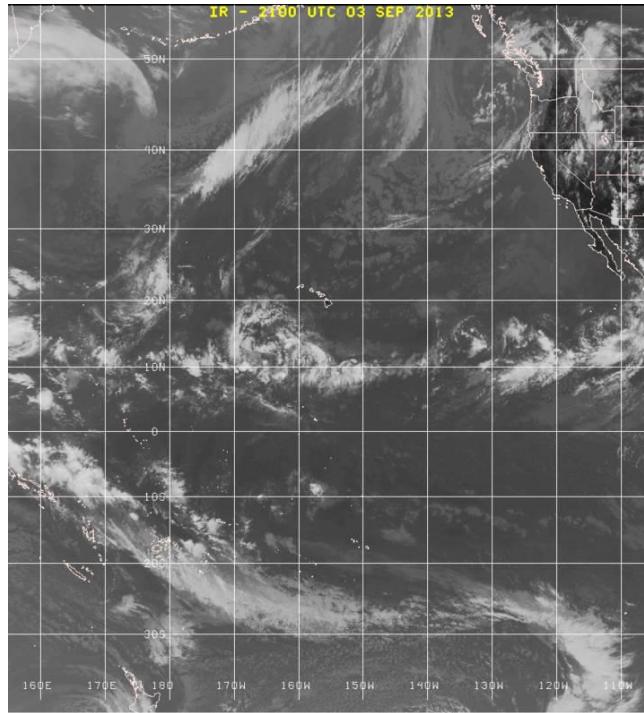
The trick seemed to be to time entry to the convergence just as an area of convection moved across ahead of us. Then we could make the gap before the next one would come across; a bit like crossing a busy highway.

### **Weather information**

My main sources of weather information were:

- GFS GRIB files with wind speed, wind direction and especially rain parameters
- Fiji Nadi text forecast
- Honolulu weatherfax (streamlines, surface forecasts and most importantly satellite images)
- Guam text weather discussion (saildocs: send <http://www.prh.noaa.gov/data/GUM/AFDPQ>)

Weather forecasting in the proximity of convergence is notoriously inaccurate. This is especially so for GRIB files which I only used for 'big picture' purposes in these areas. Close to the equator localised convection is the main weather phenomena and the development of weather events is best observed over sequences of satellite images.



### **In conclusion**

Overall the trip north was easy for us. We had no significant westerlies. No super-strong trade winds. Very brief periods of contrary winds. The only bad convection we had was while anchored in Tarawa where we saw 35 to 45 knots for several hours (fortunately the holding off Parliament House in Tarawa is excellent even through the protection is limited). Bouncing around in the convergence zones is uncomfortable but only temporary.

Of course there may be more extreme weather events. The general guidance mentions these phenomena. I anticipate that these could be foreseen by keeping an eye on the combination of weather sources mentioned above. There is also a very good weather station in Funafuti. They seem to keep tabs on all the main events in the region and are very glad to have a discussion with visiting yachts. But don't expect a detailed forecast.

On this passage, heading north and if you return back to Fiji, you will have to be prepared to strap in your sails and sail with the wind forward of the beam. It is a departure from the lazy days of downwind trade wind sailing. But on the plus side the wind gen spins and there's no rolling.

Planning and timing will make it a more pleasant trip. In order to do this effectively it helps to have some understanding of the wider influences at work in the region. While individual observations from other boats which have done the trip are useful, conditions experienced can vary tremendously, and of course El Nino would probably change the game altogether. In my experience the various pilot books and sailing directions provide the broader context for making the right decisions.