

Pacific Crossing Primer



- Dave & Sherry McCampbell
- Pacific Experience:
 - Panama, Costa Rica, Ecuador, Easter Isle, Pitcairn, Hawaii, French Polynesia, Cooks, Samoa, Tonga
 - 3 years cruising, 5 more to go, 8 while in US Navy
- This presentation and more details & pics at: SVSoggypaws.com

Overview

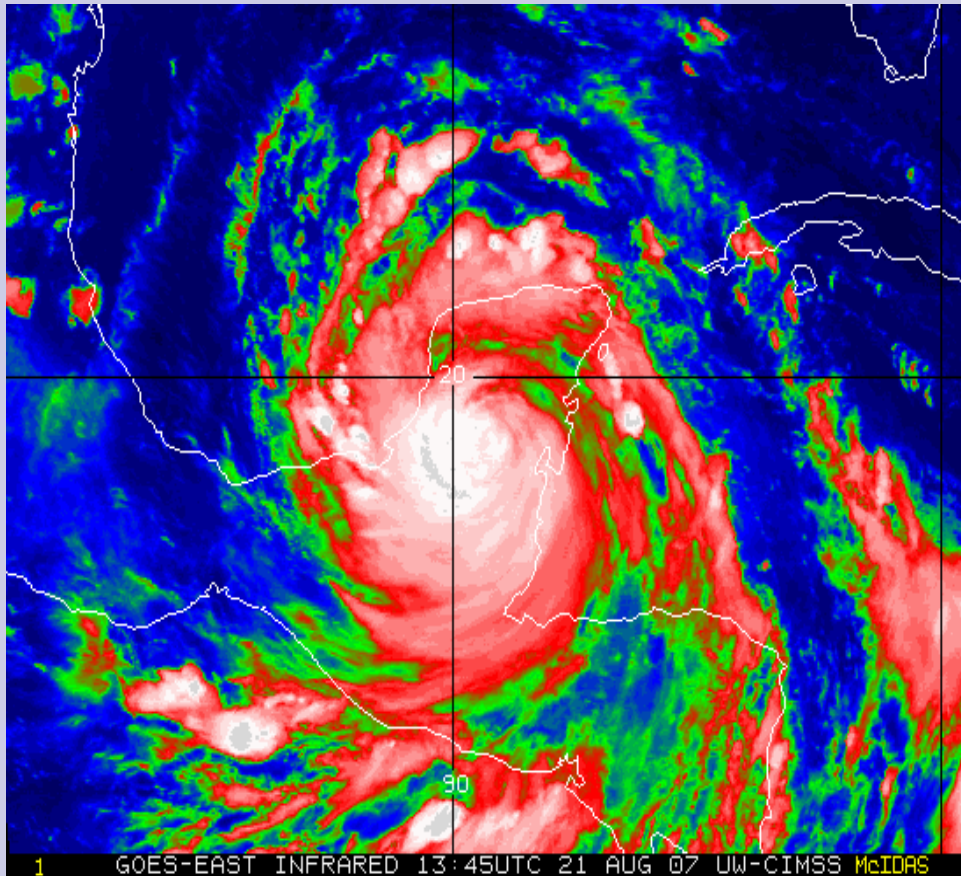


- WEATHER & TIMING
- ROUTES WEST
- EQUIPMENT ISSUES
- PICTURES

The Numbers Story

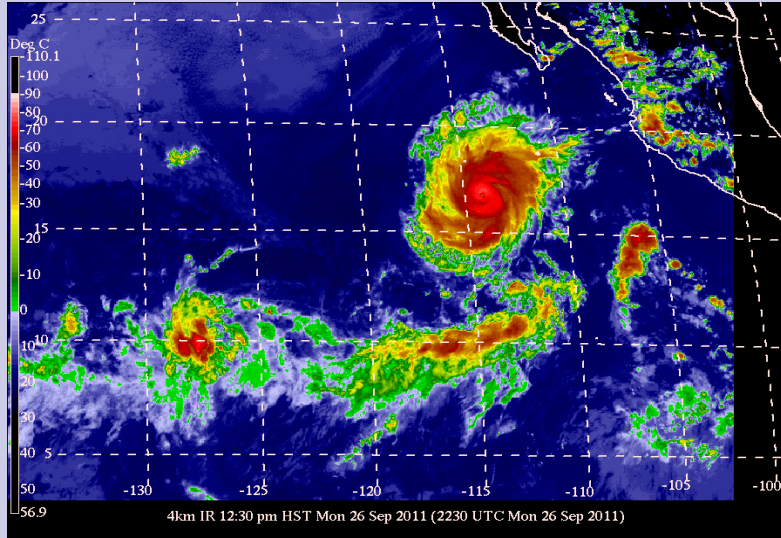
- Annual Pacific crossings 500-700+
- Annual Opua NZ checkins 400-500
- Several lost/damaged each year due to:
 - weak cruising skills
 - equipment problems
 - navigation errors
- 2010 - 60' cat flipped (SPCZ squall), 47' mono hull damage (mooring buoy), 36' mono lost (Marquesas, never found), 42' & 38' cat, 46' & 40' mono dismasted (rigging issues), 62' mono major fire (electrical inport)
- 2011 - 43' mono sunk (mooring buoy), 40' mono sunk (navigation error), 45' mono 49 days Panama to Tahiti (engine/steering), 50' mono lost rudder (broken post), 40' cat sunk (whale collision), 42' mono lost rudder (navigation error), 35' mono sunk (loose keel bolts)
- Almost all were preventable!

WEATHER and TIMING

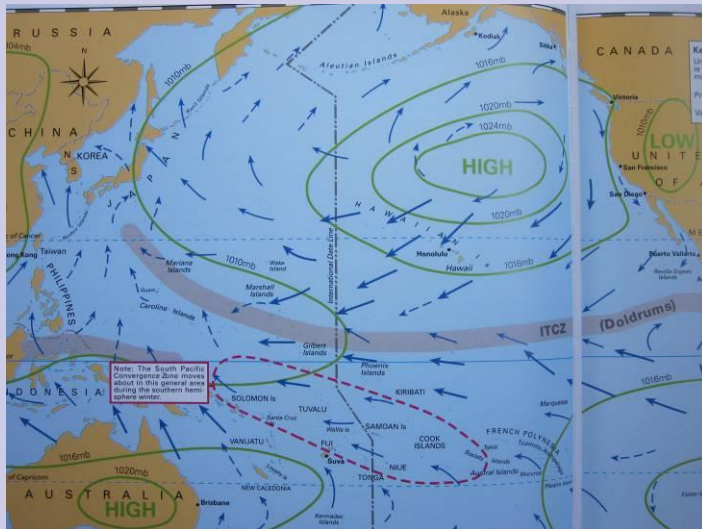


- Major Weax Features
- Cyclones/Typhoons
- The ITCZ & SPCZ
- South Pacific Weax
- GRIBs
- Weather Info Sources

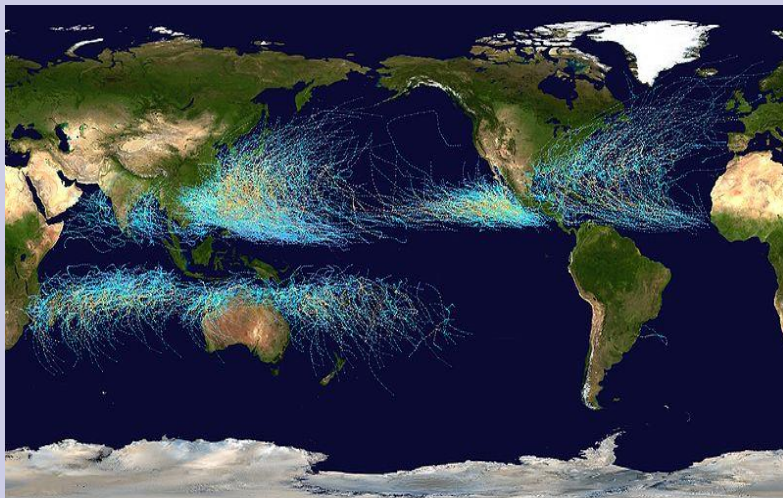
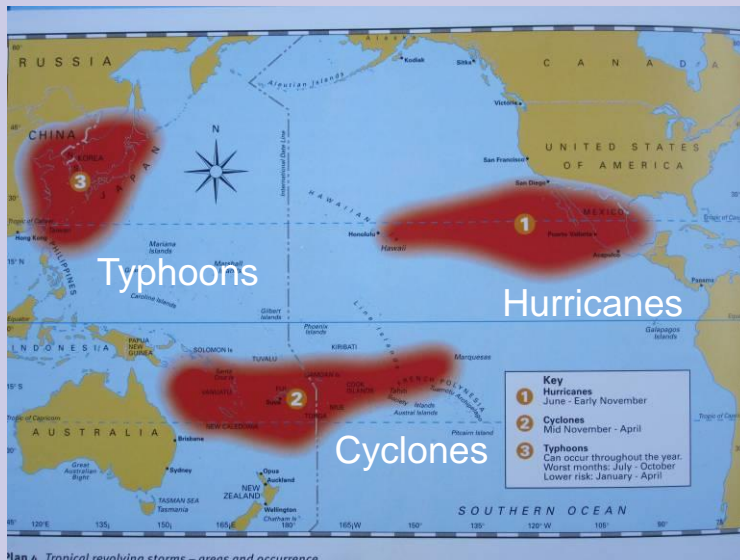
Major Weather Features



- Hurricanes, Typhoons, Cyclones
- Low Pressure areas w/ fronts
- High Pressure areas w/ reinforced trades
- Convergence Zones, including ITCZ & SPCZ
- Low Press troughs and High Press ridges

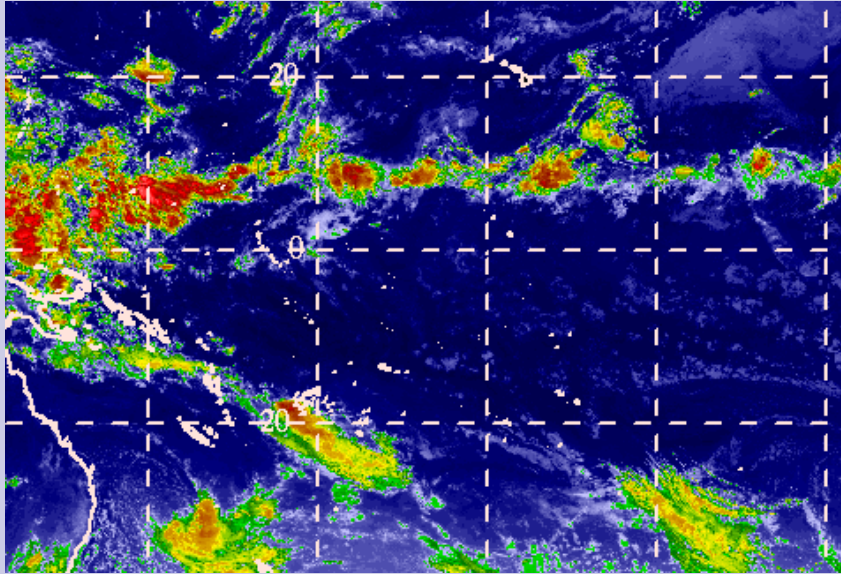


Cyclones and Typhoons

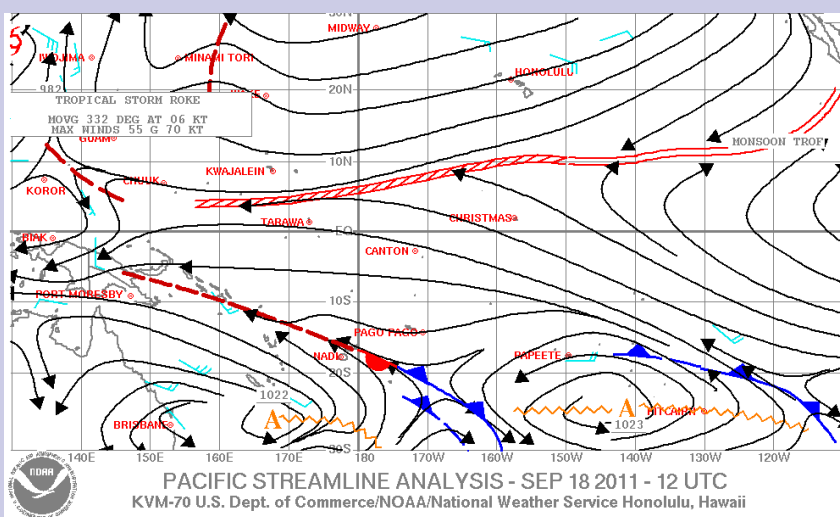


- 1 Hurricanes - Jun-Nov, Mexico to Hawaii
- 2 Cyclones - Dec-May, Tuamotus to Australia, CW rotation
- 3 Typhoons - Jun-Nov, possible any month, Fed States to China/Japan
- Safe zone within ~8-10 degrees of equator
- Cyclone Free Areas - Marquesas, Hawaii, NZ, Marshalls
- Relatively Safe Havens- Tahiti/Raitea, Fiji, Tonga

ITCZ and SPCZ



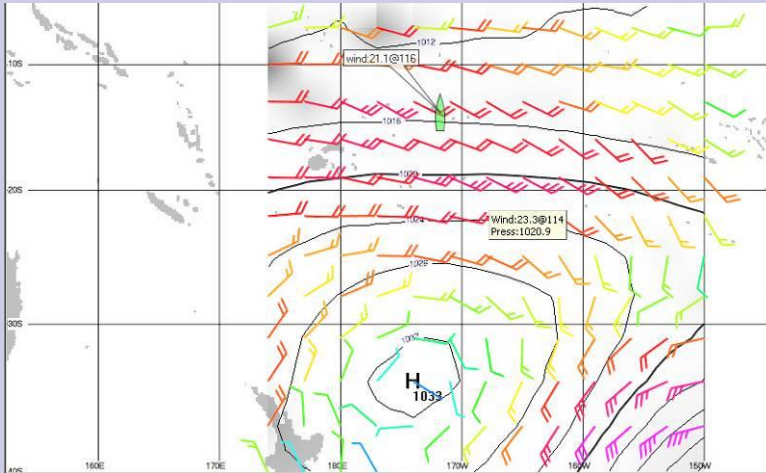
- Long areas of converging air masses, squally weax and locally strong winds
- Inter Tropical Convergence Zone – just North of equator
- South Pacific Convergence Zone - Solomons to FPoly
- They move around - be careful passing through



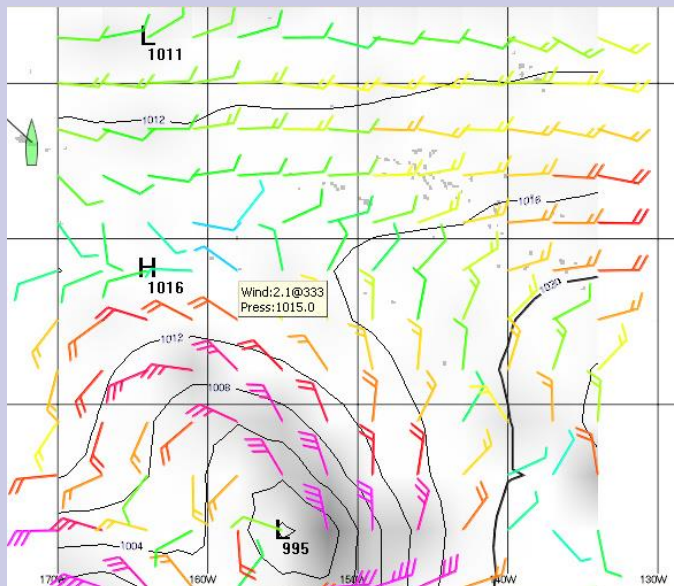
South Pacific Weax Rules

- High and Low pressure areas move W to E, rotate reverse of those in N Hemisphere
- Reinforced trades 30/30/30 rule - 10-25S
- Frontal passage winds BACK from E to SE, reverse of N Hemisphere, squalls
- Protect yourself from strong SE-E winds after frontal passage or reinforced trades
- Be extra careful around ITCZ and SPCZ, winds to 50 knots in strong squalls!

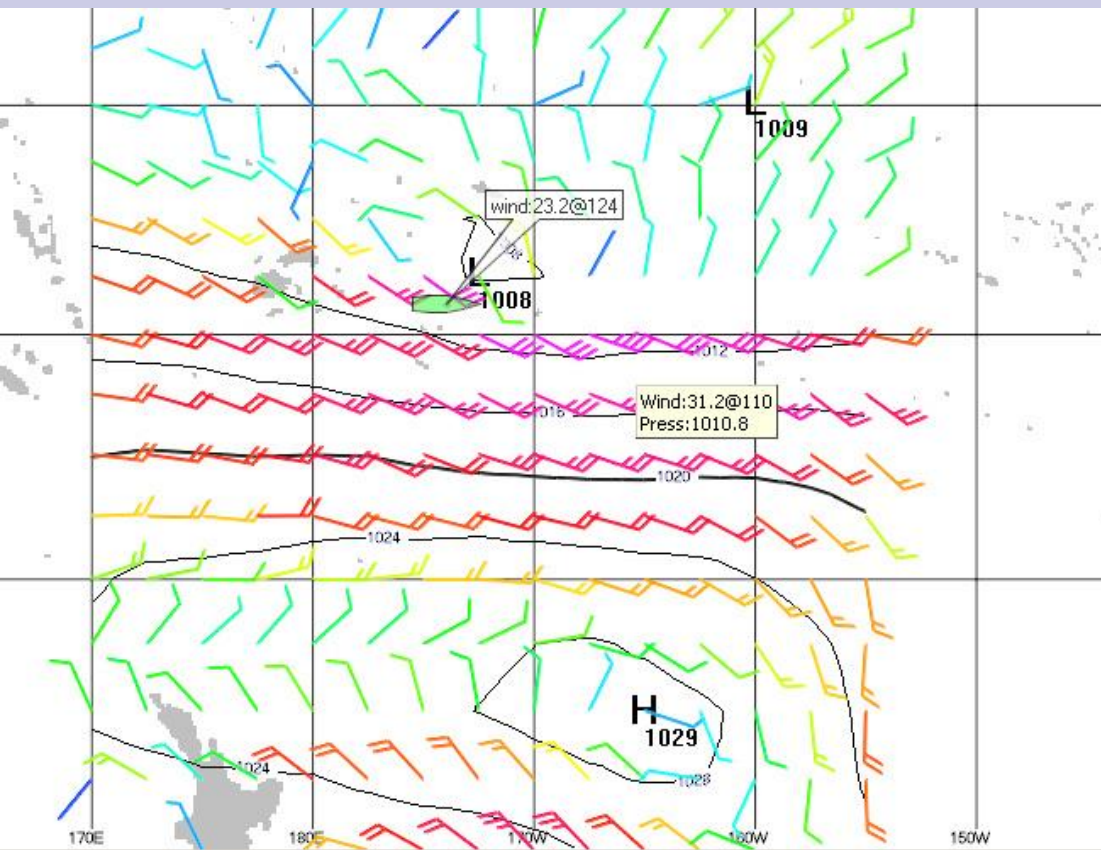
GRIBs



- Colored wind and isobar analysis and forecasts up to ten days out
- Highly accurate for trade winds 10-20 kts, suspect otherwise
- Squash zones around HP
- Fronts represented as weak variable winds, backing 90 degrees
- Computer based so can get rain and swell info



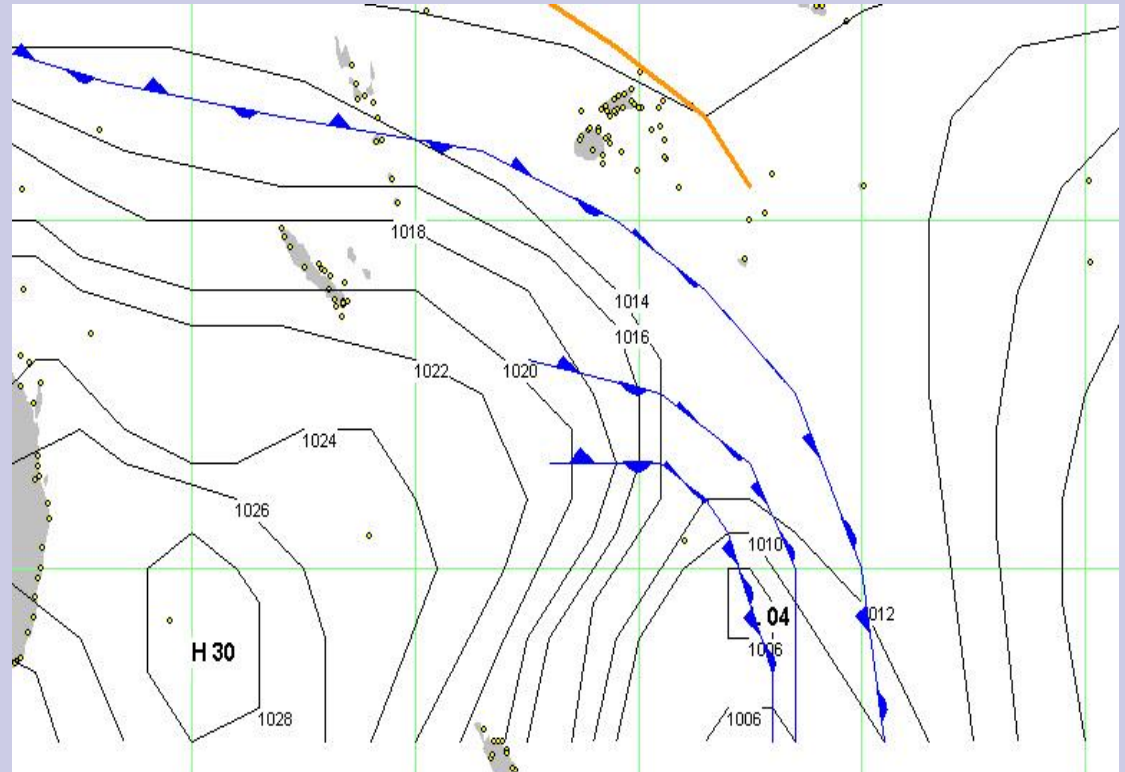
Reinforced Trades Grib



- 30-30-30 Rule - when 1030+ mb HP area is to South, expect strong trades to North
- Wide area Grib showing reinforced trades above a 1029 HP area to South

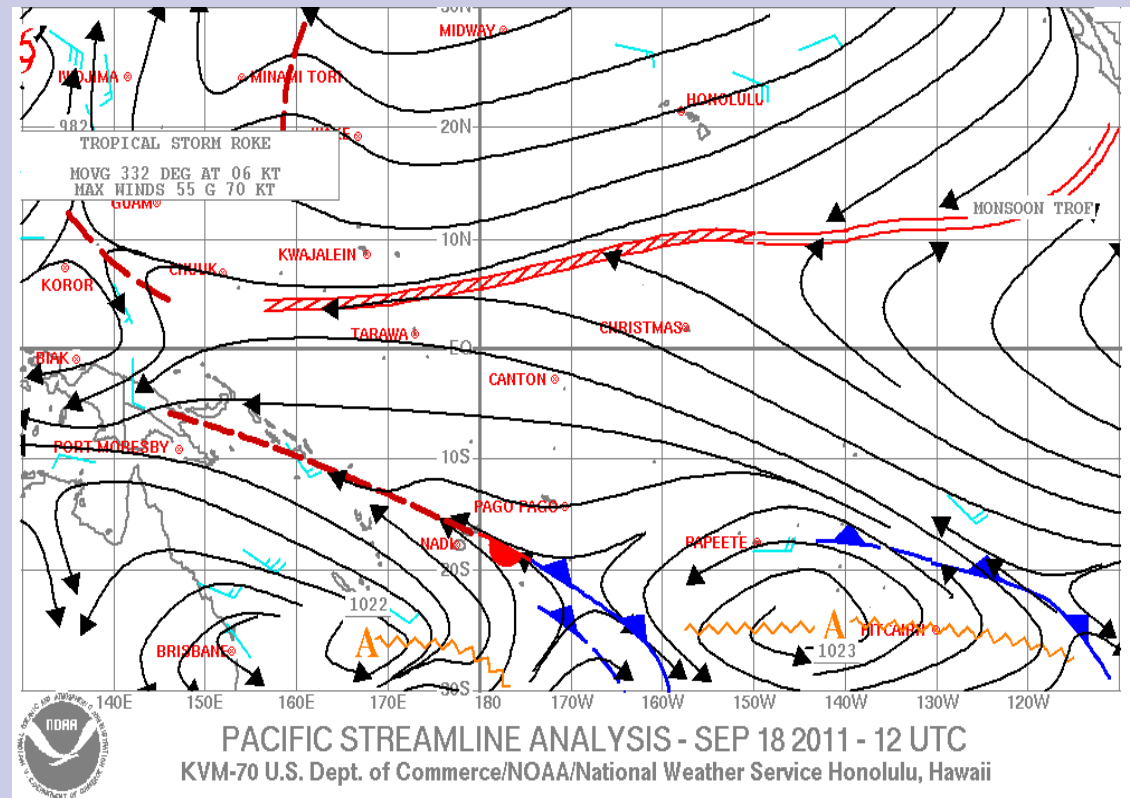
Nadi Fleet Code

- Localized front, isobar & convergence zone surface analysis, no forecasts
- Small download similar to Grib
- Uses (PhysPlot/other) viewer on computer

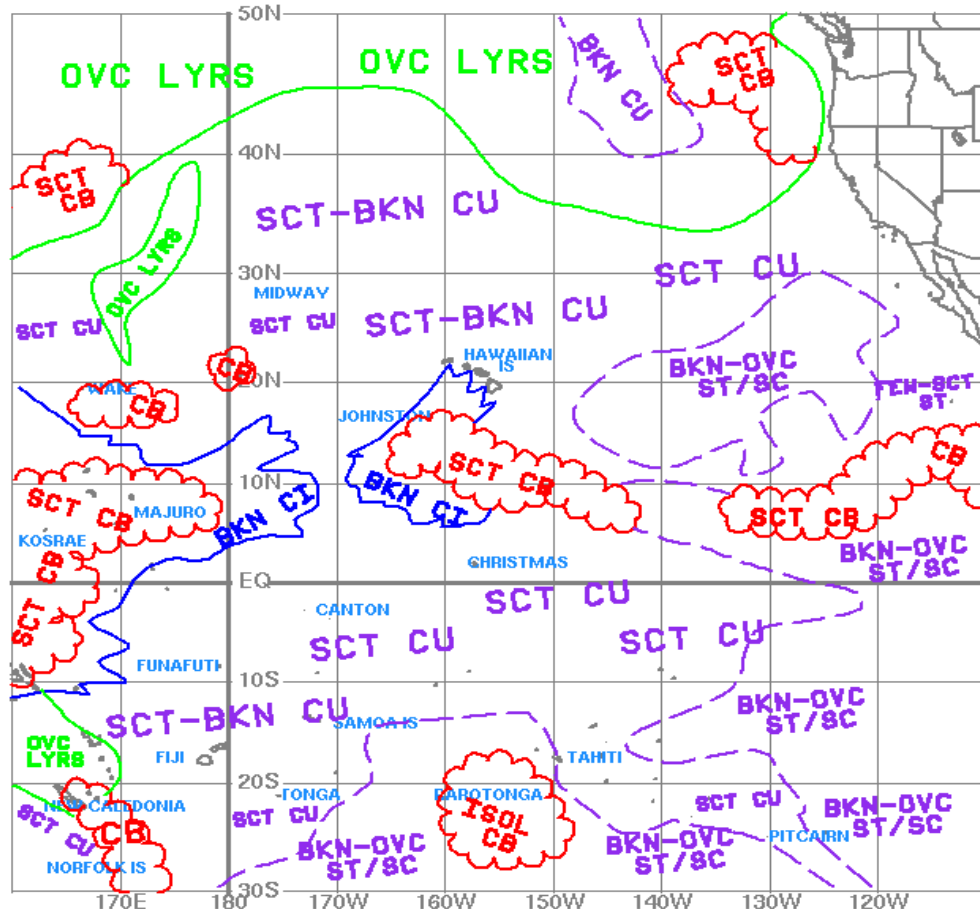


Stream Analysis

- Large area current wind analysis
- Shows CZs, wind direction/speed, TSorms, fronts, HP/LP areas
- From NOAA, Hawaii



Cloud Features



KVM-70 SIGNIFICANT CLOUD FEATURES: OCT 02 2011 15 UTC

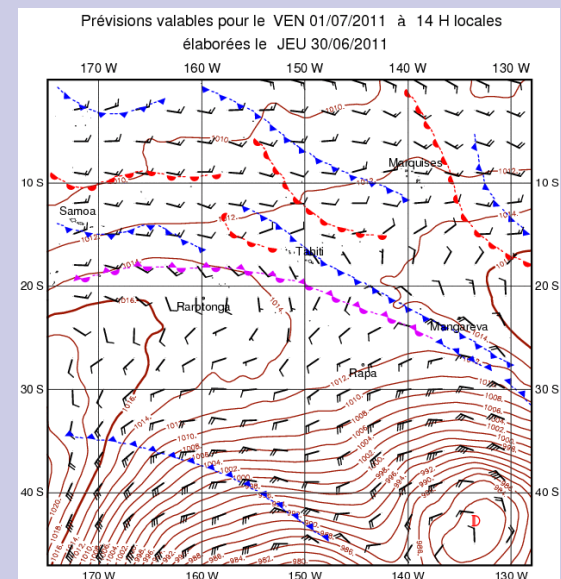
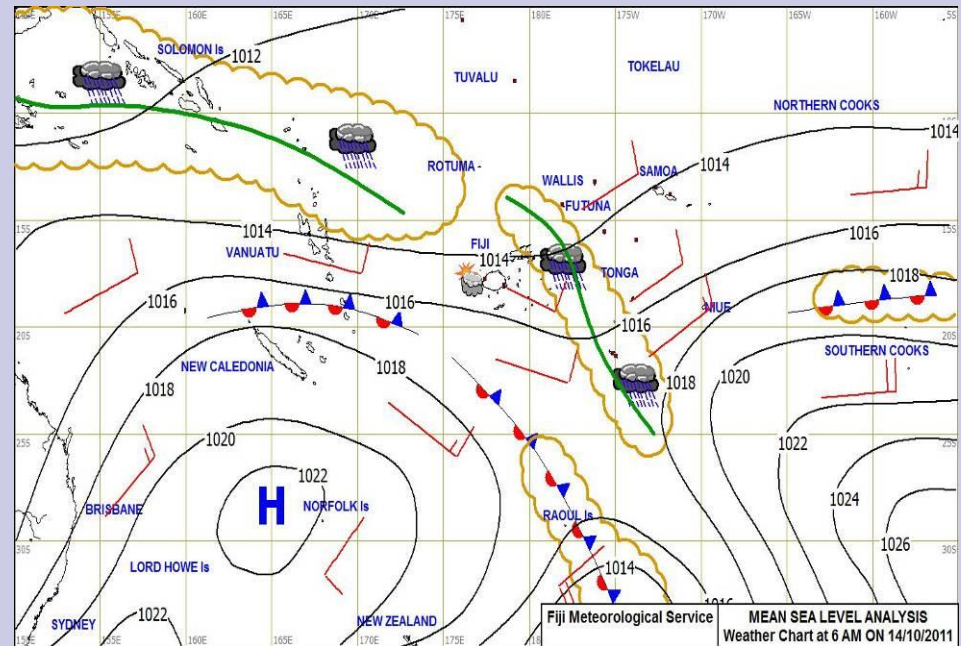
U.S. Dept. of Commerce/NOAA/National Weather Service Honolulu, Hawaii



- Large area graphic analysis Fax of cloud location and type
- From NOAA, Hawaii

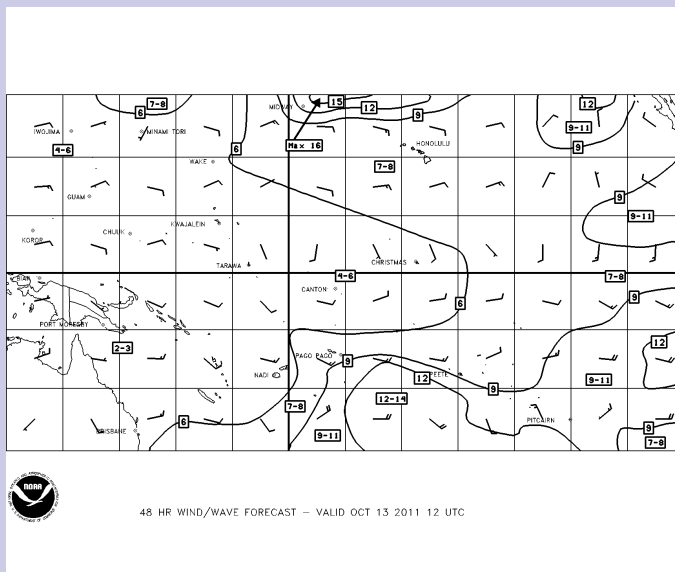
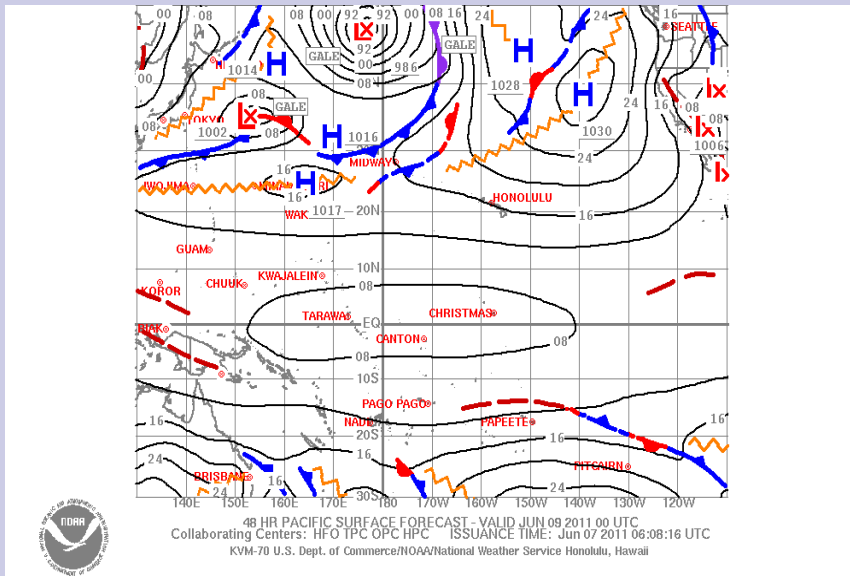
Local Surface Analysis

- Localized graphic surface analysis of isobars, HP/LP areas, CZs, fronts, wind speed/ direction, etc
- From Fiji & FPoly Met centers

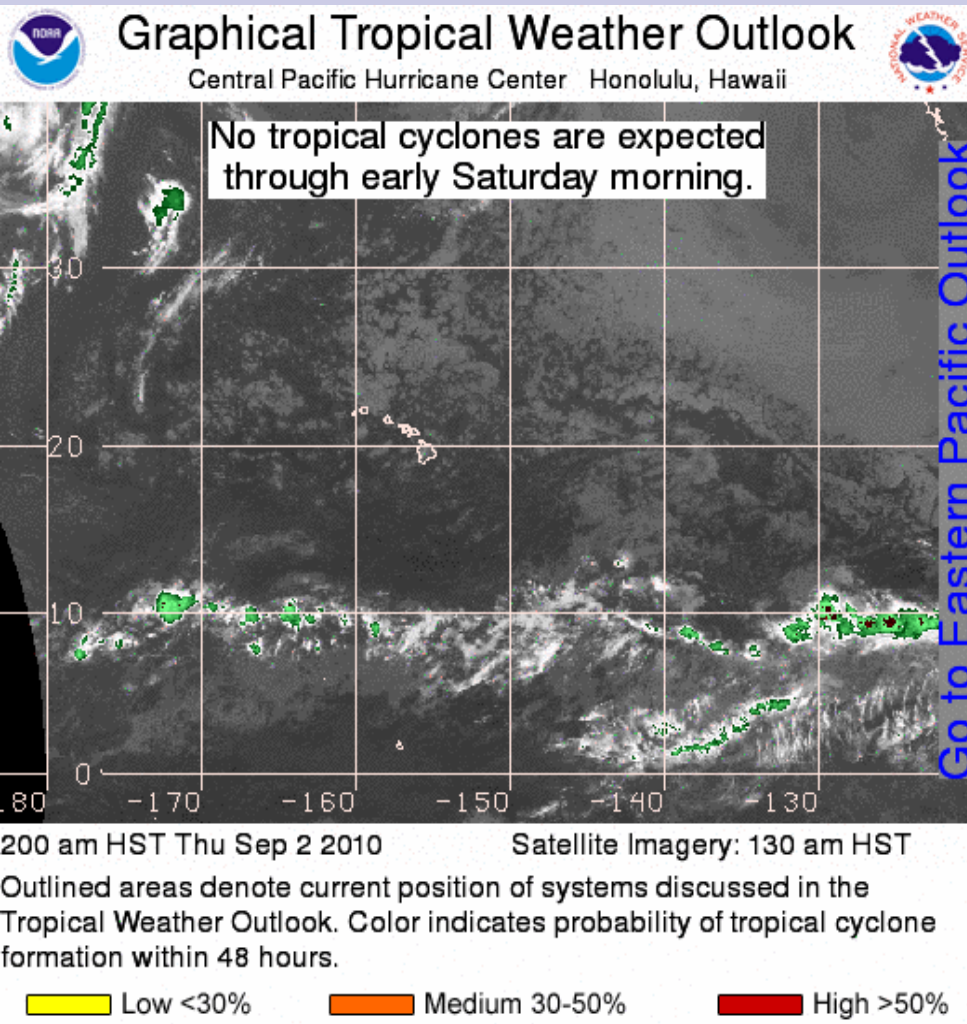


NOAA Products

- Surface Analysis/ Forecast - large area graphic surface analysis and forecast to 72 hrs
- Wind/Wave Analysis/ Forecast – large area graphic wind/wave analysis and forecast to 72 hrs
- Available as faxes from NOAA, Hawaii

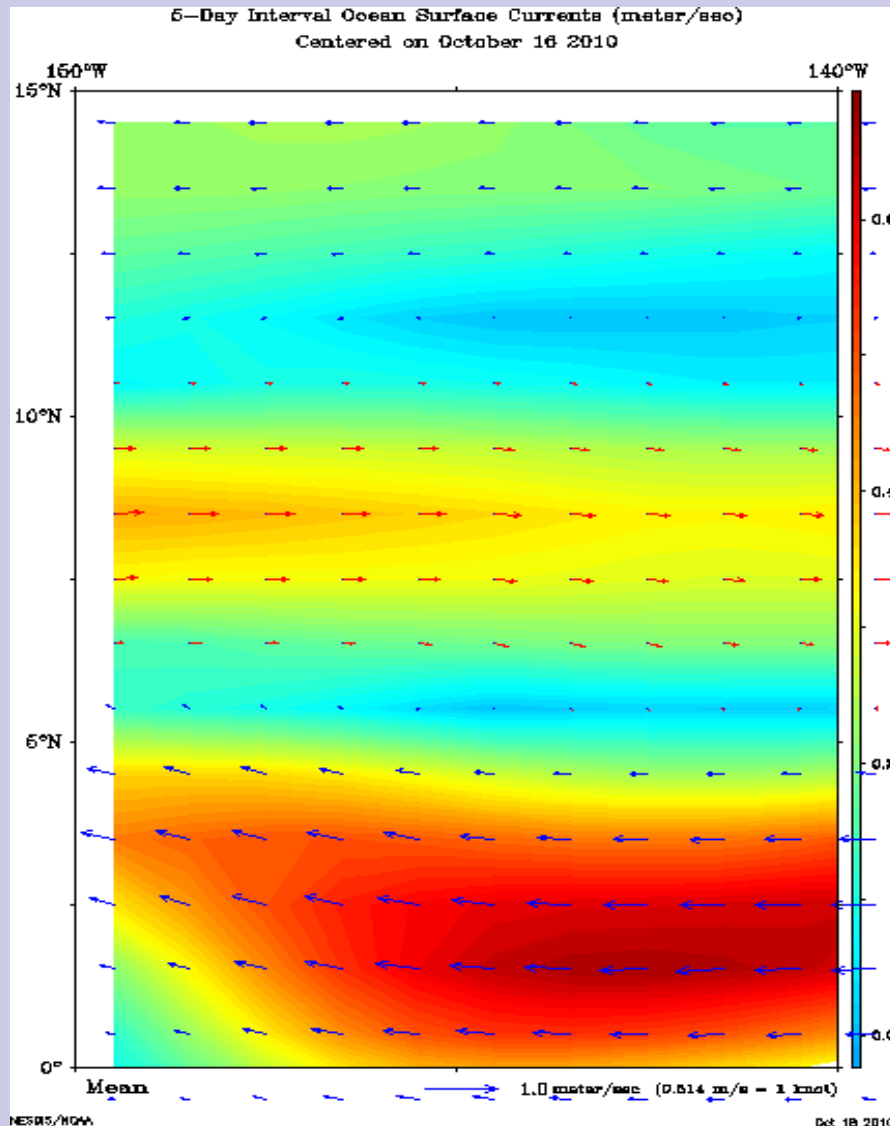


Tropical Weather Outlook



- Colorized satellite pic showing tropical cyclones, squalls & ITCZ N of equator
- Not available for S hemisphere
- Big download
- From Hurricane Center, NOAA, Hawaii

Surface Current Analysis



- Color graphic shows surface current strength and direction
- 6 day average
- Big download, can crop to your area
- From Oscar satellite via NOAA

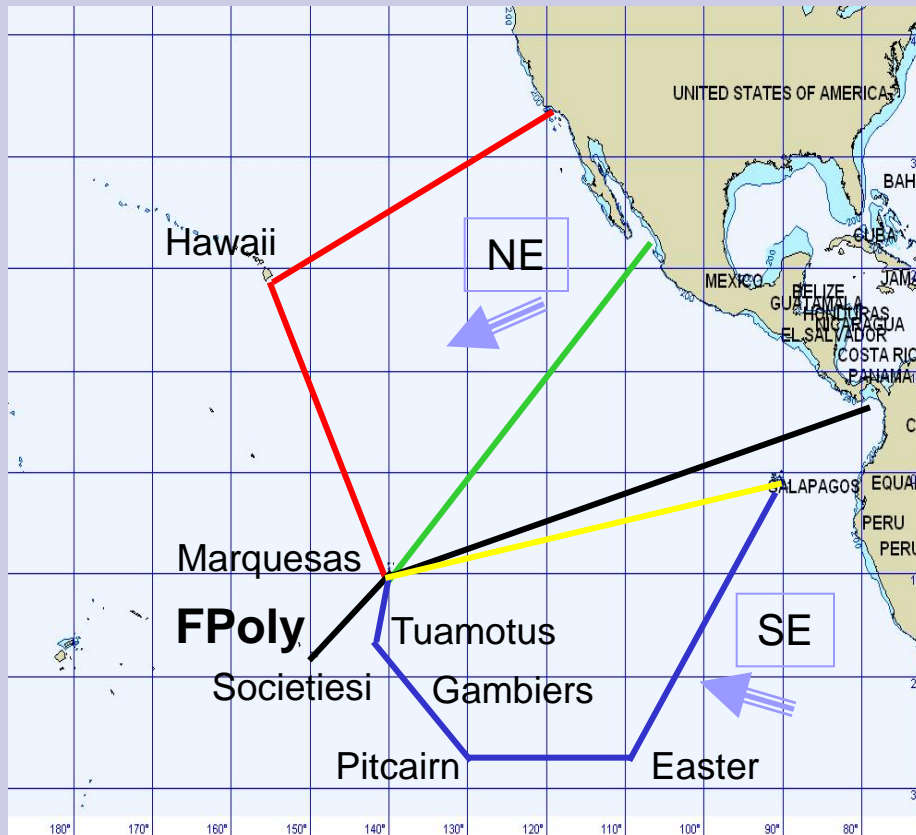
Weather Information Sources

- GFS Grib files - Saildocs or Online
- Weather Faxes, Neph - NOAA Hawaii, NZ Met
- Nadi Fiji Fleet Codes - Fiji Met
- Bob McDavott's Weekly Weather Gram and book
- Text Forecast, Satellite Photo - FPoly Met, NOAA Hawaii
- Weather Websites - Internet
- More Details and Sources - Sherry's Pacific Compendiums on our website

ROUTES WEST

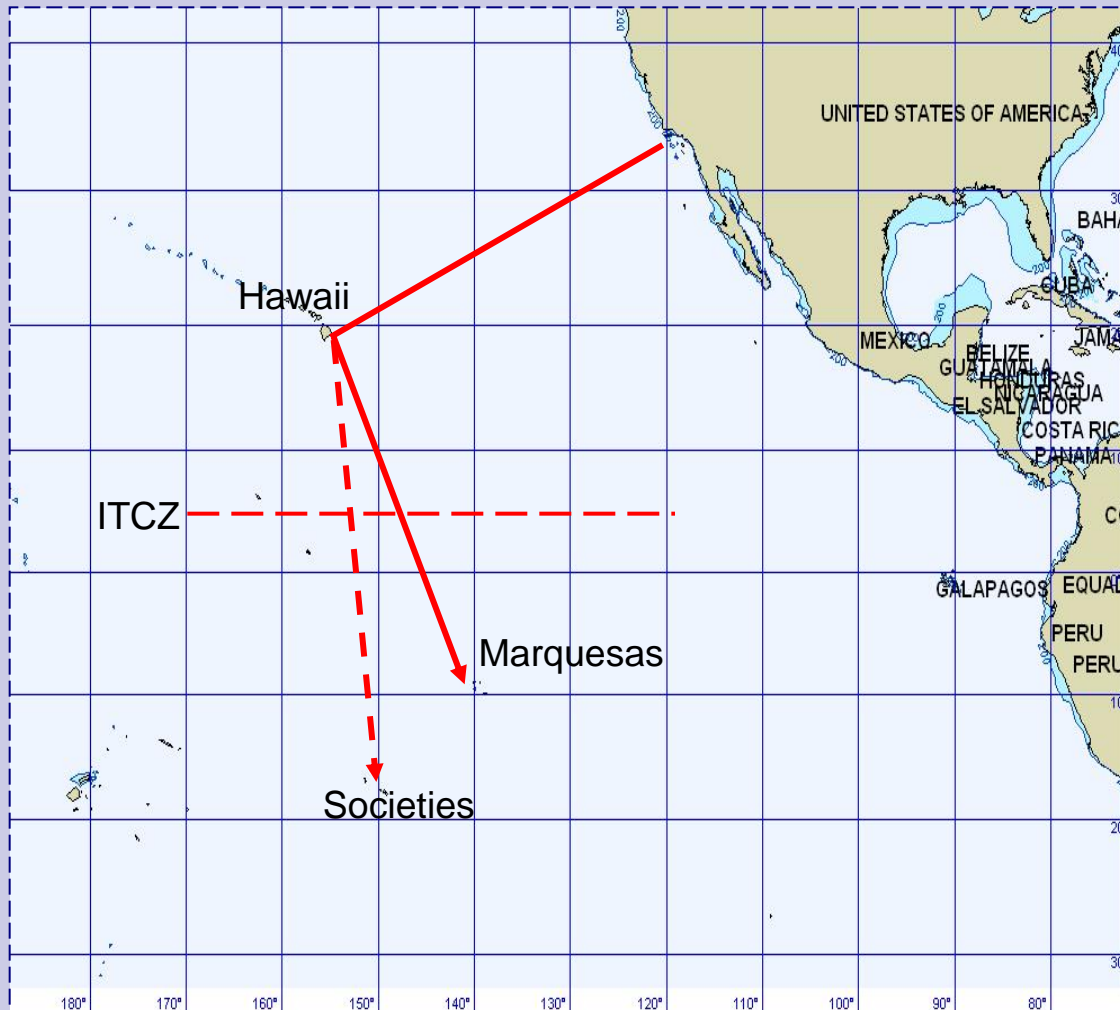


Routes to French Polynesia



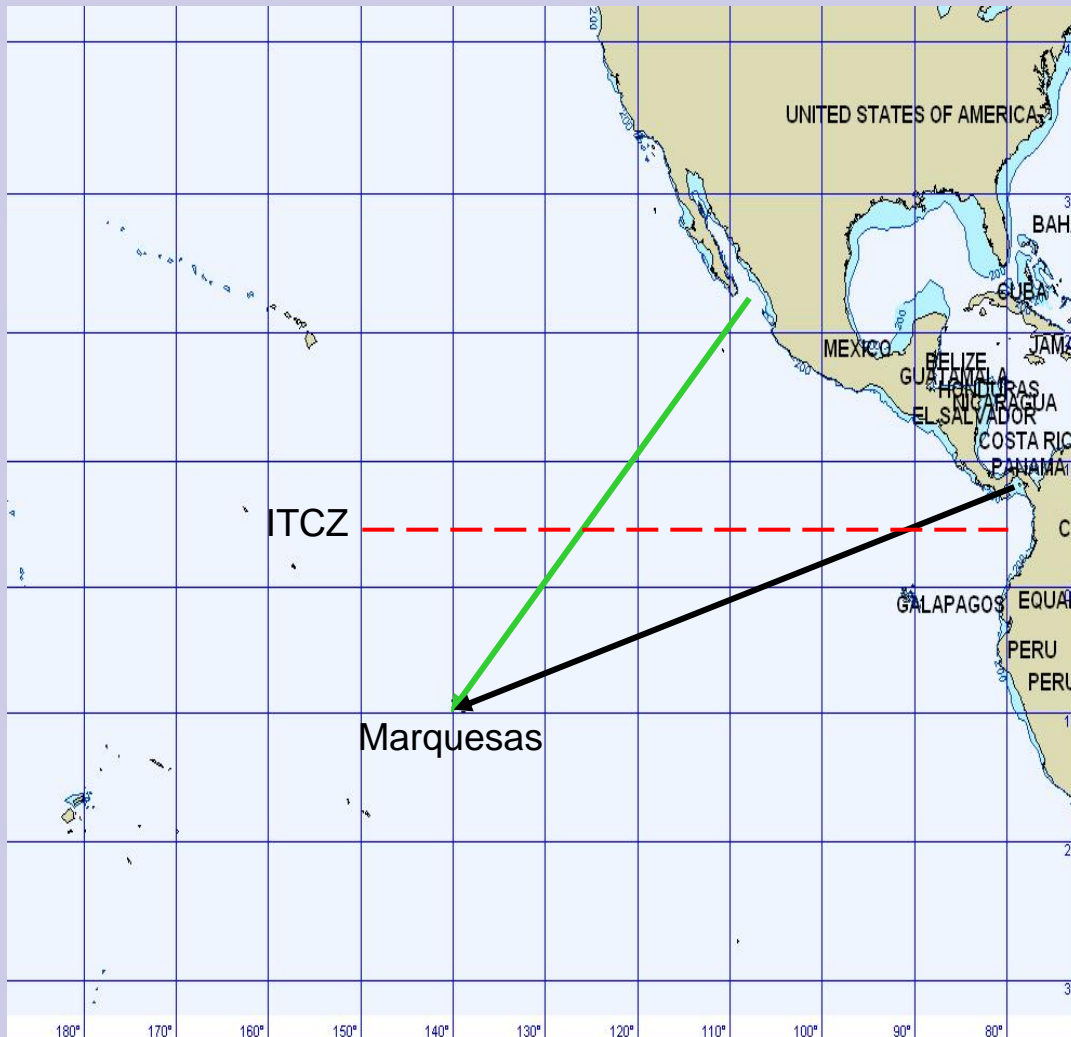
- Five popular routes to French Polynesia
- First entry usually Marquesas, southern route Gambiers
- Marquesas to Tahiti via Tuamotus = 750 nm
- Max US cruiser visa upon arrival = 3 mos
- Long stay visa = 6 mos, requires prior approval

US West Coast via Hawaii to FPoly



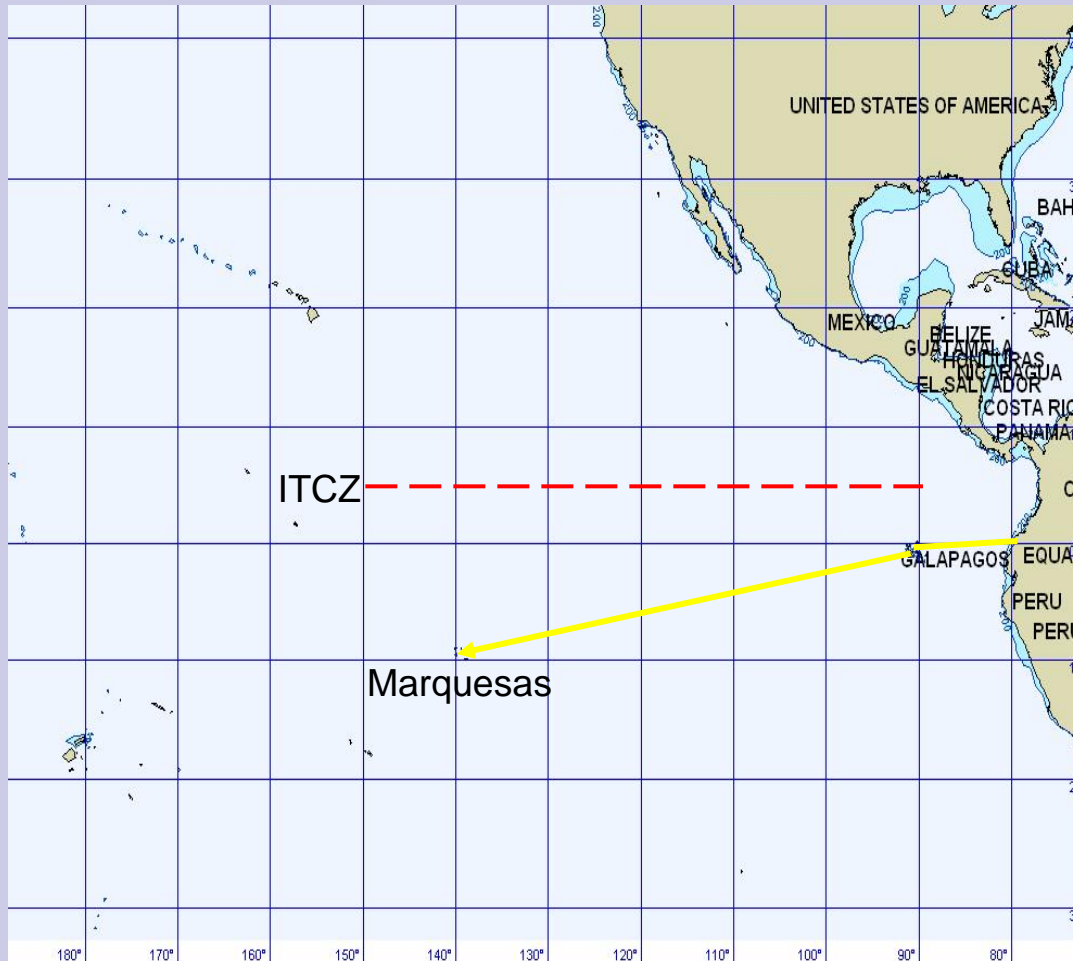
- Depart April
- Conditions-down wind, close hauled
- Cross ITCZ once at about 5 North
- $2200+2300 = 4500$ nm

Mexico or Panama to Marquesas



- Depart April
- Conditions – mostly downwind
- Cross ITCZ once
- 2700 or 3800 nm

Ecuador or Galapagos to Marquesas



- Depart March
- Conditions-mostly downwind
- Do not cross ITCZ
- 2900 or 3450 nm

Galapagos to Marquesas via Easter, Pitcairn, Gambiers, Toots



- Depart Jan
- Conditions-beam reach and down wind
- Do not cross ITCZ
- Option to skip Tuamotus and/or Marquesas, go Gambiers to Tahiti
- $2000+1100+300+750+550=4700$ nm

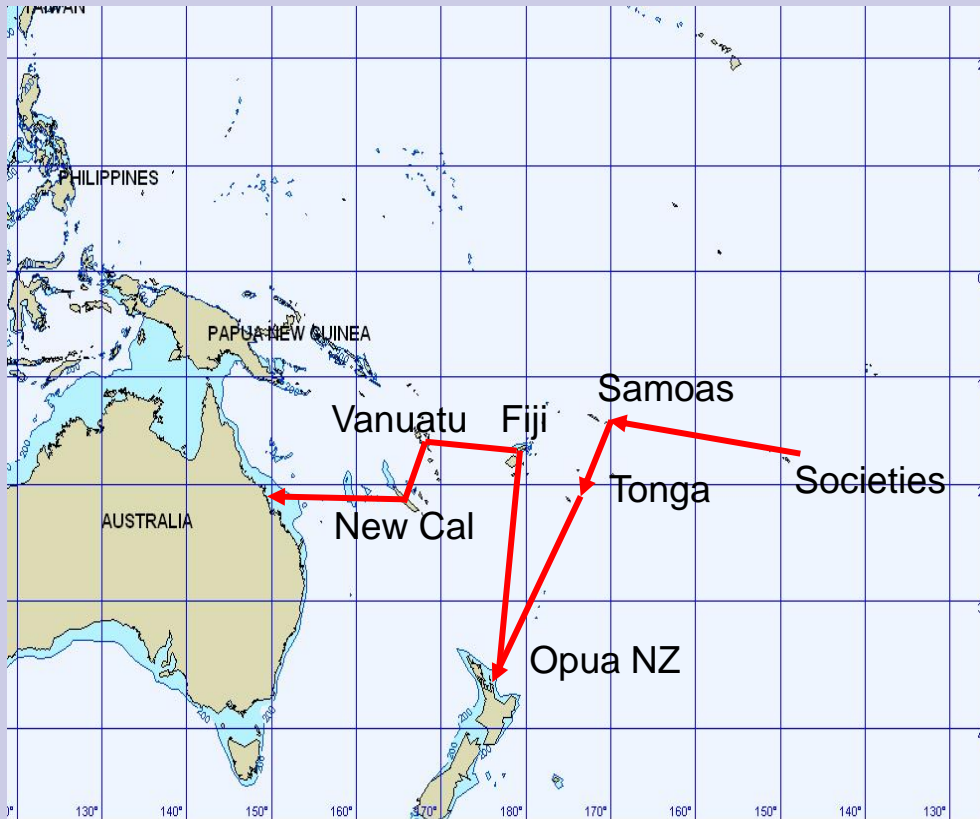
Option - Winter in Hawaii



- Avoids N&S cyclones, resets FPoly visa
- Depart Marquesas Oct, beam reach, 2000nm
- Return Toots/Societies April, mostly close hauled, 2300nm
- Cross ITCZ twice
- First year - 6 mos visa, 2nd year - 3 mos visa
- Total 9 months in FPoly

“Two Year Pacific Milk Run”

FPoly to Aust via NewZealand, Fiji



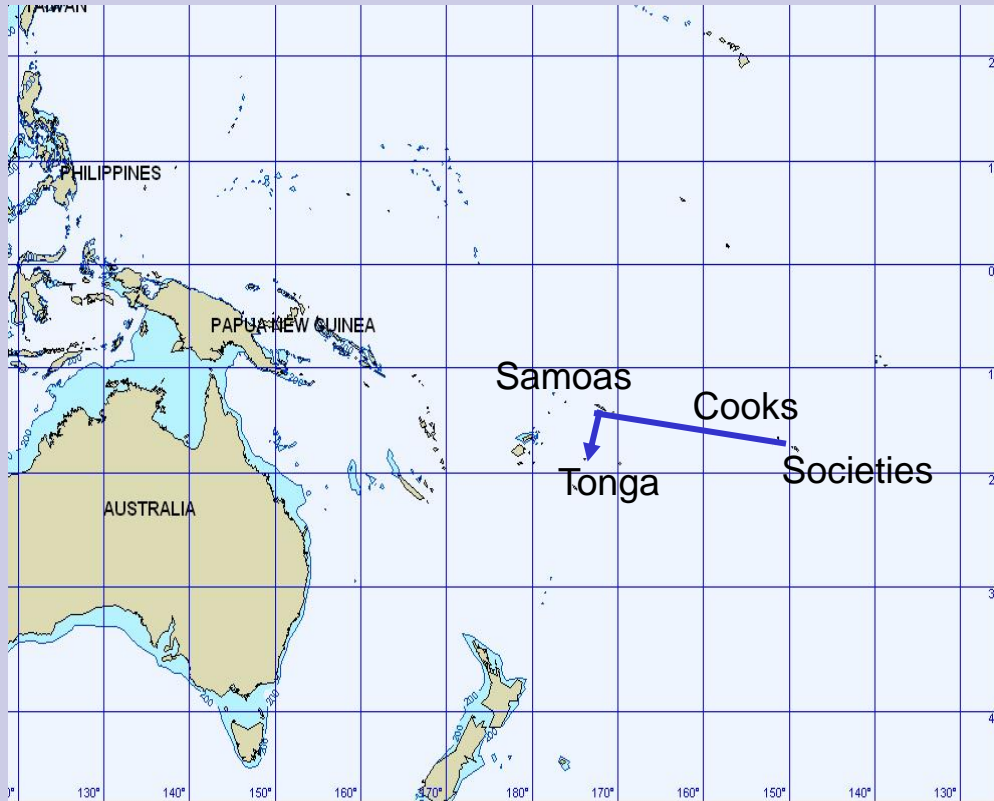
- Depart Societies July
- Conditions-mostly downwind/b reach
- Stops - Samoas, Tonga, New Zealand, Fiji, Vanuatu, New Cal
- Problem- 4 mos to cruise Societies to NZ, 6 mos NZ to Australia
- $1250+550+1050+1200+600+400+800=5850$ nm

Direct Route FPoly to Australia



- Depart Societies July
- Conditions-mostly downwind, bm reach
- Stops-Samoas, Tonga, Fiji, New Cal, Vanuatu
- Problem – only 4 months cruising Societies to Australia
- $1250+550+600+600+400+800=4200$ nm

Micronesia Option FPoly to Tonga



- Depart Societies Aug 2011, arrive Tonga Oct 2011
- Conditions-mostly downwind, bm reach
- 4 months - longer stops in Cooks, Samoas
- S Cyclone season in Vavau, Tonga
- $1250+550=1800$ nm

Micronesia Option

Tonga to Australia via Micronesia



- Depart Tonga Apr 2012, arrive Aust Nov 2016
- Conditions-mostly bm reach and down wind
- Little travelled route
- Spectacular diving, historic WWII sites
- Long stops in Palau, Marshalls, Solomons
- $1900+2100+1700+1850 = 7550$ nm

First Year

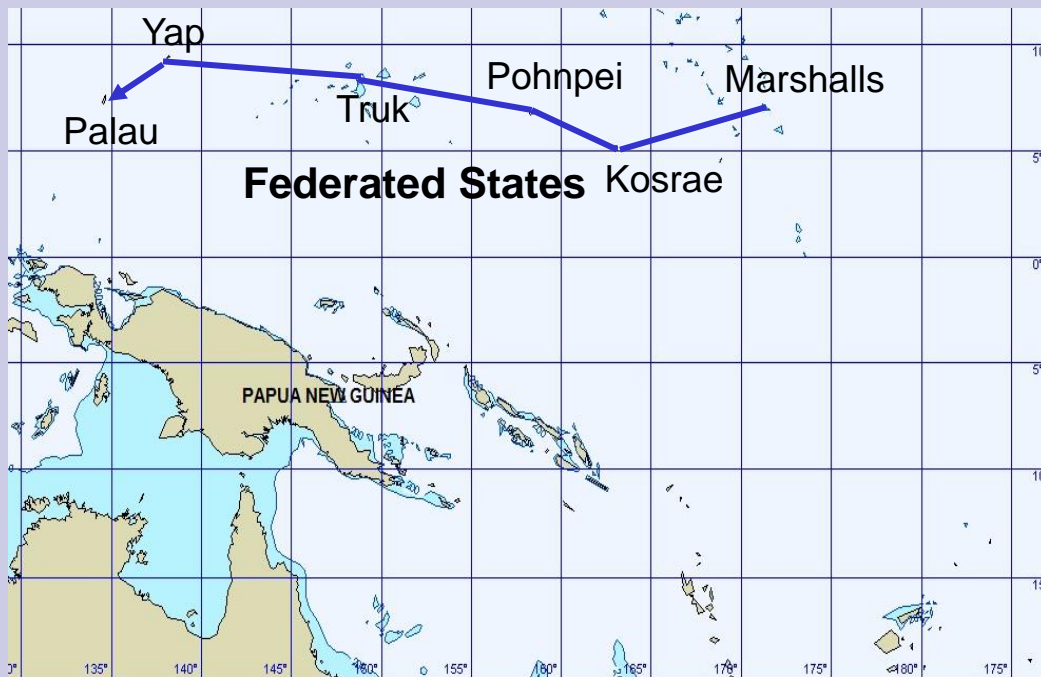
Tonga to Marshalls via Wallis, Kiribati



- Depart Tonga Apr 2012, arrive Marshalls Nov 2012
- Conditions-bm reach
- 6 mos in Fiji, two mos travel, 12 mos Marshalls
- Enroute visit Wallis, Ellice, Gilberts islands, Tarawa
- WWII sites & wreck diving
- $300+1100+500=1900$ nm

Second Year

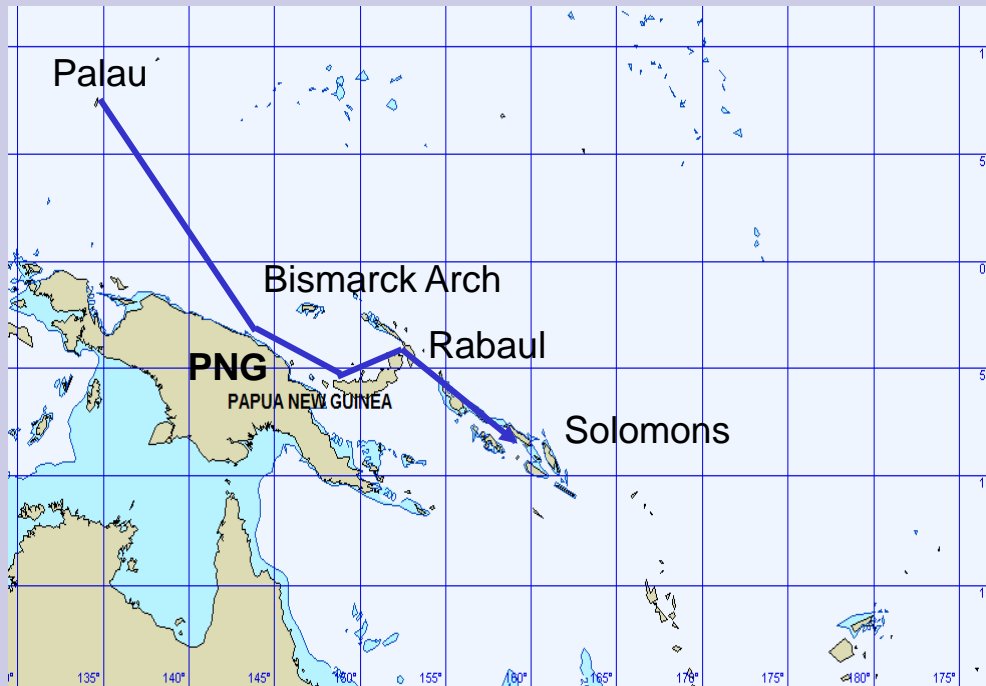
Marshalls to Palau via Fed States



- Depart Nov 2013, arrive May 2014
- Conditions - down wind
- 6 months travel
- Visit Kosrae, Pohnpei, Truk, Yap
- 10 mos in Palau, spectacular diving, WWII sites, Truk WWII shipwrecks
- Minor typhoon risk - avoid south
- 2100 nm

Third Year

Palau to Solomons via New Guinea



- Depart March 2015, arrive Oct 2015
- Conditions-downwind in NW Monsoon
- 7 months travel
- Visit PNG, Bismarcks, New Britain & Ireland, Rabaul WWII sites
- 7 mos in Solomons, WWII wreck diving
- 1700 nm

Fourth Year

Solomons to Aust via Vanuatu and New Cal



- Depart May 2016, arrive Nov 2016
- Conditions-upwind to Vanuatu then down wind
- 6 months travel
- Visit Santa Cruz Isl, Vanuatu, New Caledonia
- $250+200+200+800 = 1450$ nm
- Visit NZ by air in 2017

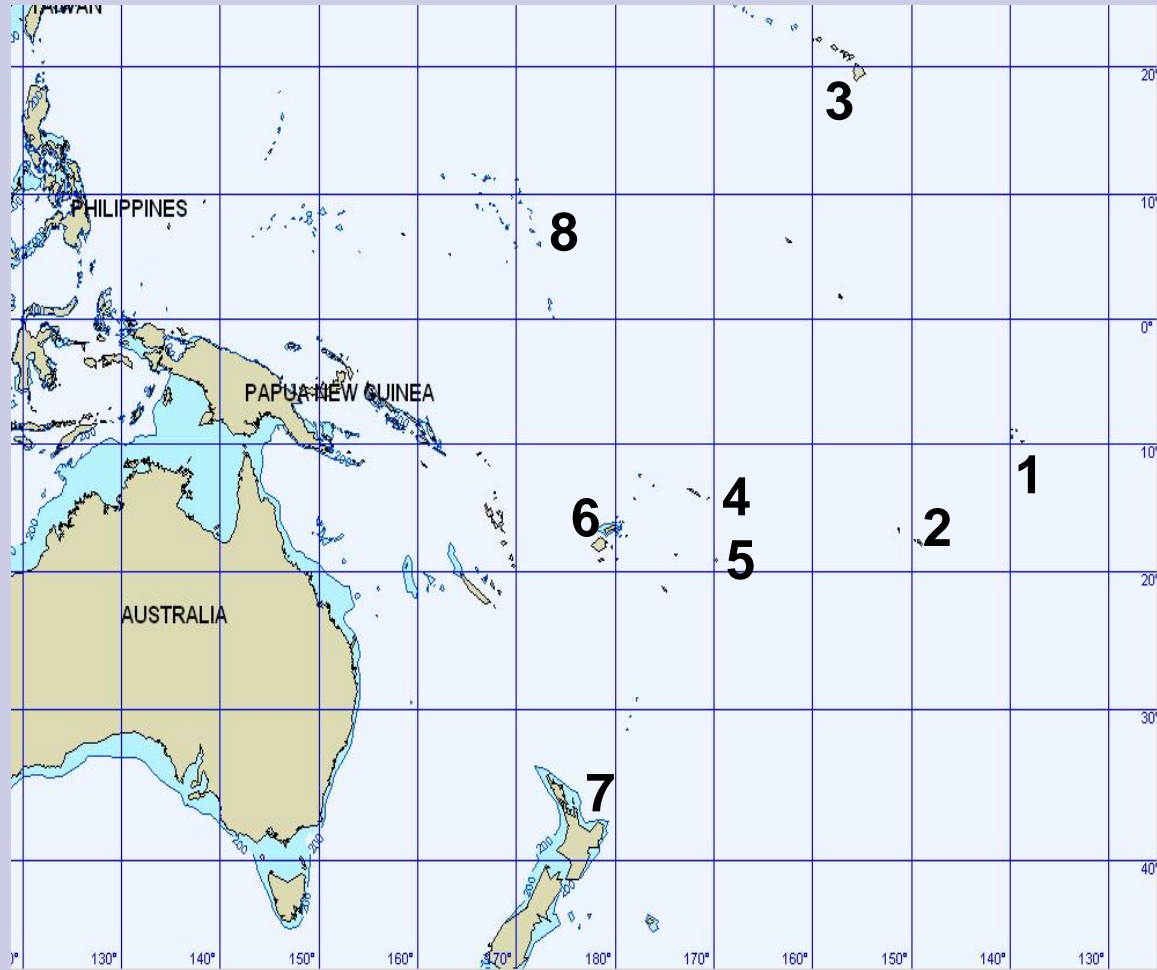
SPaws Pacific Travel Summary

12 Sep 2008-31 Oct 2011

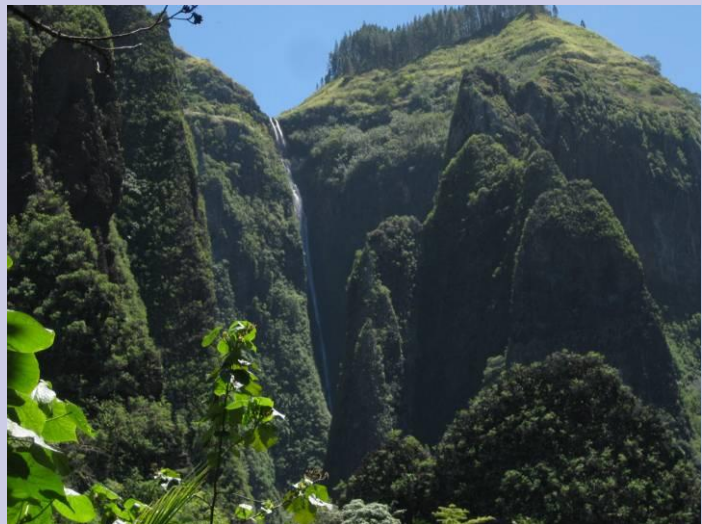
- **Miles Traveled** 15,400
- **Engine Hours** 1030
- **Sailing Hours** 2014
- **Nights** 1157
 - On Passage 109
 - At Anchor/Mooring 327/330
 - In a Marina 391
 - Included
 - 13 mos in Ecuador and Hawaii
 - 135 days in Florida
 - 142 days Inland Travel in Central & South America

Provisioning Stops

- 1 Marquesas- 3*
- 2 Societies- 4*
- 3 Hawaii- 5*
- 4 Am Samoa- 4*
- 5 Tonga- 3*
- 6 Fiji- 4*
- 7 N Zealand - 5*
- 8 Marshalls- 3*



Highlights



■ Destinations

- Mopelia, Easter, Rose and Pitcairn Islands

■ Scuba Diving

- Swarrow/Suvarov, Anse Amyot Toau, South Fakarava

■ Hiking

- Nuka Hiva, Raitea/Tahaa, Bora Bora, Am Samoa

Cruisers' Guides

- French Polynesia-
 - Charlie's Charts of French Polynesia – 2005, Wood
 - Cruising Guide Tahiti and French Societies-1984, Davoc
 - Guide to Navigation and Tourism in French Polynesia-2001, Bonnette
 - Cruiser's Compendiums for the Marquesas, Tuamotus, Societies-2011, Soggy Paws
- Hawaii-
 - Charlie's Charts of Hawaii-200?, Wood
- Cook Islands and Samoas-
 - Cruiser's Compendium Cooks and Samoas-2011, Soggy Paws
- Tonga-
 - Sailingbird's Guide to the Kingdom of Tonga – 2004, Paul
 - Ken's Comprehensive Cruising Guide to Tonga – 2002, Hellewell
- Others-
 - Lonely Planet and Moon Guides
 - The Pacific Crossing Guide-2003, Hogbin RCC
 - South Pacific Anchorages-2001, Clay
 - Landfalls of Paradise-1999, Hinz

15 EQUIPMENT ISSUES



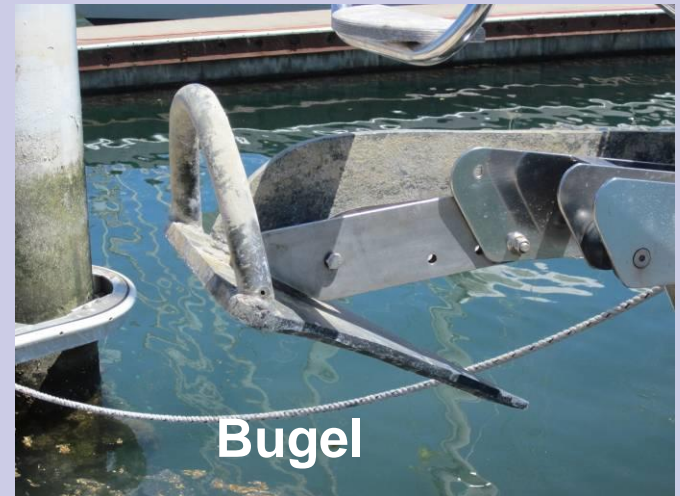
Tahanea, Tuamotus

1 Anchoring



- Small/inefficient anchors dragging, bent, broken
- You need a **SINGLE BIG PRIMARY** - must hold boat in 60 knot winds
- Boat weight klbs + length ft = min anchor weight lbs
- Yes – Modern large plows, Rocna, Delta, Manson, Bugel, Spade
- Maybe - Bruce, CQR
- No - any SS or knockoffs, Flukes, Hershoff

3 Modern Plow Anchors



3 Ground Tackle

- Inadequate tackle for deep anchoring in coral
- Need 200-300' G4 chain
- Heavy nylon bridle snubber w/ U plate chain grabber, not chain hook
- Strong ELECT. windlass
- No weak links, bent anchors, corroded parts
- Mouse shackles w/ wire
- Great chafe protection



3 Mooring to a Buoy

- Chafed/broken mooring lines
- Do NOT take one line from one side of boat thru buoy loop to other side
- Use one line from each side of boat and then back to same side
- Or one line/chain over bow roller & back
- Or fixed seized eye bridle



3 Anchoring Reading

- Recent articles:
- <http://www.petersmith.net.nz/boat-anchors/tandem-anchoring.php>
- <http://www.petersmith.net.nz/boat-anchors/>
- <http://www.followtheboat.com/2009/05/06/raving-about-our-rocna/>
- http://svsoggypaws.com/files/Yachting_Monthly_2006_Anchor_Test.pdf
[Why are Next Gen Anchors Better?](#)
- Nigel Calder's Cruising Handbook

2 Dinghy and Outboards



- Motor failures, theft, small/wet hard dinghies
- 9.5-10.5' RIB ideal for dry ride, comfort, diving, long trips
- 15 HP for speed, 3-5 HP short/harbor trips, backup
- Take repair manuals, extensive spares, tools
- Prevent dinghy theft:
 - High lift dinghy davits
 - Don't hip dinghy or leave in water at night
 - SS Abus lock w/ tube clamp cover



3 Batteries



- Old house batteries failing
- Don't start w/ batts >4 years
- Engine room heat a batt killer
- Auto trickle charge start battery w/ diode & TCB
- LA last longer than AGM/Gel
- Water Miser caps save H2O
- MUST recharge house bank frequently to 100%
- MUST equalize LA batts, Solar/Outback great option



4 Energy



- Large daily amp hour deficit
- At anchor 90%, U/W 10%
- DO NOT rely on daily charging batts with diesel main engine
- Wind/Diesel/Gen - expensive, noisy, won't charge to 100 pct, maintenance issues
- Solar- silent, no maint, 100 pct daily charge, less expensive
 - Strong mounts, best on arch
 - MPPT regulator-+25%
 - Tilt fore and aft-+25%
 - Shading a killer
- Good combo - 5-600w solar, Honda 2K gen for emergency

5 Fresh Water



- FW issues- inadequate tankage, contamination
- Need ~150 gals tankage and good rain collector
- Use lots of FW filters and SeaGull IV for drinking
- Water Makers:
 - Must have reliable unit that YOU can repair
 - Avg 7 gpd = 50 gpw, run 1X per week, buy big capacity unit
 - See SVSoggypaws.com Workshop/Plumbing for DIY 40 GPH \$2.5K unit

6 HF Radio



- Poor transmission/reception
- Careful quality installation, not \$2K radio, make top performance
- Installation Tips-
 - Auto tuner wired to antenna w/ <10' tinned GTO-15 w/ 4" spacing
 - Insulated backstay or vertical long wire antenna, not whip
 - Salt water ground plane w/ 3" cu foil
 - Read Stan Honey on Grounding, Sailmail Primer at Sailmail.com
- Reception interference issues-
 - Refrig, F/L lites, fans, alt energy, alternator, pumps, computers, etc

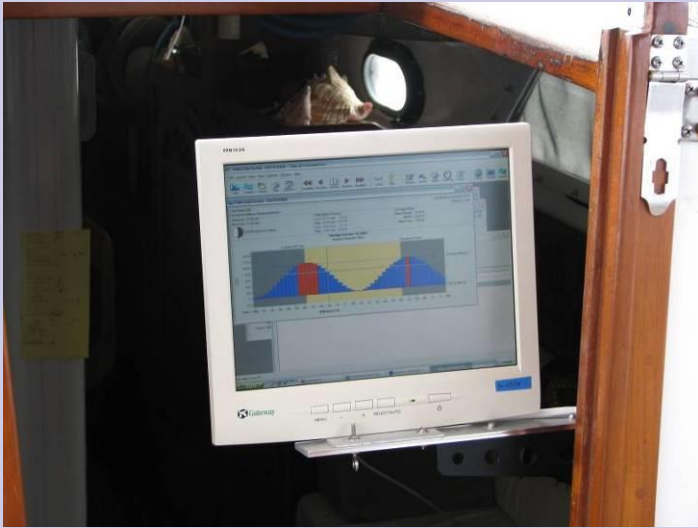
7 VHF Radio



- Weak signal, no cockpit unit, no scan capability
- Need two units, one at binnacle, one at nav station
- Must be able to scan and leave VHF on at night
- Do not use 5 watt hand held for cockpit unit
- Carry aboard power out/SWR test meter
- Gam vs Metz antennas



8 Navigation



- Groundings due to poor nav skills, eqpt and location
- Visual is primary nav tool
- Consider computer nav system rather than chart plotter due to multitasking advantage
- Many software options
- Buy multiple computers, map GPS units, guide books, few small scale charts, good sunglasses
- Fishfinder DS for reading bottom topography



9 Standing Rigging



- Several lost masts, multiple rigging failures
- Don't leave with old rigging
- SS over 15 years is suspect, replace before leaving if 20+
- Use Loos tension gage to tune rig YOURSELF
- Use 1x19 wire, not rod
- Inspect carefully/often
- Worst problem areas -
 - Internal chain plates, swaged end fittings, tangs, toggles



10 Sails



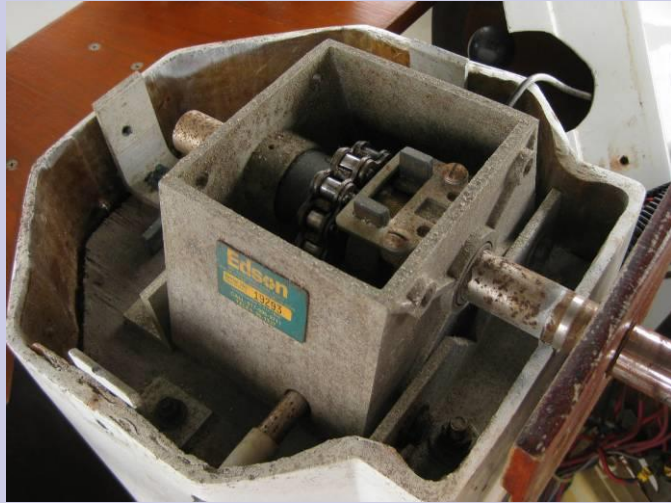
- Torn sails due to age, sun and chafe damage
- Don't leave w/ old sails
- UV is a sail killer - stow jibs and lines if in port >1 month
- New sails-research cloth type/quality, chafe protection, batten options
- Repair kit-sewing machine, 5200 Fast Cure, sail cloth
- Code 0 on furler vs Drifter w/ sock - squalls, upwind

11 Staysail

- \$60K rig loss caused by unrigged staysail stay
- Leave stay always rigged for mast support
- Great sail for heavy wx and up and down wind sailing
- Strong furler much easier than hank on for daily use
- Build sail extra strong so can use as storm jib
- Consider heavy staysail and extra deep reef vs storm sails



12 Steering



- Multiple self steering and rudder failures
- Autopilot - compass course, can be big amps user, steers in no wind, higher failure rate
- Wind vane - relative wind course, no amps, steers in high wind, sail balance critical
- Need minimum 2 bullet proof units, 1 each and spares
- Before leaving - inspect steering system carefully, take spares
- Monitor vane & CPT autopilot good combo- both user repairable

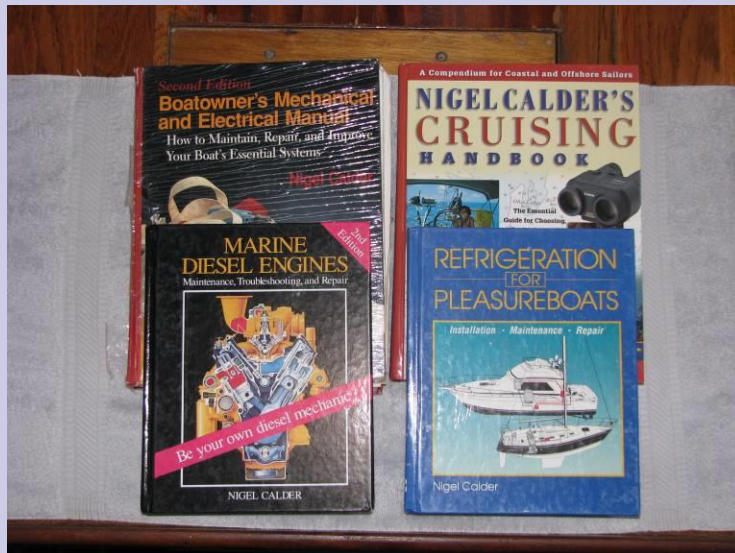


13 Refrigeration



- Multiple refrig failures due to age and leaks
- Better insulation requires less amps, goals R20 refrig, R30 freezer
- Newer 12 v Danfoss/Evap plate systems better than old cold plate system
- Best-Frigiboat w/ keel cooler and digital temp and speed controls
- Calder M&E Manual (3rd ed), great on refrig system
- Lightning issue
- Carry own elec spares, 134a, fill eqpt, guages

14 Mechanical/Electrical Systems



- Must know how to maintain & repair your systems
- Mechanics often unreliable, expensive, unavailable
- Read eqpt manuals, Calder M&E Man.(3rd ed) great, take classes
- Onbd tools/spares/repair skills critical
- Preventative maintenance, preservation, cleanliness important

15 Fuel and Engine Issues



- Dirty diesel fuel from questionable sources
- Use good filter at deck fill
- Dual Racors with vacuum gage, engine final filter
- Need multiple tanks w/ transfer/polishing system
- Additives for water, algae and lubricity problems
- Can make own filtration/transfer systems

Ideal Boat



- Cutter 40-46', < 6'
- Multihull 40-44'?
- Fuel/Water-150+ gals each
- Big cockpit w/ sun & rain protection
- Great ventilation
- Roller furling headsails
- Big refrig, freezer and watermaker

Cruisers' Able to Repair List

(Need skills, parts, tools)

- Eqpt replacement
- Alternator/starter
- Refrigeration
- Plumbing/sanitation
- Diesel engine
- Electronics troubleshooting
- Standing rigging
- Rig tune
- Sails
- Electrical system
- Running rigging
- All yard work
- Outboard motors
- Fiberglass hull/deck
- Steering systems
- Alternate energy eqpt
- Windlass/winches

Cruisers' Can't Repair List

(still need parts, spares, removal tools)

- Diesel head, injection pump & injectors
- Engine transmission
- HF radio/tuner internals
- Modern electronic internal components
- Motor/alternator windings
- Solar panel internals
- Battery internals

Cruisers' Bad Habits

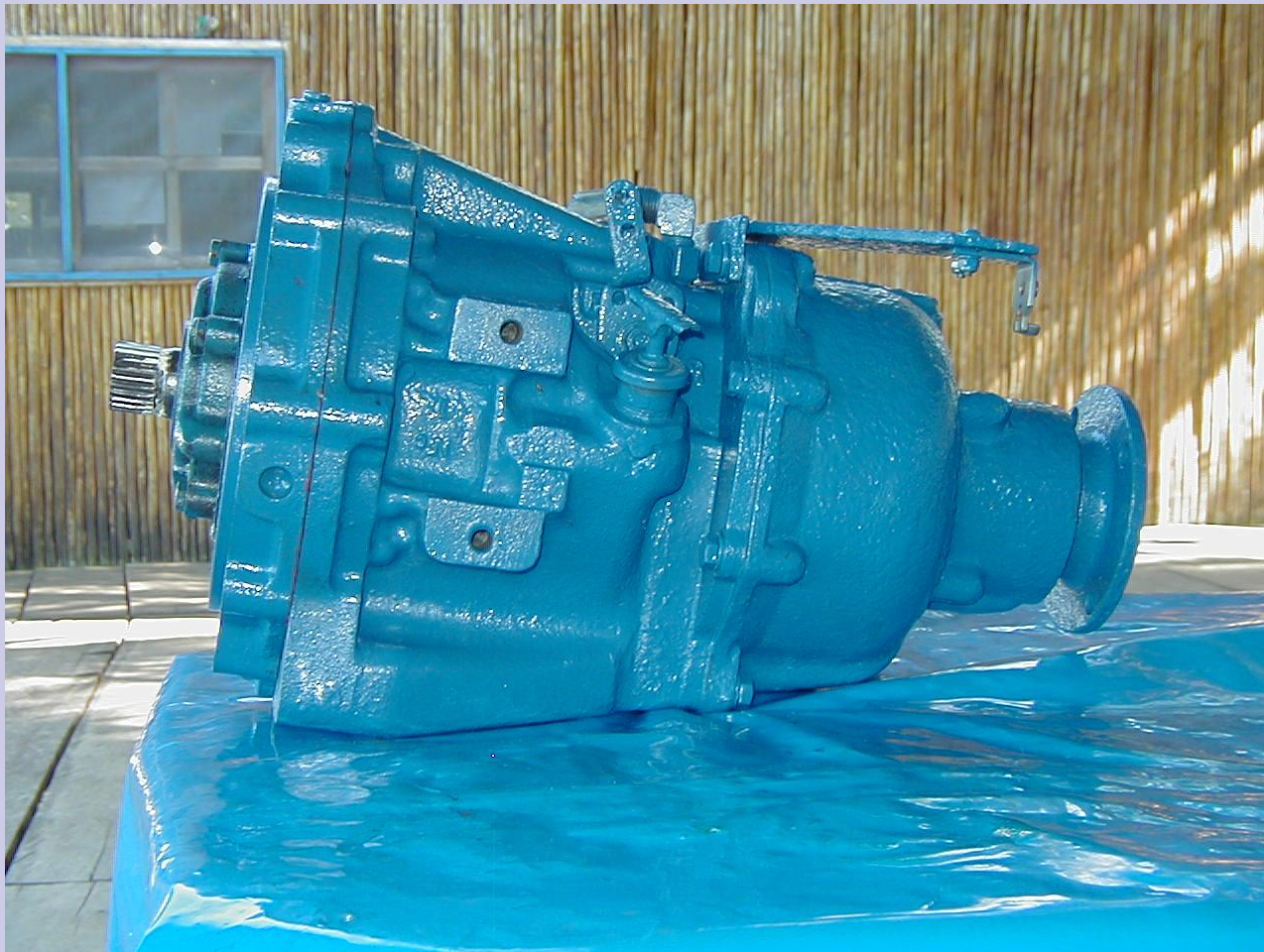
- Poor anchoring technique
- Turning VHF off
- No anchor light at night
- Dinghy unsecured at night
- Sails/lines baking in sun
- Improper flag etiquette
- Leaving boat unlocked
- Cluttered fore decks
- Improper radio etiquette



Third World Mechanics

- Poor work habits, not careful, make mistakes
- Don't show up or finish on time
- Don't read repair manuals, jury rig repairs
- Often have little training/experience on your eqpt
- Their poor tools ruin fasteners, gaskets, etc
- Don't keep clean work area
- Often charge too much for their skill level
- Never leave mechanic to work alone
- Don't expect what you can't inspect

CRUISING TRUTHS



Cleanliness

- Cleanliness is next to Godliness especially in the engine room.



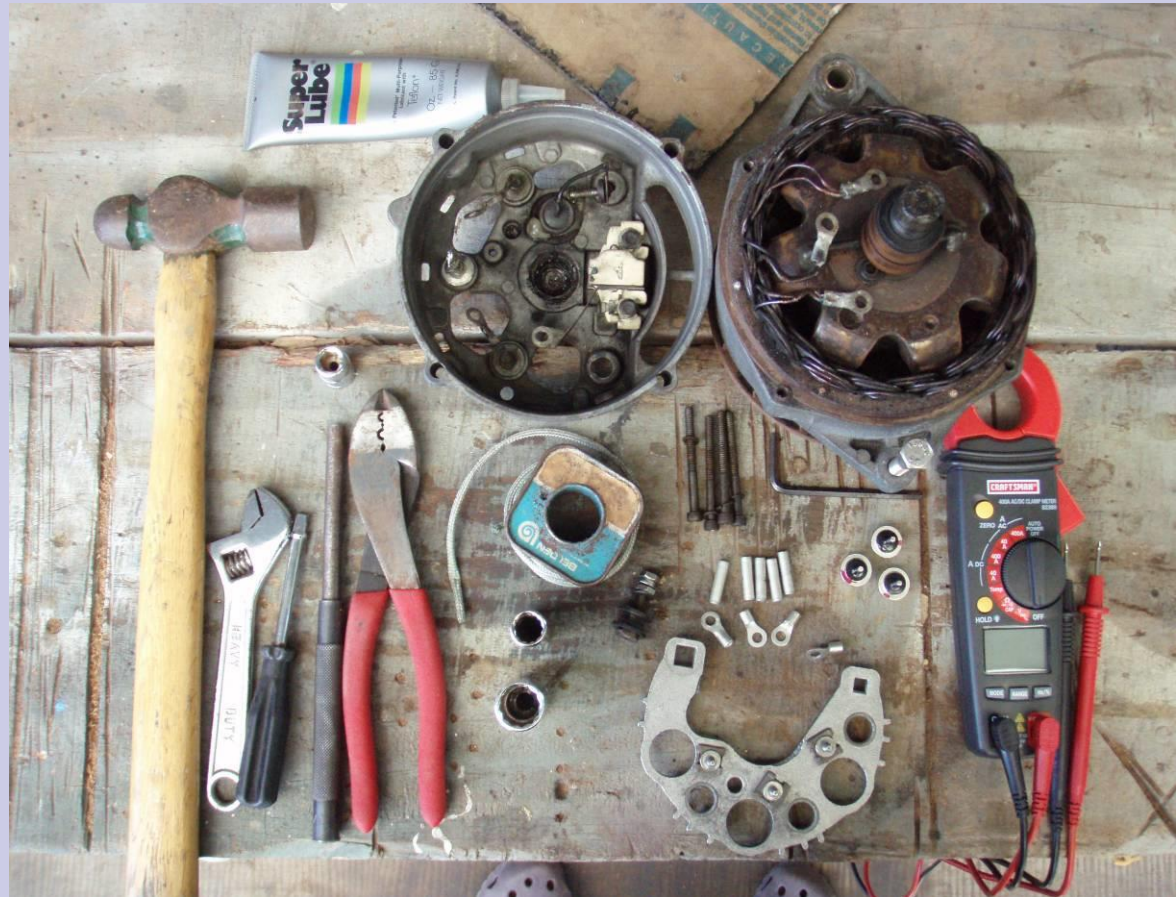
Fore Deck

- Fore and side decks are a good place to stow NOTHING.

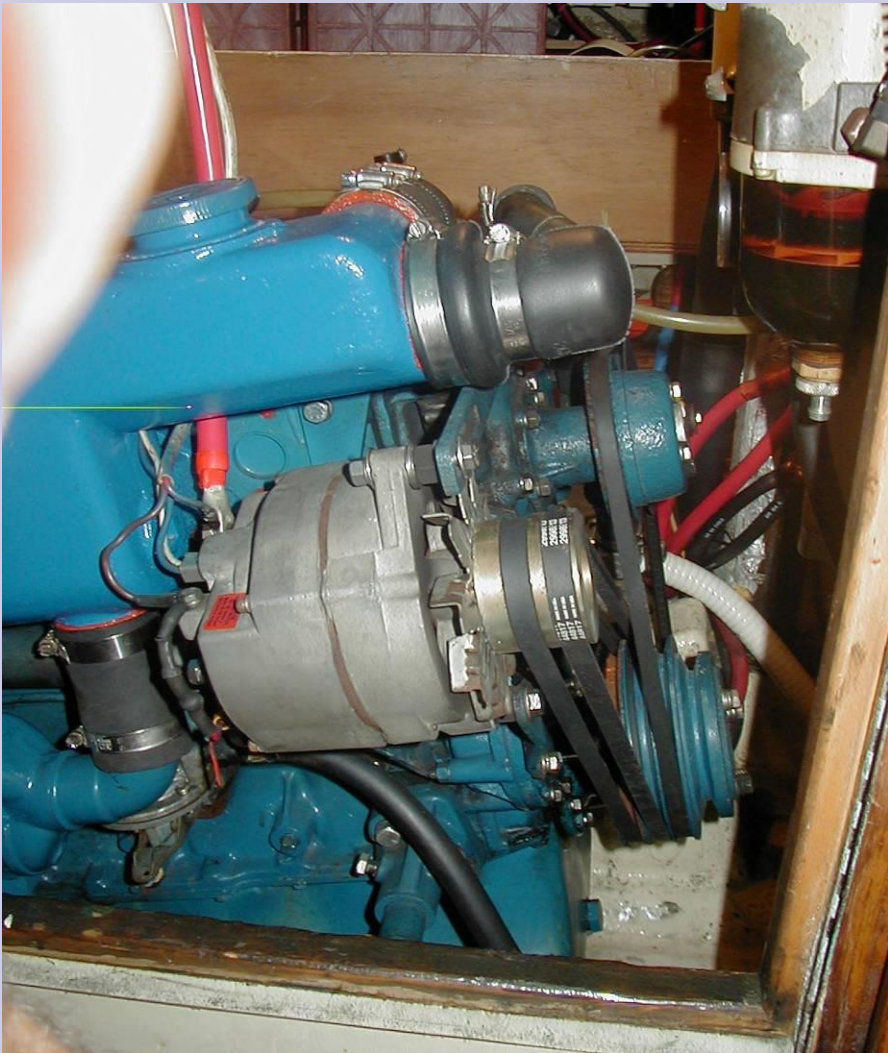


Spares/Tools

- You can never have enough spare parts or tools regardless of what your mate says.



Corrosion



- A rusty engine is a sure sign of a lazy chief engineer.

Wakes

- He who keeps a clean bottom will have a smooth wake.



Repairs



- If you believe that 'If it ain't broke don't fix it' you will be doomed to a life of eternal repair.

Murphy

- Murphy has lots of experience on cruising boats.



Rigging



- Rig heavy, reef early and carry a BIG anchor
- Boca Chica Marina after Wilma, 2005, 70 knots wind, 6' tide
- 20 big boats sunk!!

Fair Winds

- Fair winds and smooth seas only come to those who have done their weather homework.



Sunsets

- Those who say that cruising is all gorgeous sunsets and Mai-Tais have had too many Beers.



Cheap Gear

- Cruisers can't afford cheap gear.
-Tom Service



Cruising

- Cruising involves multiple visits to every marine store in town and then working on your boat in exotic places.



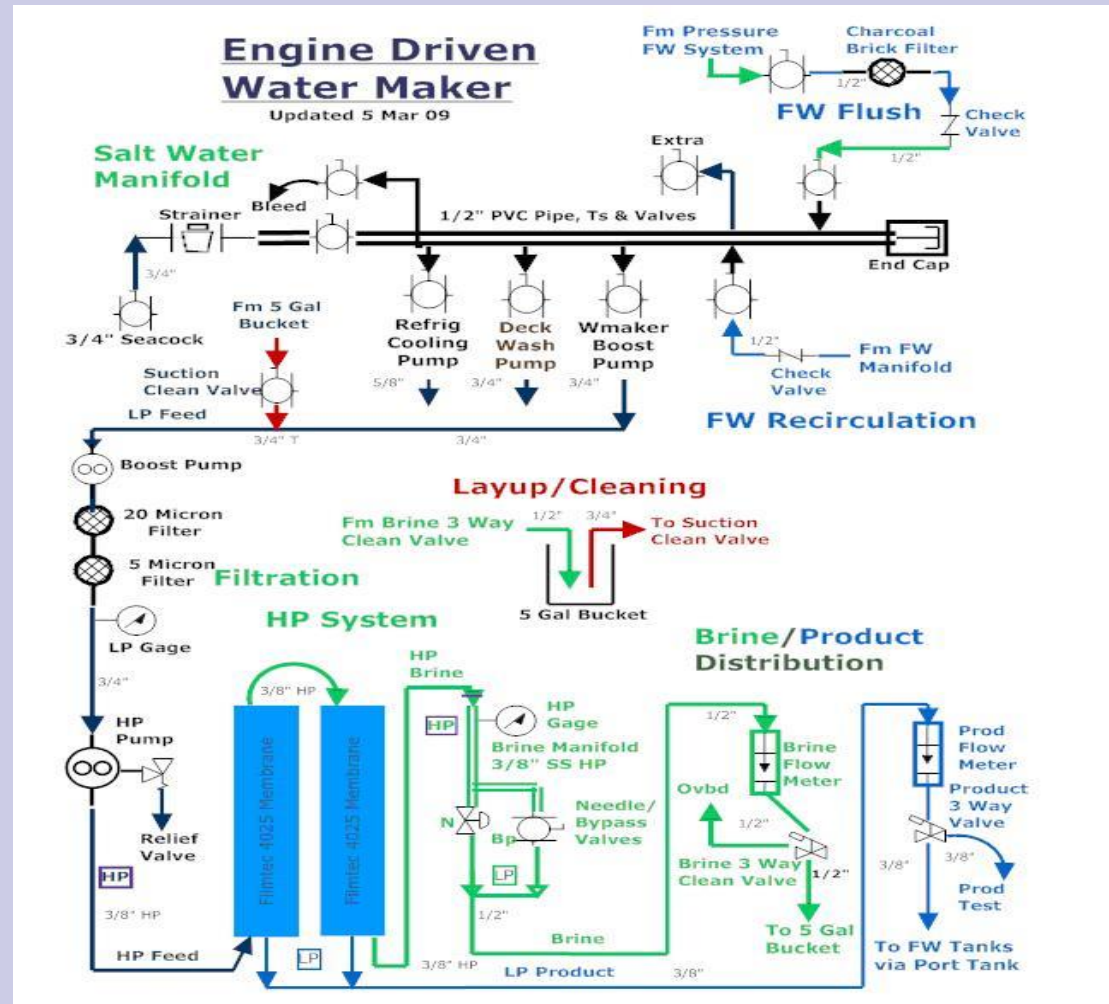
Repairs

- Cruisers who can't fix their own equipment should own cars not boats.



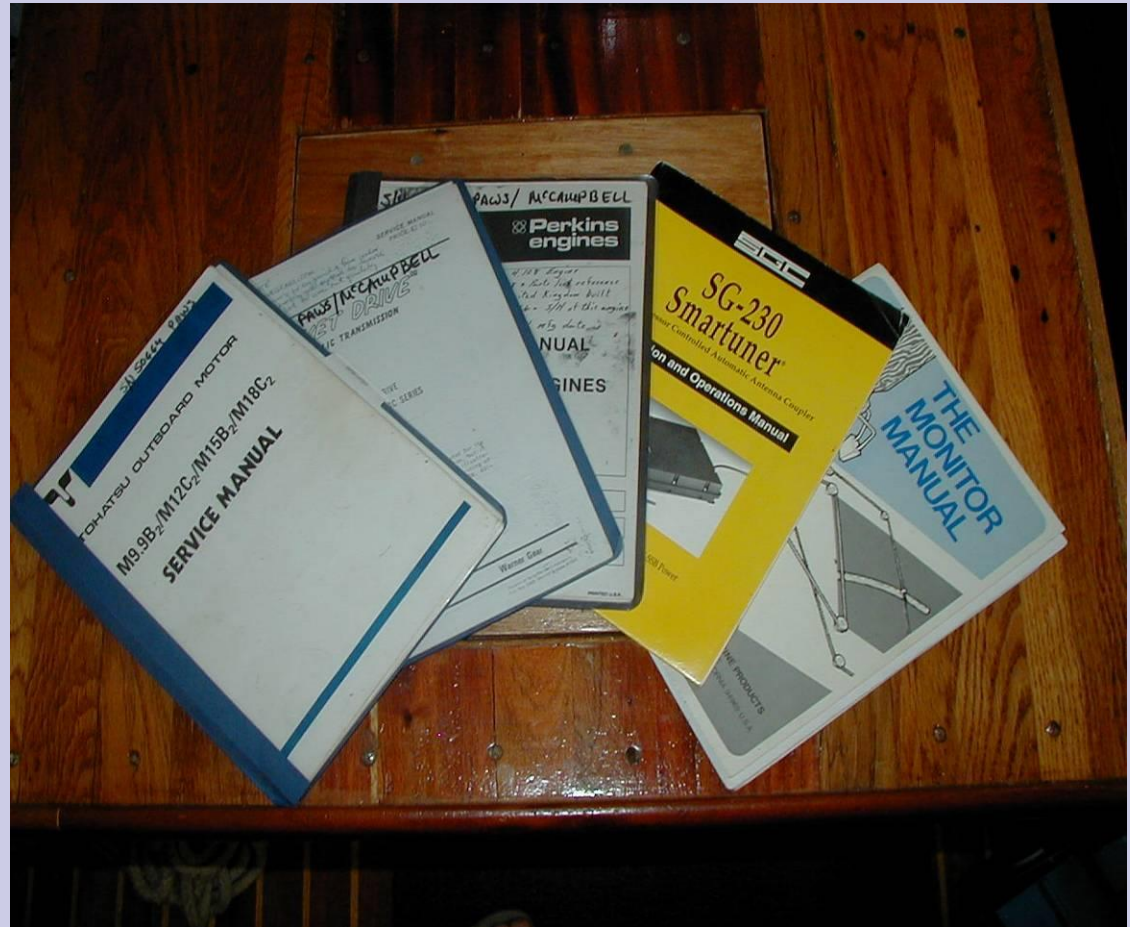
New Equipment

- If you can't install it, fix it or replace it, don't buy it.



Manuals

- Those cruisers who read service manuals instead of novels will have more time to enjoy their Mai-Tais.



PPP Theory

- A carefree cruise is the product of 'Proper Prior Planning' while a difficult cruise is the product of 'Piss Poor Planning'.



Anchors

- He who believes in saving money by having a 'moderately sized' anchor is doomed to a life of dragging.
- Speak softly, but carry a BIG anchor.



Varnishing

- Polishing and varnishing hardly ever make it to the top of a blue water cruiser's To Do list.



Heavy Weather

- Rig heavy, Reef early, and Pray often.

-Tom Service



Pacific Pictures



Tortoise, Galapagos



“Birdman” Island, Easter Isl



Moae, Easter Island



Welcome to
PITCAIRN ISLAND



Landing Area, Pitcairn





The HMS BOUNTY Anchors

Hiking Mount Duff, Gambiers





Pearl Farm, Gambiers



Uncharted Anchorage, Gambiers

Tahanea Beach





South Fakarava



The Sharks of South Fakarava



Mantas Feeding, Toau

Sherry at Yellow Dog Canyon, Toau





Lion Fish, Toau

Anse Amyot, Toau





Eclipse Totality, Tahanea

Dinghy Ride, Makemo



Kon Tiki Placque, Rarotia

Three years ago, the Taniwha Māori Club
was presented with a beautiful gift
on August 31, 1957.

THE NEW ZEALANDERS
AND THE USA

BENNY JAMES EDSON
RUFUS HARRIS EDSON
FRANK HESSLER EDSON
GUSTAV F. EDSON
GERHARD WATZINGER

On August 31, 1957, the day after
the presentation of the Taniwha
to the Taniwha Club on July 28, 1957.

THE NEW ZEALANDERS
AND THE USA

BENNY JAMES EDSON
RUFUS HARRIS EDSON
FRANK HESSLER EDSON
GUSTAV F. EDSON
GERHARD WATZINGER

En mémoire des pionniers parmi les pionniers
qui a consacré sa vie entière à repousser
les limites extrêmes des connaissances humaines par delà l'océan ... sans trêve.

En mémoire des pionniers parmi les pionniers
qui a consacré sa vie entière à repousser
les limites extrêmes des connaissances humaines par delà l'océan ... sans trêve.

Donated by the Kon-Tiki Museum in Oslo
by the Captain and Mrs. THOR PEDERSEN, 2
supported by his grandson, The and Gray HEYWOOD.

Donated by the Kon-Tiki Museum in Oslo
by the Captain and Mrs. THOR PEDERSEN, 2
supported by his grandson, The and Gray HEYWOOD.



Fatu Hiva



Tahuata



Taiohae, Nuku Hiva



Marquesan Hospitality





Nunka Hiva

Goat Hunting, Nunka Hiva





Anaho Bay, Nunka Hiva



Oahu, Hawaii



Hunting Coconut Crabs





... and the Girls





Gorgeous Sunsets



James and April, your hospitality is unsurpassed
GOD BLESS YOU BOTH AND YOUR BEAUTIFUL ATOLL
SUNDAY 16 OCT 2010

2. INDIAN: USTAVAN and Taha

GREEN PLANET
TUVU







The Tuna Fleet In Port





The End

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