
SA-1770
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Special note regarding the current American / Palestine / United Nations conflict.

By the very nature of the work we do we tend to fall under an assortment of different agencies; some of these are part or fall under the United Nations. We also represent and cater to a variety of American concerns. The floats that we deploy are funded by contributing nations who also subsidise some funds to our fuel and food aboard. These funds are collected and forwarded to us via CLS (Collecte Localisation Satellites) and not via the United Nations.

Our vessel is run completely on a non-racial and non-political basis. Our aims and purpose is solely focused at our contribution to science and the wellbeing of our planet.

Peter Flanagan
Capt.
December 2011

Our Story,

The starboard watch was standing amidships studiously cleaning a fingernail, by my count; he had been doing it for the past 10 minutes. The only conclusion I could conceive was that whatever was there, must be gone, was never there to start with or was there permanently.

It was hot and sultry, with a stifling heat that pushed the mercury up to 35°, we were almost becalmed with a spasmodic South Easterly wind flapping the sails occasionally, pushing the indicator to show 2 knots of boat speed, the sea flat calm.

Yet another piece of plastic idled its way past, I called the watch over,

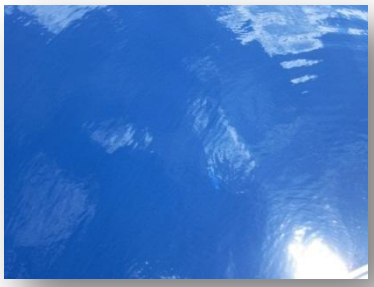
"Quad, see that plastic there? I want you to count them for the next hour, just an experiment that I'm trying."

Dutifully, notebook in hand, he started scoring lines, crossing them when he got to 10.

"Well, that ought to keep him busy for a while…"

At the end of the hour, he found me below, excited to share his findings. We did a bit of maths together: his estimate was that from the height of the deck he could see only sizable pieces greater than 100mm square and only at a distance of 10 to a maximum of 15 meters from the side of the hull. His first count came to a staggering 786 pieces of plastic in an hours run.! (this is only on the starboard side.)

I'm not even going to presume to do the maths as that assumes an equal proportion, what I will say is that this was not a gyre or anything like that, we could only see it because the sea was calm, our position; 09° 30'S: 75° 30'E in the middle of the ocean. We repeated the exercise; 20° 42'S: 93° 26'E gave us 972 pieces,11 29'S:91:56'E gave us only 489 pieces, all done in a 2 mile stretch and only on the starboard side of the boat! (This is not a science experiment, merely an observation of the state of my back yard)



Pretty soon you would be able to walk across from continent to continent!

When Carbon Dioxide and salt water mix it forms a new chemical, an acid that is eating away the shells of sea creatures and together with a raise in water temperature are killing off the coral gardens all around the world.

I had heard of the global warming hype and the greenhouse gasses story but never paid a lot of attention to it. We have all heard these stories before and it has normally been connected with

someone trying to get more money out of you. Then, I started to live on the ocean in a little boat where the results of man's effect on the planet is most evident.

From where I stand, I know my world is in trouble,

I noticed in passing that America has had the coldest spell in living memory or that the volcano's in Iceland are erupting, Northern Australia, a desert, has been ravaged by floods, the tsunami and earthquakes in Japan and the earthquakes in Spain or perhaps you have just noticed that your local weather has been a bit strange. As the oceans now hold 80% of the earth's heat absorbed from the atmosphere, what affects the oceans affects the land both above and below the sea all the way to the crust. These factors also change the weather patterns, not necessary for the better.

I don't have the answers I don't know if we can fix the problem but maybe we can understand it and with our small contribution, perhaps, if we are lucky, we may be able to contribute to the preservation of mankind. At least we are attempting to do something about it.

We received a report from TSR (Tropical Storm Risk) who forecast above average, more severe and earlier cyclones than normal. Here we were, in flat calm conditions, just below the Equator in the middle of the ITCZ and traveling at 2 knots, desperately trying to zig-zag our way eastwards, knowing we were later than we should be and that at any minute, the wonderful sparkling blue warm water around us will become a nightmare as the greatest forces in nature gathered up the heat made more intense by the greenhouse effect to feed a monster of epic proportions!

It's Christmas day; I'm standing at the helm with my oilskins and harness on lashed to the safety line. The occasional sea breaks over me, over the whole boat as she staggers to recover, I can't see much, the spray driven by a 100kmh wind is stinging my eyes. The staysail halyard has just parted at the masthead and the main has developed a meter long tear in it. I keep going, pushing my crew to their limits, upwind is our next deployment position and we will make the 27 miles sometime in the next 8 or 9 hours. We have now been at sea for 106 days, our battered little vessel fights bravely on; she has faced worse than this and is still keeping us safe.

This wind shouldn't be here, this isn't a squall, this isn't normal; this is something new.

Please help me to stop this. It's like trying to stop a train in a tunnel and I know I am not Spiderman; even if I do have a read headed girlfriend.

Yeah, I could tell you about global warming, about climate change, not from the scientists' desk but from here, behind the helm.

Background:

As both man and boy, I have been involved with the sea for the past 48 years, she has looked after me and together with my crew, we looked for a way to repay the privilege.

We wanted to help but not just from the armchair; the initiative was to get more physically involved. A lot of the problem that we could initially make out was pretty simple. The scientists were giving a warning to industry and the corporate world was procrastinating that the data was inconclusive, a scenario I am sure you are very familiar with.

As you are probably aware, science doesn't pay although everyone wants the results. It was in this lack of funding that we saw the opportunity where we could help close some of the gaps in the research by using a sailing vessel rather than a motor vessel.

For example, the engine start-up costs of a ship like S.A. Agulhas (I used to captain her), would keep us in diesel for a month!

Capt. Peter Flanagan
Senior Training Officer,
South African Navy
2002

RV Kaharoa leaving Wellington New Zealand to deploy ARGO floats in the Pacific

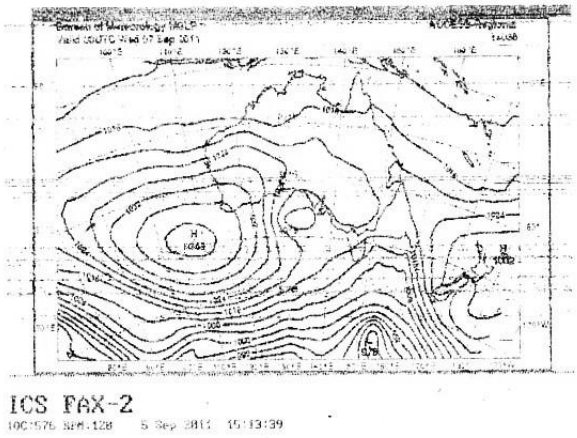
The Phoenicians say that days spent at sea are not deducted from your allotted lifespan…

1045mb?

I first noticed the change in about 2003 but it seemed slight when sailing on a 52 000 ton tanker.

It wasn't however, until I returned to smaller vessels it became more apparent that the winds that had been forecast using historical data collected by sailors since Columbus and Da Gama's time and even before that, were no longer present or had suddenly moved; a 6 knot current in the middle of the ocean that shouldn't be there and had never been there before; the trades that you could rely on with the certainty of death and taxes was inconsistent or blowing at 50 knots instead of its normal gentle 15 to 20 knots, sea temperatures that were obviously wrong for that area of ocean and pressure systems over 1045mb or below 983mb - unprecedented in the latitudes we were finding them.

Armed with this knowledge and a lot of intensive research we approached GOOS (Global Ocean Observing System) and their operations platform JCOMMOPS (Joint Technical Commission for Oceanography and Marine Meteorology Observing Platform Support) with my initial idea of assisting them with maritime research on the oceans of the world.



1043 hPa high pressure off Australia, unknown for this latitude and at this time of vear.

Deployment in Beaufort force 9 rising 10 Southern Ocean; 45°S : 30°E

WMO IOC jcomm

…floats in our wake like pearls on a necklace…

I received the following reply ***"the fact to have you ready to operate at our service is wonderful opportunity and I look forward to seeing this cooperation realized and sustained if possible"*** and, ***"it is clear that we would jump on the opportunity".*** 8 months later we were on our way to do the first deployments. Not only did they jump, but in the words of one of the Port Met Officers; ***"I have never seen a resolution passed this fast through the United Nations, it normally takes 3 years to just get your idea heard…"***

So it came together and as I write this we have a record number of floats in our wake like pearls on a necklace, so much so that in the last ARGO newsletter we are currently rated No.1 in the world as regards our SOOP cruise ∑ scores. (Scores calculated on the number of deployments, the difficulty of the area and the gap areas filled.)

The 'Lady Amber', to the best of my knowledge is the only sailing research vessel in the world doing this type of research on a full time basis and I believe that our 'modest experiment' has become quite a success.

RV Lady Amber crew June 2011

Deploying a float using the chute under radio instructions from the Navigation Station

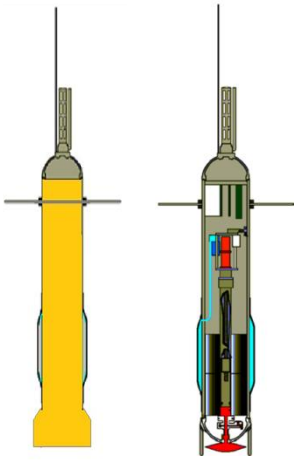
RV Lady Amber under plain sail leaving Cape Town

About Argo

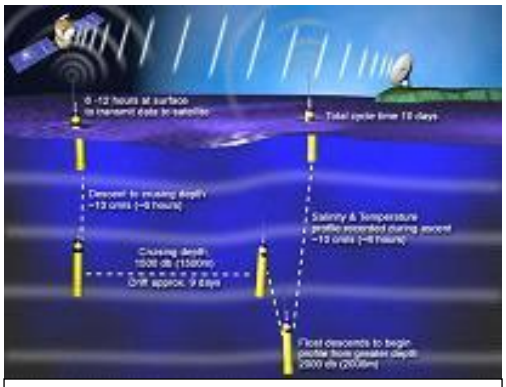
What we refer to as the ARGO array, is a network of 'mini laboratories' dropped into the ocean by ships and ideally left drifting at 3° X 3° intervals across all the oceans of the world. These 'labs' or floats as they are called, once deployed, transmits its position to a series of overhead satellites called Jason, Poseidon and Topex, and communicates to the satellite that it has set itself in what is called 'mission mode'.

Within 30 minutes of deployment, the 'float' sinks by automatically changing its displacement to the 1000m level where it remains floating in that current for 9 days.

At the end of day 9, the float sinks again to 2000m below sea level and immediately begins a slow ascent to the surface taking a series of samples from the water column. These samples are temperature, sea water chemistry change, salinity, current and Co_2 content of the oceans and finally on the surface, the sea level. (Sea level is not constant throughout the oceans as anomalies are caused by underwater obstructions, hot or cold and currents as well as melting ice together with differences in temperature)



Argo Autonomous float.



Argo float profiling sequence.

XBT profiler

APEX Float Status Reader

For climate modelling, Argo is indispensable…

Already, shippers and seafood fleets are turning to Argo data to help plot currents, routes and promising fishing grounds.

For climate modeling, Argo is indispensable. Most of the heat from global warming is absorbed by the oceans, but the temperature increases aren't uniform. This differential heating can change ocean circulation, which affects temperature, rainfall and weather patterns around the planet.

Changing weather also influences the ocean. Argo measurements have shown that much of the Pacific is becoming less salty, as a result of increased rainfall. Since salty water is denser than fresh, shifts in salinity will affect currents and circulation.

The oceans are the big flywheels in the climate system, as oceans heat up, they expand, contributing to sea level rise — a process Argo can monitor with unprecedented accuracy.

Transmitting the deployment data to CSIRO, Hobart Tasmania for operational verification.

Float 5485a deployed Christmas day 2011

Buoy gone!

The broad range of this research includes water mass properties and formation, air-sea interaction, ocean circulation, mesoscale eddies, ocean dynamics, and intra-seasonal to multi-decadal variability. Also, Argo is the core subsurface dataset for ocean data assimilation modeling, used by modeling centers around the world in ocean reanalysis and for initializing seasonal-to-decadal prediction.

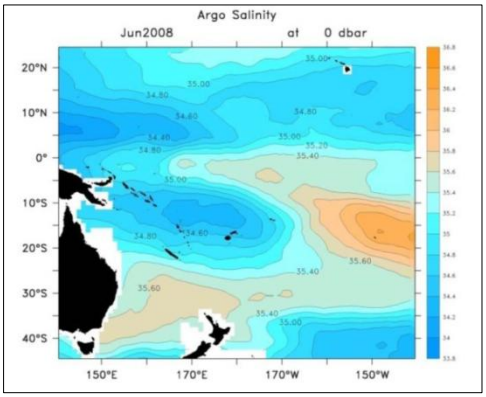
…floats like these give us an in-depth understanding of the structure of the ocean.

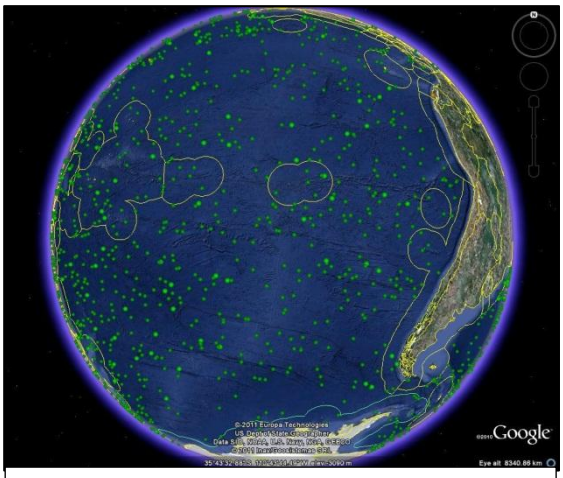
There are about 8500 floats that have been deployed in the oceans since 2000 of which an average of 3500 are continually active. The floats are untethered, (not anchored), and as they are free floating, they move with the currents (another reading is taken from this and the result is ANDRO, the worlds first accurate Atlas of Ocean Currents).

Due to this movement gaps are formed in the array and the floats have to be continually replaced at a rate of 600 to 800 per year, a small percentage of them run ashore, get run over by ships or die and have to be replaced as their batteries run out, (about 5 to 8 years).

Data from Argo floats like these give us an in-depth understanding of the structure of the ocean beneath the surface. They have also increased our knowledge of the circulation and variability of these remote oceanic regions.

….transmits its position to a series of overhead satellites…..





The green dots are active ARGO floats for the Eastern Pacific region; 600 floats are required here to maintain the array. 2011

Deployment Float36:ID. 5458i
2011-12-07-22h26m54s UTC

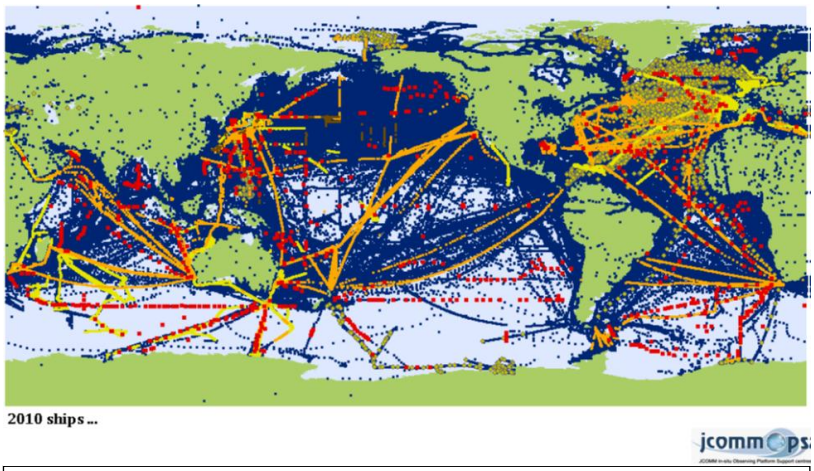
…ships rarely, if ever deviate from their course…

To do this, JCOMMOPS use SOOP ships (Ships of Opportunity). These are commercial vessels en route to their destinations that have volunteered to help with the deployments. Floats are loaded aboard together with a technician who would do the activation of the float and the deployment at a given position.

Due to the commercial nature of the ships, they rarely, if ever, deviate from their given course to deploy the floats. A chart of shipping routes used by the SOOP ships below demonstrates clearly the large tracts of ocean in the global array which are usually in remote areas far from normal shipping routes and finding deployment opportunities can often be a challenge.

Deployment from SOOP ship
Mv. Wellington by CSIRO. Indian Ocean

Deployment from RV Lady Amber,
Indian Ocean



SOOP ship routes during 2010, the gaps in the oceans not covered by the ships can be plainly seen. These gaps need to be kept filled to maintain the ARGO array

The Alternative…

The alternative is to use Research Vessels but this, especially for long distances is prohibitively costly and again can only 'piggy-back' on other research.

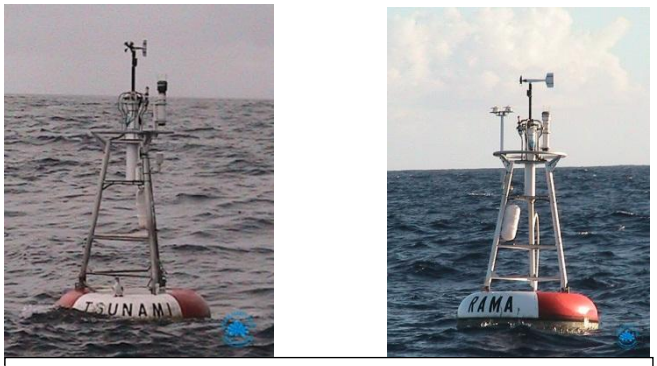
It is this vacuum that the Lady Amber is specifically designed to realize.

We go where other ships don't or can't go…

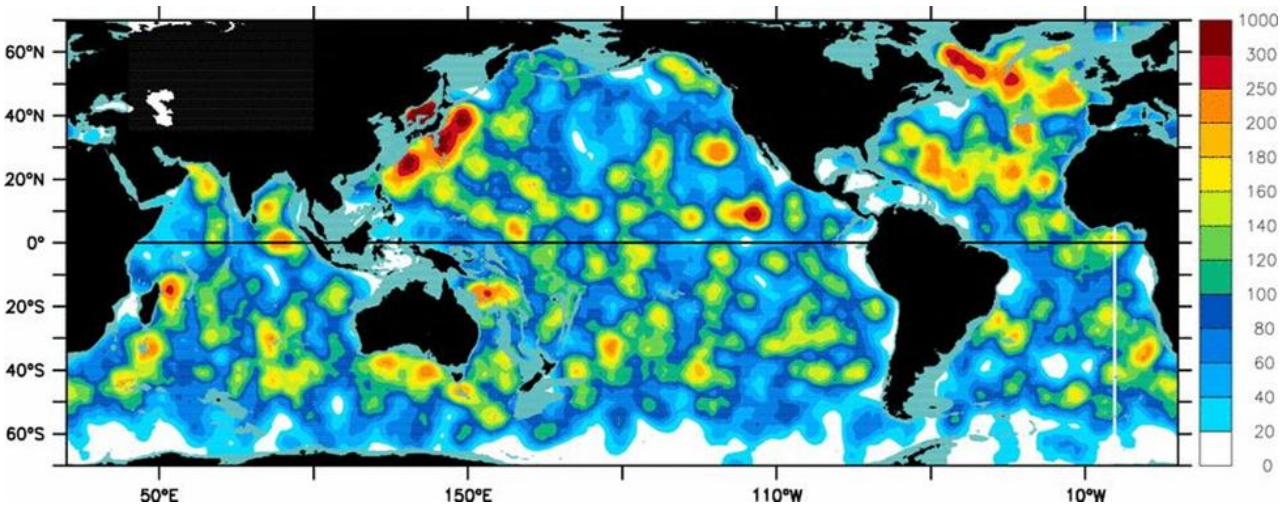
It's our job aboard Lady Amber to close those gaps which are vital to maintaining the array and where the Ships of Opportunity don't or can't go deploying Argo floats as well as inspection of the Tsunami and RAMA moored buoys. We will also be involved with other research early next year like co2, XBT, Argonite and plankton sampling, pollution measurements and weather buoy deployments (SVP's) and so on as many of the other disciplines have the same problem as Argo to get access to these less travelled waters.

Below is the latest chart of the active floats around the world's oceans, the gap areas, (the blue and white areas on the chart below) are still to be filled.

Finding a 2m high RAMA buoy in the middle of the Indian Ocean…



Inspection of the RAMA and Tsunami tethered buoys off Madagascar for NOAA.



The blue and white areas on the above chart indicate where we still need to deploy floats to complete the ARGO array. Ideally the requirement is to place a float every 3° X3° but as the floats drift out of position or die they need to be replaced. The requirement is about 800 – 1000 floats per year.

We believe in what we are doing…

To carry out this rather enormous task we have an extended cruising range aboard the Lady Amber. She is constructed to carry 4000 liters of water with a 150 liter p/hr water desalinator and 2000 liters of fuel including a huge fridge and freezer capacity with the result that our cruising range could be extended to 3 months at sea if necessary. (Or until the crew go stir crazy)

Of course, the rough sea and weather condition to go with it. We believe in what we are doing which is why we risk our lives to achieve this. Our best efforts go a long way to completing the Argo array.

Sailing in extreme conditions to get to the deployment positions is just part of the job…

Midshipman Rika Botha (Navigator) pre-testing an Iridium float immediately prior to deployment

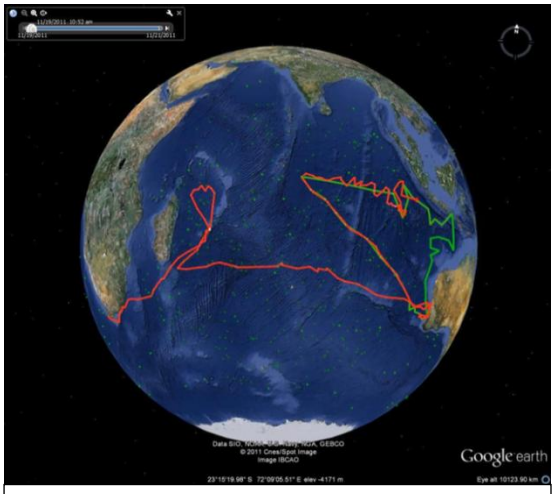
…we are cost effective without the carbon footprint…

Our advantage is that, as we are under sail, i.e. wind powered, we are very cost effective, we don't have nearly the carbon footprint of our larger brothers, also, our crew are fully trained and qualified in the initialization and deployments of the floats so there is no need to have an extra technician aboard.

In the countries we visit to resupply we seem to attract a lot of attention, not only by the public but we get invited by government officials and the scientific community for meeting and delegations. One of our tasks under the banner of the IOC (Intergovernmental Oceanic commission) is to meet with governments of all countries including the SIDS (Small Island Developing States).

We have a huge selling advantage here. On our journey so far we have had quite a few official invites. These visits that we have had in the past we usually reciprocate by entertaining them aboard our ship where the enthusiasm of the officers and crew for what we are doing becomes a very convincing cocktail.

In the past year alone, the crew of Lady Amber has spent some335 days at sea, our last run being an almost continuous 114 days without seeing land. During this time we have deployed 55 floats and closed many of the gap areas in the array that until now have been difficult if not impossible to cover.



Route taken by Lady Amber deploying 55 floats in the gap areas of the Indian Ocean. For this we have travelled 34586 miles in 11 months in every sea and wind condition imaginable.

Dedication and Duty.

Rika Botha, Our Navigator broke her tibia on the approach to Mauritius on leg 3. Instructed by the doctors that she is strongly advised not to go sailing; she burst into tears and threatened the Capt. that the boat is her home and her job and if she is not allowed to go with she will not hand over any of the computer codes or passwords nor instructions to use the testing equipment. She spent the next 2 months sliding around on her buttocks with a cast on but got the job done and done well!

The course ahead

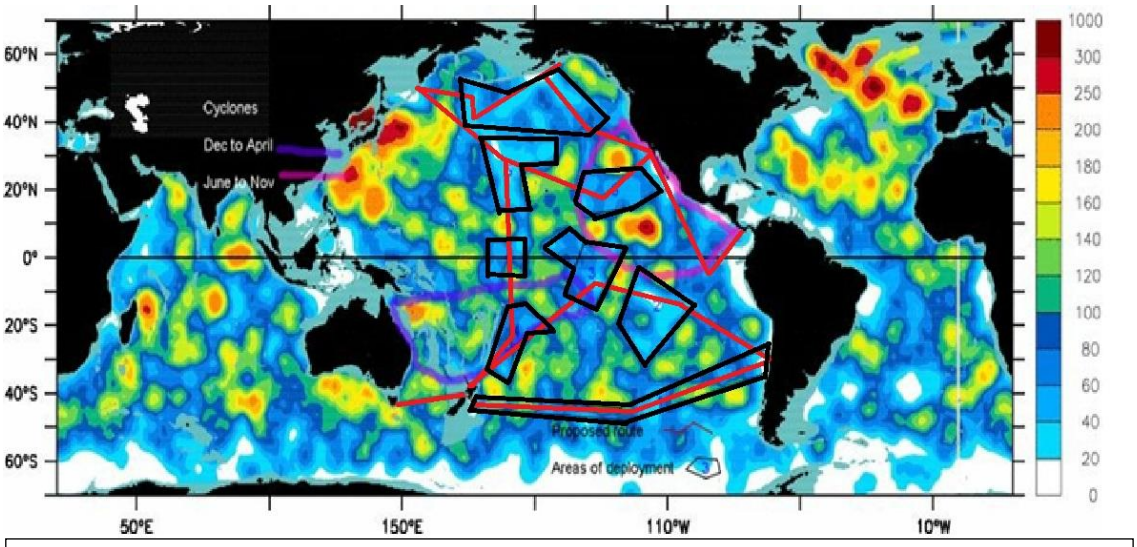
We have just finished deploying in the Indian Ocean for CSIRO Australia, having completed the Eastern South African coastline and the route across to Mauritius, North of Reunion, North and East of Madagascar, back to Mauritius and a long deployment leg to Perth where we loaded the next cargo.

From there we crossed to Chagos, Maldives and Coco's, the North West Shelf of Australia in cyclone season before returning to Perth.

After that, Tasmania and New Zealand where we will be carrying scientists aboard, load in Wellington and across the South Pacific to South America and returning via the equator, French Polynesia, Cook Islands and back to Wellington.

North again to Tahiti, Hawaii and far Northern Pacific from Japan to San Francisco, through Panama Canal and another 2 years in the South Atlantic before returning to the Indian Ocean once again. Between all this I believe that we may be asked to do summer runs to Antarctica.

We are hoping to be able to continue to do this for quite some time in the future. Our achievements so far, according to the reports we have received have apparently made a huge impact on the available data.



Pacific plan 2012 – 2013.

Our trainee program

The sea is worlds' best teacher!

You can learn to sail in a sailing school but the sea teaches character; the type you only find at sea or on mountain tops, and with this, an inner confidence in achievements and abilities that can only be beneficial in later life. To me there are very few other situations where this can be learnt.

To move a 38 ton vessel from one side of the ocean and discover a new world on the other, using only the wind, your skill and the power of God to get you there is a formidable achievement. It can only be realized with teamwork, patience, consideration and enthusiasm.

At sea there is no cell phone signal, no internet, no malls; strangely, the trainees aboard don't miss them; they are too busy having an adventure. They eat well, breathe the freshest air available and get plenty of exercise. Their hands get calloused and their brains sharp.

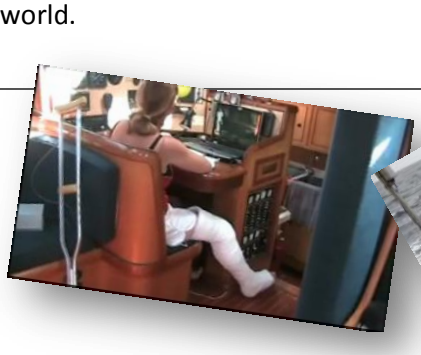
They learn to make their own bed, (you will be amazed how many of them can't), wash their own clothes (in a bucket). They learn carpentry, engineering pluming, electronics and how to fix something that has broken or burnt out using only the bits and pieces they can find around the boat.

In other words, they learn that it is only impossible if you don't try.

Aboard, they sail and work in every type of wind and sea conditions, the ship obviously doesn't stop at night and everybody works 24 hours. They learn practically, to think laterally, to hand, reef and steer, they learn responsibility during their watch hours. standing watch with one of the other officers, navigate; including electronic navigation, AIS and radar, repair sails, rig and furl and splice, cook, bake and sew, catch fish (and clean it). They will also learn engineering first hand; diesel and petrol, electronics, plumbing, first aid, Colregs, ship identification, radio procedure, meteorology and learn to fill in Turbowin, the met data we do for the weather all over the world as well as a whole host of other skills.

On top of it all, they help with oceanographic research, deployment, analysis, and sampling and attain an awareness of their environment that can't be achieved in any classroom.

Ashore they are encouraged to experience and appreciate the different countries and cultures we stop at for supplies, they get to meet top government officials and scientists on a one-on-one basis and make friends and contacts from all over the world.



Our kids of today have changed, their world revolves around the cell phone, TV and electronic adventures, I was even invited once to join someone's virtual life!!???

School on a whole is designed to create slaves; you begin your earliest education learning to sit down and keep quiet, and don't ask any questions that the teacher can't answer.

Out here is where leaders are born, the 'average' kid, given the opportunity and put in a situation where they can achieve and see their achievement pay off. Make a mistake (under control) and see why it didn't work. We push them to try something new every day, to learn what works and what doesn't. We teach them how it's done and then encourage them to do it themselves.

The kids all come from different countries on a 6 month ‘gap’ normally between college and university or work, mainly from the sea cadet bases, sea scouts, dinghy sailing clubs and environmental training facilities. They have to have finished school and be over 16 years of age, they have to apply for the position and qualify for it (their first achievement) as well as passing a health, eye sight and drug exam. (it is a condition of our contract that no recreational drugs are allowed aboard)

We can carry 4 at a time on a 6 month contract rotating them every 3 months. So far we have been able to cover most of their expenses although some are sponsored by local businesses it is our intention to eventually set up a fund through UNESCO or some other organization as well as get sponsorship for their airfares from one of the international airlines.

Of all that we have done out here, the trainee program has been the most rewarding. They arrive as tadpoles and leave as shellbacks, having spent 6 months before the mast; the resultant confidence and character speak for themselves and for us, it has been a privilege to be able to give them the opportunity.

These kids are our future, the ones we hope will carry on our research, spread our story and carry the banner, who knows, they may even become the decision makers of their country. It’s worth the try.

Will the world end in 2012?

The Mayan calendar ends on the 21st of December 2012. Everyone in the world wants to know what will happen; will we be invaded by aliens from another planet? Will a meteorite hit the earth and wipe it out? Will nature take its revenge on mankind? Will it be the start of WW III

I don't believe that anything is going to happen but if I was pressed, I think that what they were talking about was the 'Next Evolution'. According to leading experts on the interpretation of the calendar, Neanderthal man died out giving way to the Homo-sapiens, the reason they give was that Neanderthal man did not have 'art'; i.e. the ability to imagine something that doesn't exist and create it, or at least attempt to do so.

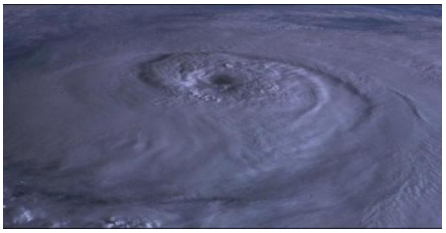
Parallel this concept with an objective view of the world as we know it. In my humble opinion, 21st December 2012 is the start of the new 'Global Consciousness': The aware, the un-selfish and the pro-active survive, the rest, die out.

I hope I am on the pro-active side, I risk my life and that of my crew on a daily basis to contribute to what we believe in. to us it is our duty, to ourselves, to our children, to our planet.

We can't do it alone though, we need help.

I hope that you would look kindly on our request and that we, on our part, could not only continue the work that we have started but expand on it as well. Together, maybe we can make a difference, however small, after all; there's no Planet "B".

Looking forward to hearing from you soon, however, in the meantime I will be spending…



ANOTHER LOUSY DAY IN THE OFFICE WAITING

FOR THE PHONE TO RING!