

Improving Our Understanding Of The Ocean

**Presented by
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Abstract

People of the Pacific has acquainted themselves with the oceans as part of their lifestyle, their way of living and their culture from generations to generations. This acquaintance with one of creations' natural resources for man has been strengthened by the understanding of its behaviour and the benefit it has provided to its caretakers in the past centuries. The property rights of the knowledge passed from generation to generation has not been documented, as there was no need, for our culture was preferred to be "lived" rather than being "taught".

Introduction

Small Island States in the Pacific have been affiliated with the oceans longer than they can remember. The skills they have learned from their forefathers in selecting the appropriate time to catch that special fish for a special meal, whether to celebrate an occasion or just for the normal daily provisions, reflect this affiliation.

The merging of the traditional knowledge that we possess and the scientific findings that has proven the merit of this traditional knowledge can only assist us in achieving a better way of living and to be closely acquainted with such natural resources. Oceans are understood by us traditionally but do we understand it enough to reap the full potential of the benefits that it can sustain us? As ocean is closely related to the climate of the atmosphere, the discussion will revolve around the interactions between the ocean and the climate and the implications on other sectors.

Climate

The climate of the Pacific Islands can be called tropical due to its location between the tropics of Capricorn and Cancer. This location paves the way for invariable rainfall and two distinct seasons, the wet season, commonly known in the Pacific as the Cyclone Season, and the dry season. In the Cook Islands, this distinction is more apparent with the wet season giving 67% of the total annual rainfall (months from November to April) and the dry season giving 33% of the annual rainfall (months from May to October).

Climate is defined as the historical picture of the weather over a period of time and would normally give some indication of the trend in the day-to-day observations of meteorological parameters. Weather, on the other hand, dictates what we need to do on a daily basis in terms of our activities and chores required. Climate then is the collection of

the weather observations that will paint a historical record of the meteorological events that have occurred in a specific spot.

This definition would then give us an idea of the general weather pattern for the Pacific and will normally give some results if unusual events occur. Some of the events has been identified as the El-Nino-Southern Oscillation (ENSO), the Pacific Decadal Oscillation (PDO) and the Southern Oscillation Index. These meteorological phenomena are inter-related.

Ocean

The Pacific Ocean has been a food basket for the Pacific especially in subsistence life and we have mastered the art of fishing in our respective countries in our own right. We will never run out of this food basket if there is no intervention to the current stock that we have.

Glancing today at the development of economies within the region, the ocean is playing a major role in this activity. The few industries that have benefited from this natural resource can see that there is room for improvement and will enhance their productivity if given the opportunity to do so. The ocean will always provide some benefit and cost to our respective countries but it is up to us, the caretakers of this resource to utilise its potential to do so.

Interactions

The interaction between climate and ocean has always been of significant importance to developing countries, especially the Small Island States. This is the only resource that they can utilise so as to obtain some income as well as to provide for their respective households. The interactions that take place between climate and ocean can be identified from the results of such interactions. These are: -

Hydrological Cycle
El Nino/Southern Oscillation (ENSO)
Sea Level Rise

These interactions will be the only ones discussed in this forum so as to grasp the understanding of the interactions.

Hydrological Cycle

The hydrological cycle is the process in which the state of water is changed from solid to liquid to gas and then to liquid again and falls to the earth as rain. This process will continue as long as the atmosphere is there. This cycle at times is not fully understood by many but it is a living reality to many of small island states. This is via the rainfall collection platforms they have especially on remote islands. They may not be able to see the clouds coming over the horizon but they know that the new moon or the full moon is

getting close and so they prepare themselves to collect that amount of rain from these signs when the rain arrives.

This hydrological cycle is commonly known as the water cycle.

El Nino/Southern Oscillation Index

Although El Nino/Southern Oscillation Index (ENSO) has been with us for the last century or so, the impact of such phenomenon has only been realised by the scientific community. This phenomenon has the tendency to affect the Pacific in terms of rainfall, sunshine and the more devastating hazard, cyclones. As a general pattern, ENSO tend to reduce the normal easterlies and enhance the westerlies. This tendency tend to move the warm pool of ocean in the Coral Sea towards the east and thus creating a higher risk for tropical cyclones to eventuate in the summer months of the Southern Hemisphere.

The effect of this on the Cook Islands will have more rainfall fore the Northern Cook Islands and less than normal rainfall for the Southern Cook Islands. ENSO also increases the chances of cyclones visiting the Cook Islands.

Sea Level Rise

With the current high profile of the issue of sea level rise resulting from climate change, due to the increase in greenhouse gas emission into the atmosphere by the industrialised countries, it is imperative for us to ensure that any changes to the legal document of the United Nations Framework Convention on Climate Change (UNFCCC) must have our approval as we are the most prone region to this hazard. This requires our participation in any discussions even at the highest possible level. As a very low emitter of greenhouse gases, our respective countries cannot afford to be subdued by the ocean due to the implications caused by others.

Implications

The implications of these interactions will see the strain put onto our prestine environment and our natural resources. They will also reduce out capability to sustain life on our remote islands due to the depletion of such goodness from these resources.

We have our own national respective markets, we need to safe guide these natural resource and understand them. Such markets that can benefit from these are as follows: -

- Tourism
- Fishing
- Pearl Industry
- Aquaculture
- Sustainability

As a means of understanding these implications, there is a need to monitor these natural resources and see how they behave. This behaviour may be able to assist the Small Islands States to attract a niche market so as to enjoy the benefits of their own natural resources. A classical example of this is the current monitoring of the sea surface temperature in the Pacific. This monitoring has enhanced the capability of long-line fishing boats to maximise their time and productivity on the ocean as they would have a fair idea where the schools of fish would be based on the sea surface temperature.

Monitoring Stations has been put into place by some government so as to monitor the sea level rise and other parameters. Although these have achieved their respective objectives, there is still a tendency to monitor the impact of other factors on the ocean and how can they assist Small Island States to cope with such impacts. Eleven tidal monitoring stations were installed by the government of Australia on 11 Island States in the region to monitor the rise in the sea level. Although this would take over a period of time, the results so far as shown some indication of such an effect.

Conclusions

We have been acquainted with the oceans over a long period of time and we look forward in continuing this acquaintance. Considering the amount of development entering into our region, maybe it time to take stock of what we have and utilise it for our own benefit. In order to utilise it, we need to understand it the way it works and under what constraints are we required to use them.