

# Climate Change and the Threat to Pacific Island Nations

E Ronneberg, Andre Vltchek

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### An Interview with Espen Ronneberg

#### Andre Vltchek

SAMOA — Espen Ronneberg is Climate Change Adviser for the [Secretariat of the Pacific Program on the Environment](#) (SPREP), a regional organization established by the governments of the Pacific region and including all 22 Pacific island countries and territories as well as Australia, France, New Zealand and the United States. Ronneberg was Vice-President of the Kyoto Conference of 1997 that adopted the Kyoto Protocol on the environment.

## The Impact of Climate Change on Pacific Island Nations

Vltchek: What impacts does climate change have on Pacific Island nations?

Ronneberg: The impacts are quite varied. If you look at the physical impacts that climate change is having, you will see temperature increases and sea level rises as the key factors. Changes in atmospheric and ocean temperatures will be having impacts on Pacific Islands through a variety of physical interactions — one of them being changes in precipitation patterns. For example, some parts of the Pacific may have short but more intense periods of rainfall, so the amount of water that falls may increase, while the duration in which it falls decreases, so you get much more rapid rainfall. Combined with periods of drought when the ground dries up, the ability of the ground to absorb water changes. Another

major impact of seawater temperature changes is on the coral reefs, which are fairly sensitive. Currently they exist in a very narrow parameter of temperature resilience. Above certain temperatures they simply die off. That has been seen in a number of places around the Pacific, sometimes resulting in severe coral bleaching. Some coral bleaching can be reversed when the temperature drops again. Sometimes the reef can get re-colonized, but not necessarily by the same species that was there earlier. So there may be impacts on other parts of the ecosystem; for example on certain types of fish that had adapted to living on a particular type of food which will be no longer available. In this way there may be an impact on the food chain.

But the more direct and dramatic impact on the Pacific Islands are the changes in, for example, storm surges and the number and intensity of cyclones in the region. Those are really dramatic, major events that we are seeing in increasing numbers.

Vltchek: What does it all mean practically? We all see these computer-generated images of parts of Manhattan disappearing in one hundred years, parts of Alaska becoming uninhabitable because of water level increase as a result of melting ice. But here in the Pacific some nations are already practically disappearing.

Ronneberg: Some of the atoll countries around the Pacific are no more than a couple of meters above sea level. They are currently experiencing some very serious king tides and storm surges. These are associated with cyclones and storms that may not impact them directly, but the wave patterns they create tend

to go over the top of the atolls leaving salt water behind, which is damaging to crops and to houses and other infrastructure. It also contaminates the fresh water supply if they use well water. Those are some very serious impacts that are actually being observed. In some islands if the sea-level rises by as much as the maximum that is suggested by scientists there wouldn't really be much possibility of saving them.

## Tuvalu Disappearing

Vltchek: If we take the case of Tuvalu, which is probably the most extreme case, how high is the main atoll of that country and how fast is the water rising? How many years does Tuvalu have left before it ceases to exist?



Tuvalu tidal wave

Ronneberg: That's the big question. The climate change scientists of the world are meeting right now in Paris to discuss and revise the parameters of estimates of the sea level — maximum and minimum estimates. But if you look at the maximum potential sea-level rise of five meters, and Tuvalu is mostly two to three meters above sea level, then Tuvalu will be in serious trouble before long. The documented sea-level rise that we have been able to look at in the records, where they do exist, indicates a rise of around 20 centimeters per decade in previous years. But that was in a period when greenhouse gas emissions were

accelerating not at a linear rate, but at an exponential rate. The possibility that the sea level rise and the temperature change were also following an exponential curve as opposed to a linear curve is very real. It's something that we don't know, but we should seriously consider.



Funafuti atoll, Tuvalu.

Vltchek: Are we then talking about some two to three decades before Tuvalu will become basically uninhabitable?

Ronneberg: There are probably some things that can be done to limit the damage in the near to medium term. There are ways to restore and build the resilience of the coral reef or mangrove forests. These provide protection for the coastal zones and perform multiple tasks of benefit to the islands. So some things can be done to stop some of the worst immediate impacts. There are many things we should be doing to clean up the other factors that impact on the coral reef; damage such as poor waste management, sewage and things like that. Those types of activities should be undertaken to protect the reef. When the sea level rises, it has an exponential impact on the height of the waves as they roll in. So you can imagine that a taller wave with more energy will roll further in, and it is likely to cause more damage than the island is currently experiencing. So yes, there is a possibility that

more and more islands will become uninhabitable.



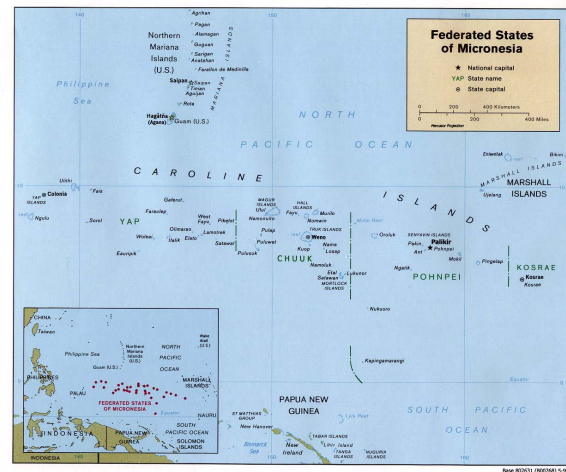
Funafuti Conservation Area, Tuvalu  
Vltchek: Apart from Tuvalu, what other parts of the Pacific are actually in danger? Many Pacific nations consist of small atolls, including Kiribati.

Ronneberg: Basically all of the Marshall Islands, all of Kiribati, all of Tuvalu, parts of the Federated States of Micronesia (particularly Yap and some of the islands of Pohnpei) — actually all over Micronesia.



Marshall Islands. Photograph by Chris Steel-Perkins  
In Palau a number of islands will be very hard hit, particularly their Rock Islands. In the

Solomon Islands and also in some parts of Papua New Guinea some smaller islands will be affected. Tonga and the Cook Islands also have some atolls that would be impacted, in the medium term probably. But the larger islands would also be affected mainly because most of the economic activity is situated in the coastal zones, and also because there may not be any possibility of retreat to higher ground where this exists.



## Micronesia

Vltchek: Are the inhabitants of these countries aware of the situation? Do they attempt to reverse the trend? Of course they cannot themselves reverse the sea level rise, but can they can do anything, and is there determination by the government and inhabitants to protect the islands from virtual disappearance?

## Recognizing the Problem in the Pacific

Ronneberg: I think a number of the Pacific Island countries recognize the problem; I think there is recognition from the government level and there is probably recognition from most of the private sector throughout the Pacific. The degree to which the average person understands climate change or takes a fatalistic view varies throughout the region. I've talked



to a number of people around the area who say, "Oh, climate change will be so bad for us. We will just have to leave." However, with a bit of public awareness and education, a number of communities are actually taking concrete steps to work on alleviating the impact of climate change. SPREP is running a very large project in 11 Pacific island countries called "The Pacific Adaptation to Climate Change Project," which looks at some practical measures like protecting the water supply in four countries; looking at food security in some of the other countries and coastal management in the rest. From the point of view of food security, if you are going to have changes in the rainfall, you have to plan your water resources management accordingly.



People squatting in front of government building, Tuvalu

Vltchek: But eventually, whatever they do, if the ice continues to melt due to rising temperatures, the sea level will rise. Is it worth the fight if they cannot reverse the global trend? If there is no change in attitudes of the major global players, it seems that these nations will disappear anyway.

Ronneberg: Yes, there is this possibility. You are quite right. But we haven't yet reached the point where it's time to give up. I think there is still a window of opportunity to reverse the trend. And if that happens, then Pacific island

countries have to be prepared for at least some degree of climate change. Because the atmospheric system is very sluggish, it takes some time to react to some gases that are emitted today. It will take some time before the impact of these gases is felt in the chemistry of the atmosphere. We have to work quite strongly in the advocacy side to try and force some changes in the global patterns of gas emissions.

Vltchek: Is there any united action taken by the governments and the people in this part of the world? Are Pacific Islanders cooperating with other parts of the world in order to prevent disappearance of the small island nations?

Ronneberg: The Pacific islands are part of the greater Alliance of Small Island States that comprises the Pacific, the Indian Ocean, the Atlantic and the Caribbean. They have been working together since 1990 when the group was formed in the context of climate change negotiations. Pacific Islanders have been quite prominent in that group. The success of the group has been varied. Unfortunately it depends a lot on the people who become involved at any given point and time. The years when the former ambassador of Samoa was in charge of this group were very, very successful years. Currently there is an effort to try to invigorate the group.



Alliance of Small Island States



Vltchek: Yet many islanders are actually leaving. Some Pacific Island Nations have arrangements with major regional players like New Zealand who are willing to accept migrants from Tuvalu and other countries, which are facing the danger of disappearing. Are there any incentives given to Pacific Islanders to stay and fight for the survival of their countries?

Ronneberg: Actually, New Zealand said that they would accept environmental refugees; I don't think Australia said it will, but I am not sure. In terms of incentives to assist the people in protecting their islands, yes, quite a lot of funding has been provided by Australia and New Zealand. Australia had a major project involving Fiji and Kiribati a few years back, funded through the World Bank. It looked at varied impacts of climate changes in a number of different sectors, not just the coastal zones or water resources, but also health issues. Changes in rainfall patterns will affect things like the incidence of dengue fever outbreaks. It is well known throughout the Pacific that when you have some patterns of rain and drought intermittently, it causes tremendous growth in the number of dengue-bearing mosquitoes. Under some climatic scenarios, the impact on the Kiribati health system was really quite devastating. It was shown that under its current setup, the system would not be able to cope. So we are talking of near collapse of the health system under a major dengue fever epidemic. Measures were recommended and there are some efforts on the way to respond to them through funding from Australia and the Global Environment Facility. New Zealand has provided similar funds for a number of projects as well. So they are definitely working to assist the countries, but I think part of the equation is the uncertainty of the exact impact on each country. This is where we just don't have that level of data or that level of accuracy in our data. We can get best estimates, but we can't say for sure how climate change would impact a particular part of an island or even the island

as a whole. Studies show that some very site-specific conditions have to be kept in mind. The slope of the beach front, the health of the reef — there are very specific parameters that may make one island, or one part of an island, more resilient than another part.

### Will the West Act?

Vltchek: How well is the research in this part of the world funded? Do the countries in the West whose consumption is the major cause of global warming consider helping Pacific Islands — the main victims — as a priority? Are they funding massive research in this part of the world?

Ronneberg: I wouldn't call it massive research, but there is a significant amount of research going on. There is a sea level rise project that has been funded by Australia for some time now, which has installed tide gauges in all the Pacific Island countries. This is a long-term project because you need at least 50 years of data to be able to say anything concrete. Currently it has been in operation for 14 or 15 years, so it has some time to go before they can say anything concrete. There are tide gauges in other parts of the world, which have been in operation since the turn of the century. So yes, we have global data but again, it's the "site-specificness" of it that matters. Other on-going research, funded by Americans, is measuring atmospheric radiation and how it might be impacting on climate change and what we can learn from studying different forms of atmospheric radiation. It tells how thick the atmospheric layers are. This is also an on-going project. We have another area of quite great interest in the region — the Pacific Islands Global Climate Observation System. The Atmospheric Radiation Measurement program is centered around improving scientific understanding of global atmospheric processes through field measurements taken by select high quality measuring sites in the tropical west Pacific and other regions around the world.

Vltchek: How is the US government reacting to the plight of Pacific Island Nations? The present administration has been living for many years in denial, playing down any major impact of global climate change on the world. Are there any positive developments? Is there any increase of direct US funding to the projects, which may be able to help to protect this part of the world?

Ronneberg: Not so much directly ... direct US funding is going to research and things like alternative fuels and the impact assessments of direct interest to themselves. Indirectly however there is a lot of funding going to the activities around the island regions through cooperation mechanisms that had been in place for some time, which are not necessarily impacted by the political level of decision making but rather are longstanding cooperation arrangements between, for example, the US National Weather Service and the meteorology stations here in the Pacific. For example, the National Oceanic and Atmospheric Administration (NOAA) of the US does a lot of work monitoring sea level temperatures from the point of view of the fisheries sector. But the data is important for anybody who is doing research on climate change! And it has not been apparently affected by the non-belief in climate change that seems to prevail in Washington.

### **The Kyoto Protocol: too little, too late?**

Vltchek: You have co-chaired conferences, which led to the Kyoto Protocol being signed 10 years ago in 1997. Do you feel disappointed looking back at the way the world reacted to the goals, which you helped to define?

Ronneberg: Well I think that the conference was a success because it was a compromise, the best we were able to make at that time. Disappointment perhaps that while we all compromised - and a lot of us compromised more than we felt that we should have - it was a

little bit unfair that some parties refused to ratify and become bound by the agreement. For example, a number of provisions in the protocol were brought there by a group of countries that had interest in trading emissions. Many of the small island countries were not keen on that; actually many developed countries were not too keen on trading mechanisms, because it was felt that we needed to be sure that emissions were actually being reduced, and that the best way to ensure this was if emissions were reduced within the jurisdiction of the country that had responsibility over those emissions. In the end we accepted these rather complicated mechanisms, and it seemed that they were actually working. However the country that was most keen on these flexible mechanisms then decided not to sign up. So that is perhaps the big disappointment: if only we had known that they wouldn't ratify, then we could perhaps have made it a little bit simpler for the rest of us.

Vltchek: And probably make it more demanding...

Ronneberg: Well yes. That's another interesting question. Because many other countries involved in the process were calling for greater reductions, but only if all industrialized countries would accept greater reductions. Countries could look at their own potential for reductions and perhaps come up with commitments, but they realized that they would have to count on economic costs, particularly if their trade rivals were not bound by similar reductions. Personally I feel that the economic cost argument is not that persuasive. Often you can gain back any investments in energy efficiency and renewable energy in a very short period of time. You have to make the commitment to put it within your investment cycle, that's all. A lot of misinformation was going on out there, relating to costs of taking action; misinformation mainly funded by those whose industries that revolve around petroleum.

Vltchek: There are many scientists who are now saying that the Kyoto Protocol was too little, too late. Several prominent British scientists are claiming that unless severe austerity measures, which are usually implemented during war, are put in place, our world will be facing a catastrophe in the foreseeable future. Do you share these concerns?

### **A window of opportunity?**

Ronneberg: Again, I think that we still have a window of opportunity, but I have to admit that I did have some trepidation over the low level of overall emission reductions that the Kyoto Protocol set. From the small islands, we were advocating a 20 percent cut across the board in the industrialized countries. And what we ended up with was de facto reduction of around five to six percent, depending how you count it. It certainly isn't as much as we had asked for, so it is probably too little in the long term. Whether it's too late ... I am still not fully convinced that it's too late. We have a window of opportunity. And the latest economic review coming out of the UK I think highlights the possibility of avoiding catastrophic costs in the future by taking action now. And it also indicates that the long-term costs of taking action now is not much higher than perhaps one percent of global GDP.

Vltchek: Scientifically, do we know exactly what has to be done in order to reverse the trend? Can scientists define the levels of emissions reduction which could guarantee the halt or reverse of global warming and consequently of rising sea levels?

Ronneberg: You have some different scenarios - maximum and minimum -- but none of them is absolute. None of them are 100 percent accurate. So the whole debate about what is the optimal level is a very difficult one. For example, the European Union has stated that they would like to see an emission scenario that

only gives us two degree warming. Two degree warming would devastate a large number of islands.

Vltchek: Are we then giving up on stopping the trend? Are we just talking about damage control?

Ronneberg: Practically, yes. On the practical level that's what we are doing, although a number of countries are still talking about 'halting and reversing'. I think that we have to admit that we are committed to a certain level of warming and the climate changes that it will bring because there is not the political will or economic will to take the really dramatic action that could reverse the emissions trend.

Vltchek: The Marshall Islands is your adopted country. At the same time it is one of the worst affected countries in the Pacific. What is the reaction of average citizens towards the danger, which brings global warming?

Ronneberg: I think there is a lot of interest in climate change in the Marshall Islands. They have also taken some strong steps to actually reduce greenhouse gas emissions in the country, even though they are very miniscule. There are a number of initiatives using coconut oil as a diesel substitute, for example. They are doing very well. On the preventative side, yes, there have been a number of good measures put in place in some of the islands where the local community, and local government were empowered to take certain steps. But then again, you may sometimes take two steps forward, but one step back. It happens everywhere. Some decisions might be taken which are contrary to what should be done in terms of a longer-term view of climate change scenarios.

Vltchek: But considering that parts of the Marshall Islands can be severely affected by global warming and sea level rise is there a situation of urgency, do people discuss these



issues on a daily basis?

Ronneberg: I think the awareness of the issue is there; it's quite strong. And I think a lot will be happening in next few months, because the President is taking very strong position on climate change. He was in the United States last year, making various representations to some senior lawmakers, talking to them about climate change and the impact it will have on the Marshall Islands. It helps to have that leadership from the top. It's equally important for pressure to come from the grass-roots level.

Vltchek: But isn't there a dilemma? Most of the countries in Micronesia, Melanesia and Polynesia are one way or the other dependent on the rich countries. Under these circumstances, is there any chance that they would be able to exercise effective pressure on the governments and companies of the rich countries, in order to reverse the trend?

Ronneberg: Well, that's the major part of the problem ... the degree to which the countries can persuade their development partners that action needs to be taken. It has been attempted for the last 17 years in the climate change process, with gains and losses. From where I see it, the only thing we can do is to provide information and the resources to the leaders of the region, so they can articulate the factual and realistic view of what climate change will be, what it would mean to the region, and

therefore to explain where action has to be taken. But it has been a long struggle, and it will continue to be tough fight for the foreseeable future.

Vltchek: Do you remain optimistic? Do you believe that the trend can be at least slowed down?

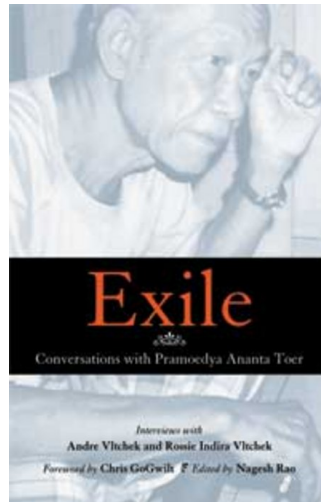
ER: I am optimistic that something can be done. I think there is tremendous potential in switching to bio-fuels, and switching to a more energy efficient usage of resources. Yes, I have seen so many different technologies that are available and less polluting. And I think the potential is there. It is a question of political will and of taking action now.

*Andre Vltchek interviewed Espen Ronneberg for [Asiana Press Agency](#) in Samoa on January 30, 2007. All photographs unless otherwise noted by Andre Vltchek. Posted at Japan Focus on August 25, 2007.*

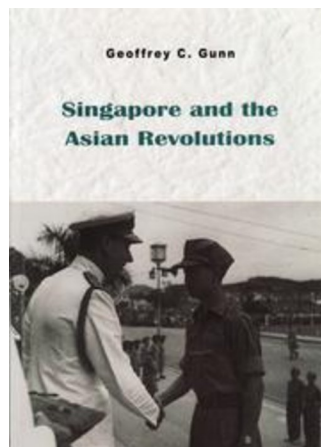
*Andre Vltchek, novelist, playwright, filmmaker and journalist, is Editorial Director of Asiana Press Agency ([www.asiana-press-agency.com](http://www.asiana-press-agency.com)), and co-founder of Mainstay Press ([www.mainstaypress.org](http://www.mainstaypress.org)). Author of several books, including his latest novel "Point of No Return" describing the "New World Order" from the perspective of war correspondents. He is presently working in Asia and the South Pacific and can be reached at [andre-wcn@usa.net](mailto:andre-wcn@usa.net)*



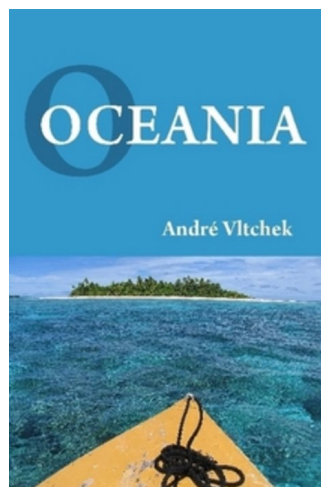
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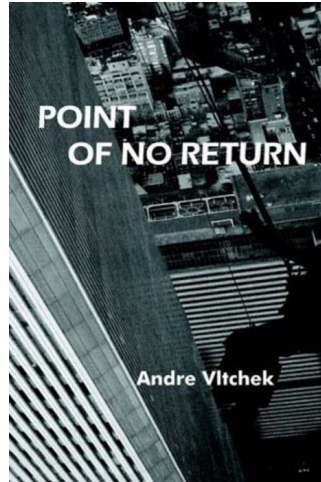
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