

1. Can you briefly introduce yourself?

I am an independent journalist, I worked at Liberation as the director of the Science & Environment department. But I should say that the press in general are less and less interested in environment. Before, I used to be a physicist. Now I carry out many different activities (photography), and most of them has nothing to do with OIF...

2. On your website effetsdeterre.fr, we can learn that you got a doctorate in physics, and then that you did some scientific research. Can you precise the scientific fields on which you worked?

I studied the way light propagates through dust particles . I should say that dust plays a significant role in the solar radiation on the atmosphere, and therefore on the climate. With a laser, we point a sample of dust and analyze how the beam scatters. There is a lot of applications: satellite imaging for military purpose and for weather and pollution forecast just to name a few. I was 20 years ago, in another life.

3. Your profile is interesting. You began your career as a scientist, and then you became a journalist specialized on environment issues. Why the environment especially ?

I didn't really have a long term vision of my career at that time. I was appointed as a teacher at the college, and quickly left. I then met a journalist who suggested me to write some articles on science and computer science for his agency, and I accepted. Journalists must behave like scientists: they must remain skeptic. So the path I took was not really incoherent.

And then I decided to specialize in Science & Environment. Environment and technology have always been a passion: when I was young I used to build small PV cells with a friend of mine. When I integrated Le Monde, these topics were sparsely treated, just maybe the climate a little bit. That was the case not only of Le Monde but of all the French press at that time. We decided with my colleagues in the 2000's to adopt a transversal view on environment in order to deal with scientific, technical economical and social aspects of the issue. I worked really hard in particular on Katrina, the AZF explosion and the Clemenceau's amiante. All these subjects cannot be seen from a single point a view.

4. Let's talk about the core subject of the interview: ocean fertilization. You deal with the subject in several articles. During the last decade , environmental NGOs and medias were more closely interested in the issue raised by numerous events that occurred. Do you know the point of the issue nowadays? Are other scientific research projects on schedule?

The issue is not finished. Geoengineering is going to be increasingly important. People realize that it is not as fancy as they thought. It seems that scientists want to work on the downstream part of the carbon issue. But some malicious people saw economic interests via the carbon market, I am thinking especially of Russ George.

On the other hand, scientific research demonstrate that dust-rich wind can fertilize the sea. For example in the Namibian shores there is a correlation between plankton bloom frequency and sandstorm activity (which carries inorganic particles such as iron to the sea).

But now, what can we do on the industrial scale? This is another question. We know that there is potentially a risk polluting the biosphere. Current evasive juridical frameworks implicitly forbid scientific experiments. Some businessmen have tried to bypass this : they aim at fertilizing the ocean to boost fish output and thus meet global food growing demand. But it didn't work. In 2012, Russ Georges decided to work with Canadian businessmen to carry out OIF experiments offshore British Columbia to boost salmon output. There is a judicial proceeding, because you cannot throw iron sulfate to the sea like that. It seems that Russ George is fired now. The future of his company won't be good. He will maybe come back by a way or another, but not now.

5. To you, are the 'oceanic carbon pump' and the carbon capture methods equivalent issues? Could you develop your opinion on both methods?

On the one hand, putting the carbon under the carpet is a strong indicator that we are not able to reduce atmospheric carbon concentration. On the other hand, we should not forget that coal is one of the fuel the most consumed in the world. Carbon Capture and Storage (CCS) is coupled with coal fired power plants. CCS technology seems to be ensured, but there is always a risk of leakage. The irony is that CO2 injection in the oil industry is daily used to boost wells production which is quite paradoxical.

6. Throughout your opinion on Planktos projects, you question the efficiency of the carbon market to limit GHG emissions. To you, legal measures put apart, is there any efficient commercial method to incentivize companies to emit less?

The carbon market was seen as an acceptable way of reducing GHG emissions, because people don't like rigid juridical frameworks. The EU commission defended and promoted carbon market. This is viable only if the bonds are enough valuable so that firms reduce their emissions, which is not the case now.

The cement industry is a case apart: a large part of their budgets is made of fuel consumption, they do everything on their power to reduce coal production and enhance their efficiency. We can bypass the problem as well by saying that we can replace cement by something else.

The only thing we managed to is to attract malicious people that exploited the flaws of the carbon market. Now nobody wants to respect the rules of the game and prices are too low. But we don't have many choices : geoengineering or juridical framework.

7. I would like now to speak with the scientist that you are. In one of your articles, you mentioned the cancellation by the German government of the iron fertilization experiment in the South of the Atlantic in 2009. According to you, what is the place the authorities must have in relation with scientific research, in particular with large scale experiments?

We can compare this with the GMO controversy which is quite similar: we need research, but at the same time sociological constraints slow it. We don't know everything yet, for example the impact on biodiversity. The Polarstern cargo has been stopped by pressures from NGOs in Germany. We should wear in mind that this cargo has carried out numerous and valuable scientific experiments in the past.

Sorcerer's apprentice or scientist? Should we go ahead? How can we know the marine carbon impacts on climate? Maybe 15 metric tons was too much, I am not an expert on that. What is sure is that sociological pressure can hamper progress on that field. We see that in the GMO controversy as I said. Many people think that what is good is natural. But we must not forget that there are natural vegetal species that are toxic for the environment, and that mankind has always selected and crossed species. For example maize as we know it nowadays is a pure invention of mankind. Some deep ecologists think that the planet would be better without mankind. My philosophy is different. I am interested in environmental issues precisely because mankind is part of it. I don't really find relevant to settle elephants, giraffes and butterflies across the globe. I think I am ecologist, but the ecologists don't really appreciate me when I show them their own contradictions.

8. In one of your articles, you mention fuel overconsumption of cargoes on which shellfish colonies are fixed, or even on the hull your own yacht. Similarly, offshore oil & gas platforms sometimes shelter significant colonies of marine fauna, such as starfish, which seem to adapt to the new environment. The last question is: there is no doubt that the anthropogenic footprint triggers ecological changes, but is it always in a negative way ?

There are a lot of places across the globe where we discharge artificial reefs to boost marine life. Sometime the effects are quite spectacular. It is a way to restore biodiversity for example in the Mediterranean Sea, which has been almost a dead zone. It can boost tourism locally as well. Our footprint is not always harmful, but can unbalance some ecosystems. Our action can help to re introduce extinct species. All is a matter of measure. There has always been species transfers. Rats came to Hawaii by European explorers. With globalization, we multiply these transfers.