

Your Serene Highness,

Excellencies,

Ladies and Gentlemen,

It is a great honor for me to stand in front of you to receive what was the greatest surprise of my life so far. Hastily I must add that it is not only the greatest but also the most positive surprise that caught me totally unprepared. I was indeed so much unprepared that, when I received the notification through email a few weeks back, I thought that it was the usual silly joke of a fellow hydrologist friend of mine. It took me some time to realize that this is not the case. Thank you very much for awarding me with the fourth edition of the prestigious Prince Albert II of Monaco Foundation's Award in the field of water.

I was informed that I was awarded for my scientific contributions in trying to push the frontiers of hydrology somewhat ahead. My humble contributions were basically done in the field of flood hydrology through perhaps [creating](#) a somewhat better understanding of the extremes of the water cycle and their role in the environment with all the complexities involved. Frankly speaking, I am not at all sure that I did anything spectacular except pushing others to do a good job through various international programmes [I was involved in](#) ranging from UNESCO's International Hydrological Programme through the World Water Council, [UN-Water](#) and the World Water Development Report. Next to pushing others the past forty years I was occupied in trying to answer a very simple question: What happens to the rain? A very elementary question indeed, yet I am not able to answer this simple inquiry with full certainty even after forty years of research. Why is that? – you could ask, Ladies and Gentlemen.

The answer is simple: we are grappling with this issue for many years as to what happens to rain, or precipitation, at different scales that is indeed a very complex process and no simple answer exists. The reason behind it is that rainfall-induced hydrological processes are highly non-linear, heterogeneous, non-stationary and contain a great deal of randomness. In spite of all the incredible scientific and technological progress achieved over the past 30 years, particularly through the understanding and modeling of hydrological processes by applying new technologies, such as remote sensing and computer simulation of hydrological phenomena, there [still](#) are a great deal of uncertainties when forecasting floods. And floods are the big killers whose behavior we must be able to forecast to save lives and property. Floods have

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huge impacts in many parts of the world; for instance, they affect about 520 million people and their livelihoods, claiming about 25,000 lives worldwide annually. The annual cost to the world economy of flooding and other water-related disasters, is between \$50 and \$60 billion. In Pakistan alone the disastrous flood last year resulted in \$ 40 billion economic losses. It is the least developed nations that suffer both the adverse economic impacts on development and the high human toll from flooding and that is where assistance is needed to build up local response capabilities. With climate change the probability of occurrence of extreme floods, and for that matter the probability of extreme droughts, will likely increase. This, combined with the effects of sea level rise, will likely have enormous impacts particularly on coastal areas where the majority of humanity will live. While climate variability carries a great deal of potential danger it also adds uncertainties to the existing risks that are generated by the unprecedented population growth and by all its derived changes, such as land-use changes, urbanization and changing migration patterns.

Forty years down the road there will be nine billion human beings in the world; the current world population will be living in cities or in Asia, if you look at it from another point of view. The population growth is going to generate an unprecedented situation making water management one of the most important, if not **the** most important, issue of the 21st Century, ranging from public health issues to security against water disasters. The big challenge is how to mobilize individual, community and government resources in minimizing loss of life, at the same time aiming at environmentally sound sustainable development of flood-prone areas.

Water connects and does not divide. It connects, for instance the three of us here tonight, involved in ocean, biodiversity and water research. It also connects all the natural and social cycles. Therefore, we have to unite our knowledge and make this simple fact recognized from elementary schools to ministerial cabinets for appropriate action. The way to do that is through improved water education at all levels.

Ladies and Gentlemen,

While I am humbled and privileged by this great honour of being given the Prince Albert II of Monaco Foundation's Water Award I would like to invite you all to contribute to these efforts. Invest in water, from education to research and to improved technologies to serve the unserved. For if you invest in water, you invest into peace. And that is a pretty good deal.

Thank you for your attention.