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Communicating natural hazards. The case of marine extreme events and the importance of the forecast's errors.

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Scientific knowledge has to fulfill some necessary conditions. Among them, it has to be properly communicated. Usually, scientists (mis)understand that the communication requirement is satisfied by publishing their results on peer reviewed journals. Society claims for information in other formats or languages and other tools and approaches have to be used, otherwise the scientific discoveries will not fulfill its social mean. However, scientists are not so well trained to do so. These facts are particularly relevant when the scientific work has to deal with natural hazards, which do not affect just a lab or a computer experiment, but the life and fate of human beings. We are actually working with marine extreme events related with sea level changes, waves and other coastal hazards. Primary, the work is developed on the classic scientific format, but focusing not only in the stochastic way of predicting such extreme events, but estimating the potential errors the forecasting methodologies intrinsically have. The scientific results are translated to a friendly format required by stakeholders (which are financing part of the work). Finally, we hope to produce a document prepared for the general public. Each of the targets has their own characteristics and we have to use the proper communication tools and languages. Also, when communicating such knowledge, we have to consider that stakeholders and general public have no obligation of understanding the scientific language, but scientists have the responsibility of translating their discoveries and predictions in a proper way. The information on coastal hazards is analyzed in statistical and numerical ways, departing from long term observation of, for instance, sea level. From the analysis it is possible to recognize different natural regimes and to present the return times of extreme events, while from the numerical models, properly tuned to reproduce the same past ocean behavior using hindcast approaches, it is possible to produce short and long term forecasts. While the statistic of extremes is useful for many stakeholders, short term forecasts could be of importance for the whole society. Whatever the case, the prediction errors have to be emphasizes even more than the forecasts. The most common forecast in terms of general public understanding is the weather prediction. Nowadays, general public knows it well enough to properly deal with the uncertainties, because after so many year of not perfect forecasts, society knows the limits. Other coastal hazards deserve to be presented more carefully, and some successful example of the use of the precautionary principle could be observed, for instance, on the Pacific Tsunami alert system. Nowadays, the preparedness of the coastal population is good enough (even in such big and diverse area) not to be bored to run up the hill, most of the times unnecessarily, because they know the uncertainty and accept it. The key issue we, scientists, have to work better at any level, is the need of properly estimate and communicate the uncertainties of our results, cause they are not obvious nor irrelevant.