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Rogue waves in 2006-2011

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Nowadays rogue waves are frequently registered all over the world by various instrumental measurements (range finders installed on offshore platforms or deployed buoys, SAR image processing, etc.). They are confirmed to exist in both deep and shallow areas of the World Ocean and even at the coast. Usually coastal rogue events result in a short-time sudden flooding of the coast, or strong impact upon the steep bank or coastal structures. The relevant descriptions, although at times suffering from too emotional character, are still very important as they considerably broaden the understanding of possible rogue wave occurrence.

Although there exist hundreds of instrumental freak wave records, the pool of existing data is still insufficient to build reliable statistics and to give a definite answer concerning the nature of rogue waves. Therefore, it is important further to collect and to analyse all existing data of rogue wave events. It can bring us to new ideas of its nature and mechanisms of formation.

In this study the evidence of rogue wave existence all over the world during last years has been collected based mainly on mass media sources. The waves occurred not only in deep and shallow zones of the World Ocean, but also at the coast. From the total number of 131 events reported in 2006-2010, 78 were identified as evidence of rogue waves (which are expected to be at least twice larger than the significant wave height). The background significant wave height was estimated from the satellite wave data. The rogue waves at the coast, where the significant wave height is unknown or meaningless, were selected based on their unexpectedness and hazardous character. In addition, the information on wind speed has been provided when available.

The annual and seasonal statistics of rogue waves in each group and overall statistics of rogue wave occurrence has been discussed. The geography of freak wave events has been analyzed. The occurrence of multiple extreme waves (two, three, four, and several) in deep, shallow water and on the coast has been studied. It is shown that it is essential to consider the rogue wave hazard for shallow and coastal areas, where the major damage has been reported.