

Large or freak waves?

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Freak waves are anomalously large waves that reportedly appear in the middle of a group of otherwise relatively smaller waves. They are a permanent danger to the navigation and are believed to be responsible for the loss of many ships. The difficulties of having an instrument at the right time and position adds speculation on their reality and nature.

In February 2006, while it was crossing the Mediterranean Sea from the African coast towards Barcelona, the cruise ship Voyager was reportedly hit by one or more big waves and suffered substantial damage. The ship survived, but had strong difficulties in limping towards the closest harbour with only one engine at work.

I analyse the physics of freak waves and report about some documented episodes and experimental data. In particular I analyse the wind and wave conditions present in the Mediterranean Sea at the time and location of the Voyager accident. The analysis is done using wind and wave modelling supported by satellite and buoy wind and wave data. Granted the hindcast of the storm, I also analyse the local conditions for the possibility of freak waves.