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Extreme waves in deep water with wind and damping.

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We discuss rogue wave generation
in deep water from the perspective of the focusing
Nonlinear Schr
ödinger equation and some of its
higher order generalizations (HONLS).
For the HONLS equation two features emerge: (a) a chaotic sea
state appears to be an important mechanism for both generation
and increased likelihood of rogue waves; (b) the extreme waves
intermittently emerging from the chaotic background can be correlated
with degenerate homoclinic orbits characterized by maximal coalescence
of their spatial modes. A physically realizable mechanism for
obtaining degenerate multiphase solutions of the HONLS equation
will be examined as well as the effects of wind and wave damping.