

Exercise 2: Extreme wave analysis

Delft Hydraulics Laboratory performed a hindcast study for the Tripoli deep water wave climate and identified the 17 most severe storms in a period of 20 years. The ranked significant wave heights are listed in the table below.

rank i	Significant wave height x_i (m)
1	9.32
2	8.11
3	7.19
4	7.06
5	6.37
6	6.15
7	6.03
8	5.72
9	4.92
10	4.90
11	4.78
12	4.67
13	4.64
14	4.19
15	3.06
16	2.73
17	2.33

Find the design wave height corresponding to a return period of 100 years.

1. Calculate the sample intensity
2. Obtained the experimental cumulative distribution function F
3. Choose the Weibull and the Gumbel distributions and fit the experimental cumulative distribution
4. Compare the goodness of the fit
5. Calculate the wave height corresponding to a return period of 100 years.