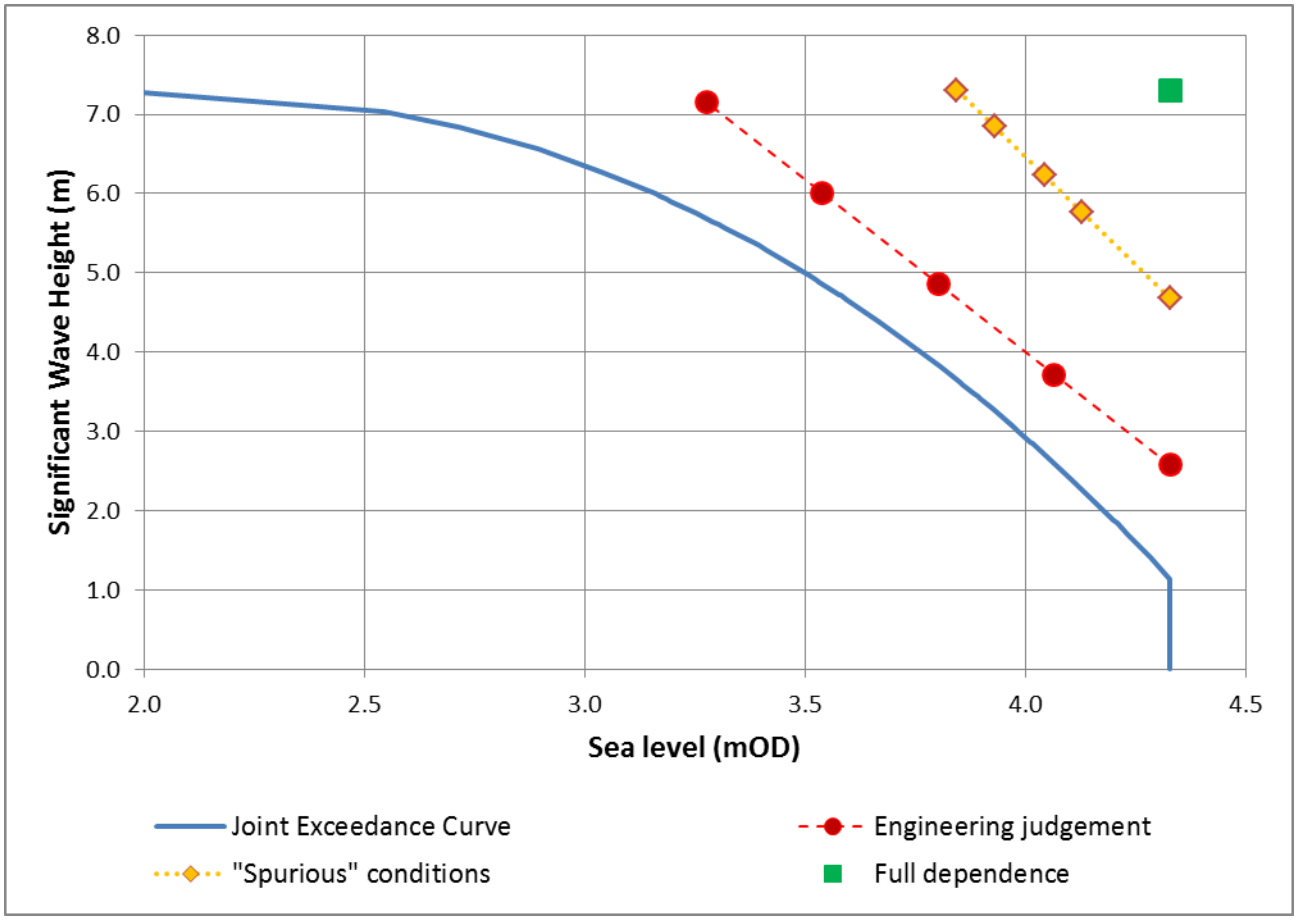


Figure 1. Typical methodologies applied in the late 1980s/early 1990s prior to the introduction of the joint exceedance curve approaches.

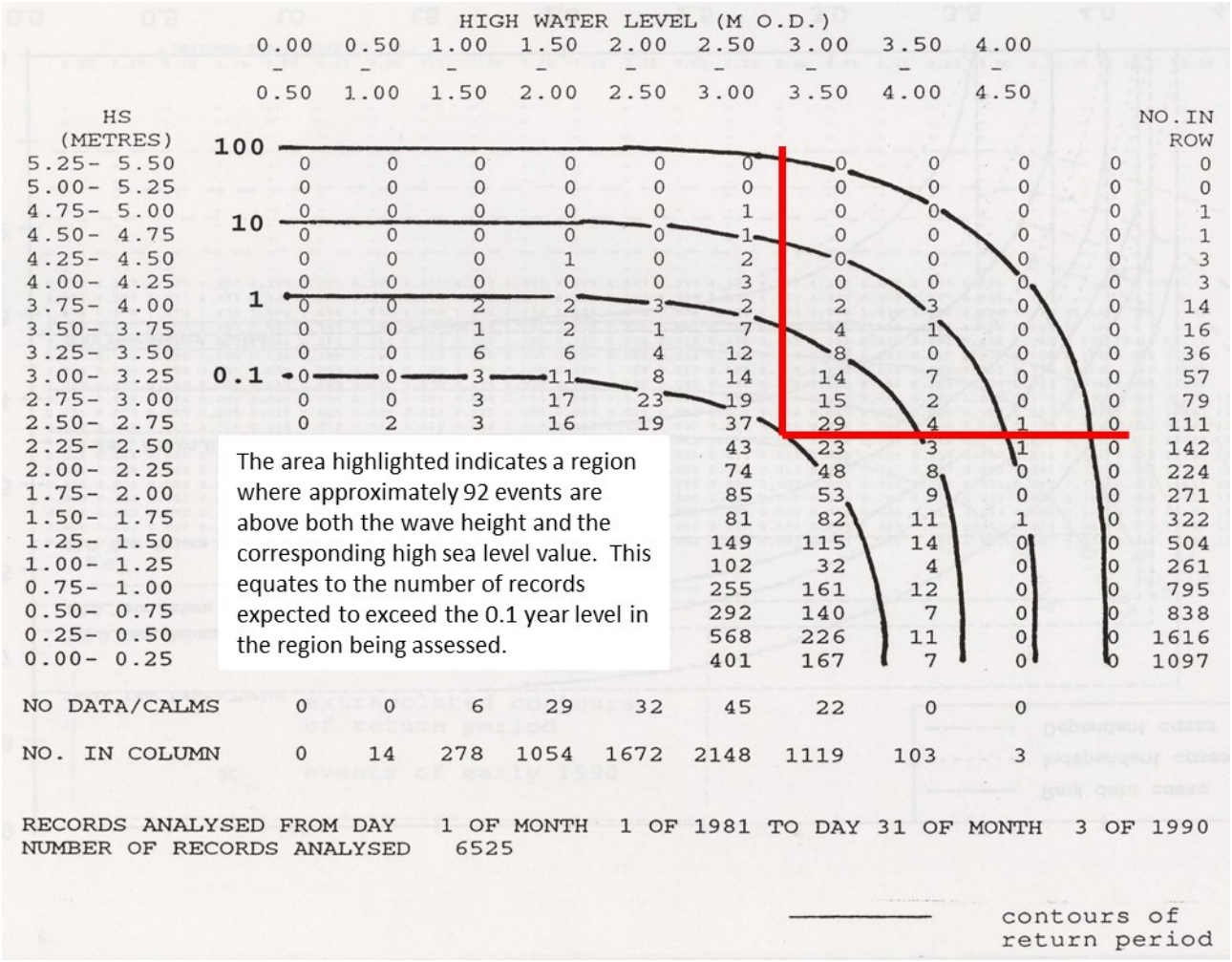


Figure 2. Example of an early use of the CoMJEC approach as applied for Shoreham in Sussex based on 9.2 years of coincident records (after HR Wallingford Ltd 1992).

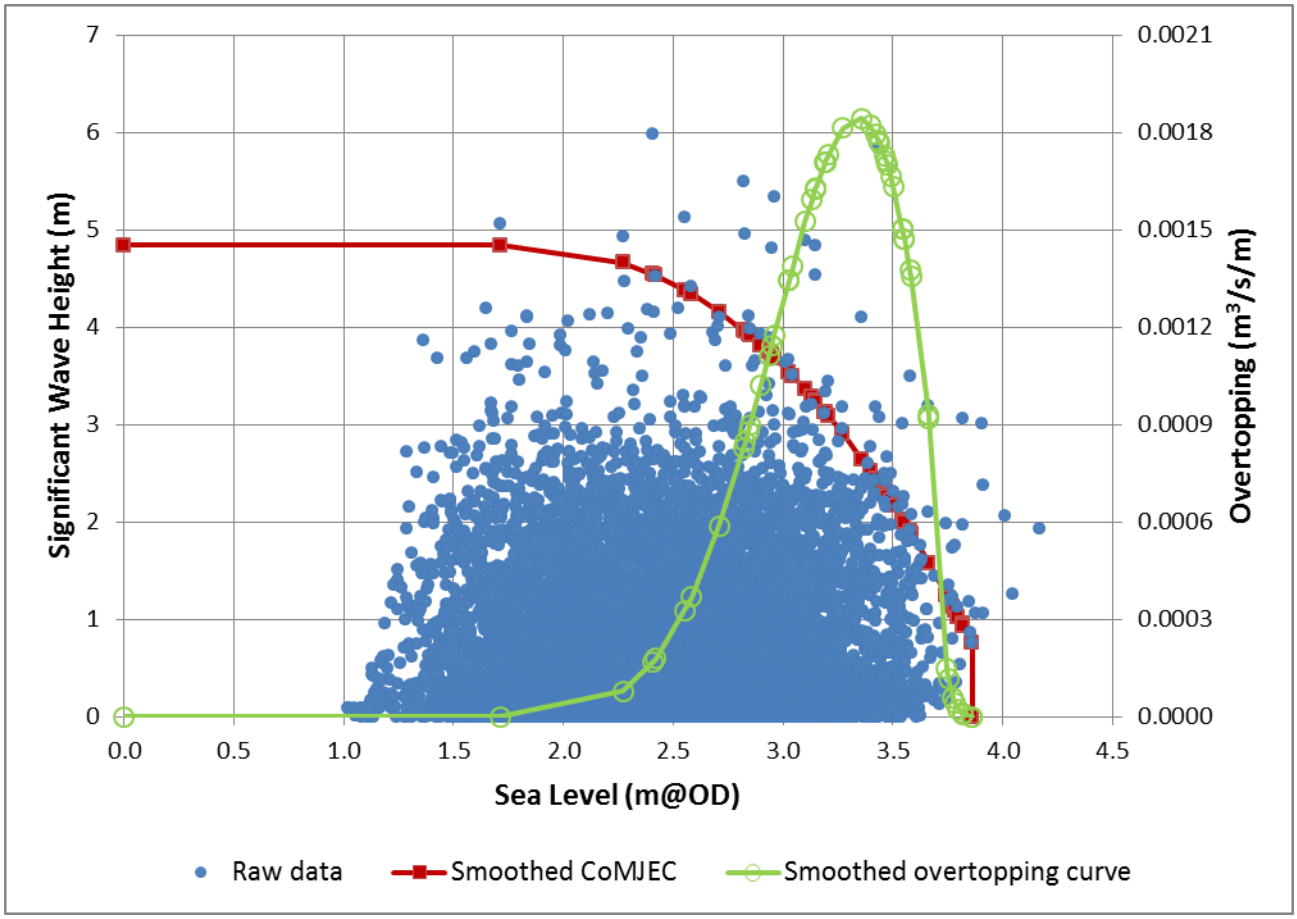
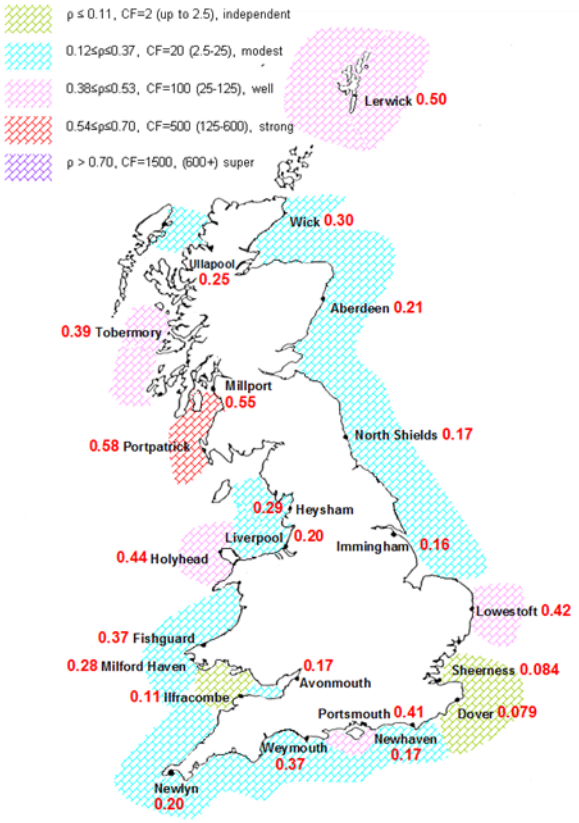
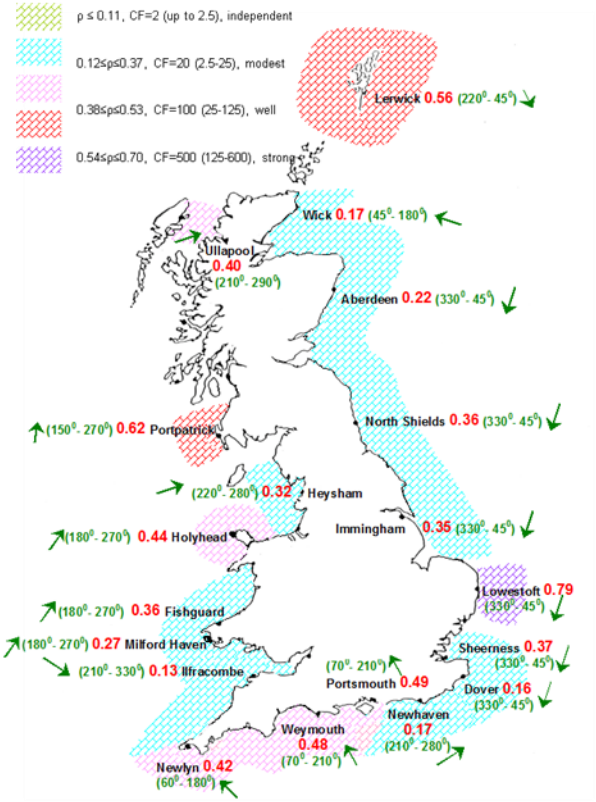


Figure 3. Determination of the peak overtopping rate from a 1-year CoMJEC for a typical sea defence structure.



Simplified approach, where correlation is based on all directions combined (Figure 4.1, Defra 2005). The numbers in both figures indicate the correlation coefficient for a threshold of 0.90.



Desk-study approach, where correlation is determined spatially based on wind direction (Figure 4.2, Defra 2005). The arrows indicate the direction for which the correlation is highest.

Figure 4. Levels of dependency and correlation for the different InJoPA approaches outlined in Defra (2005a).

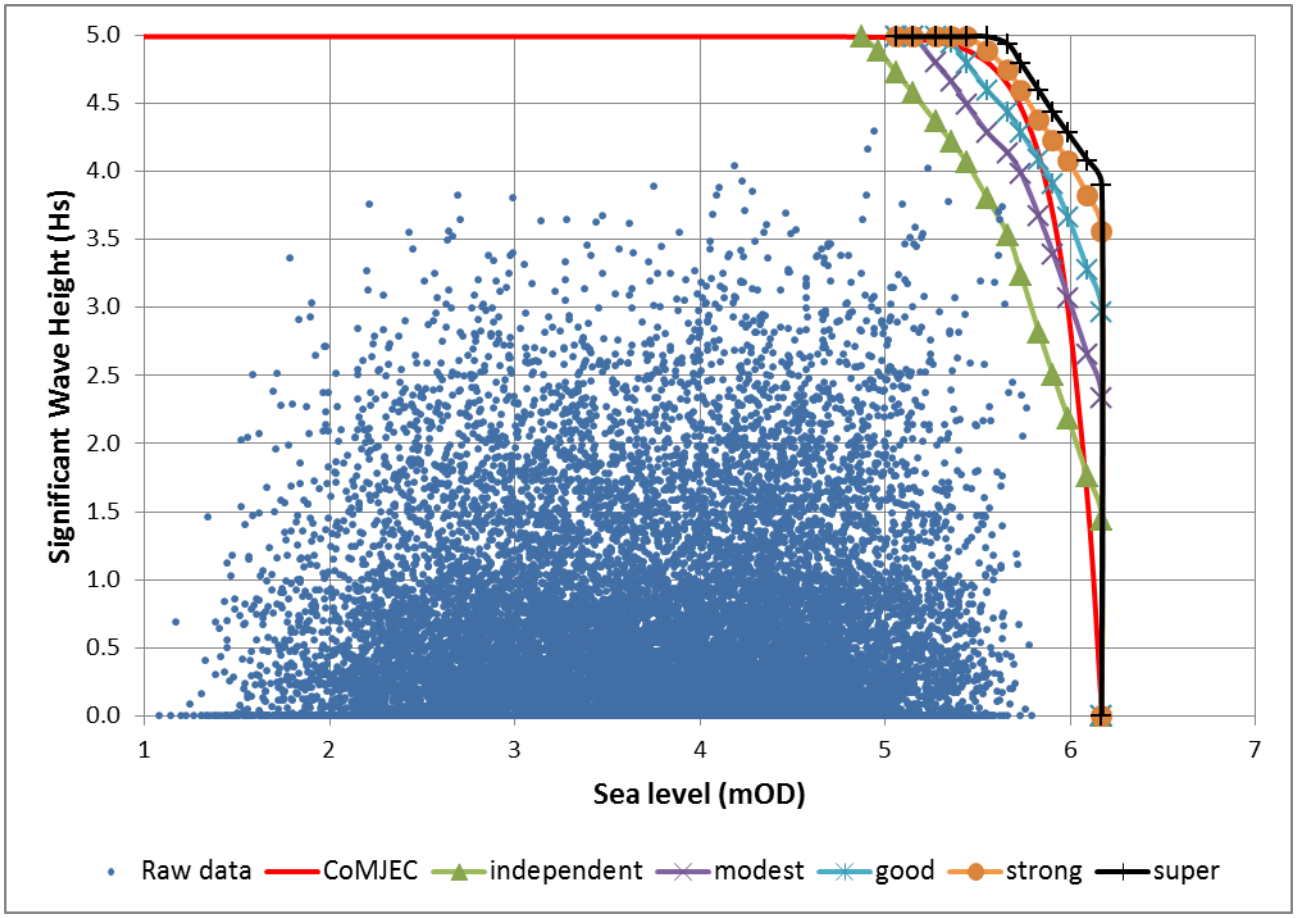


Figure 5. Comparison of the InJoPA simplified approach against the CoMJEC for a 100 year return period condition for an unspecified UK location.

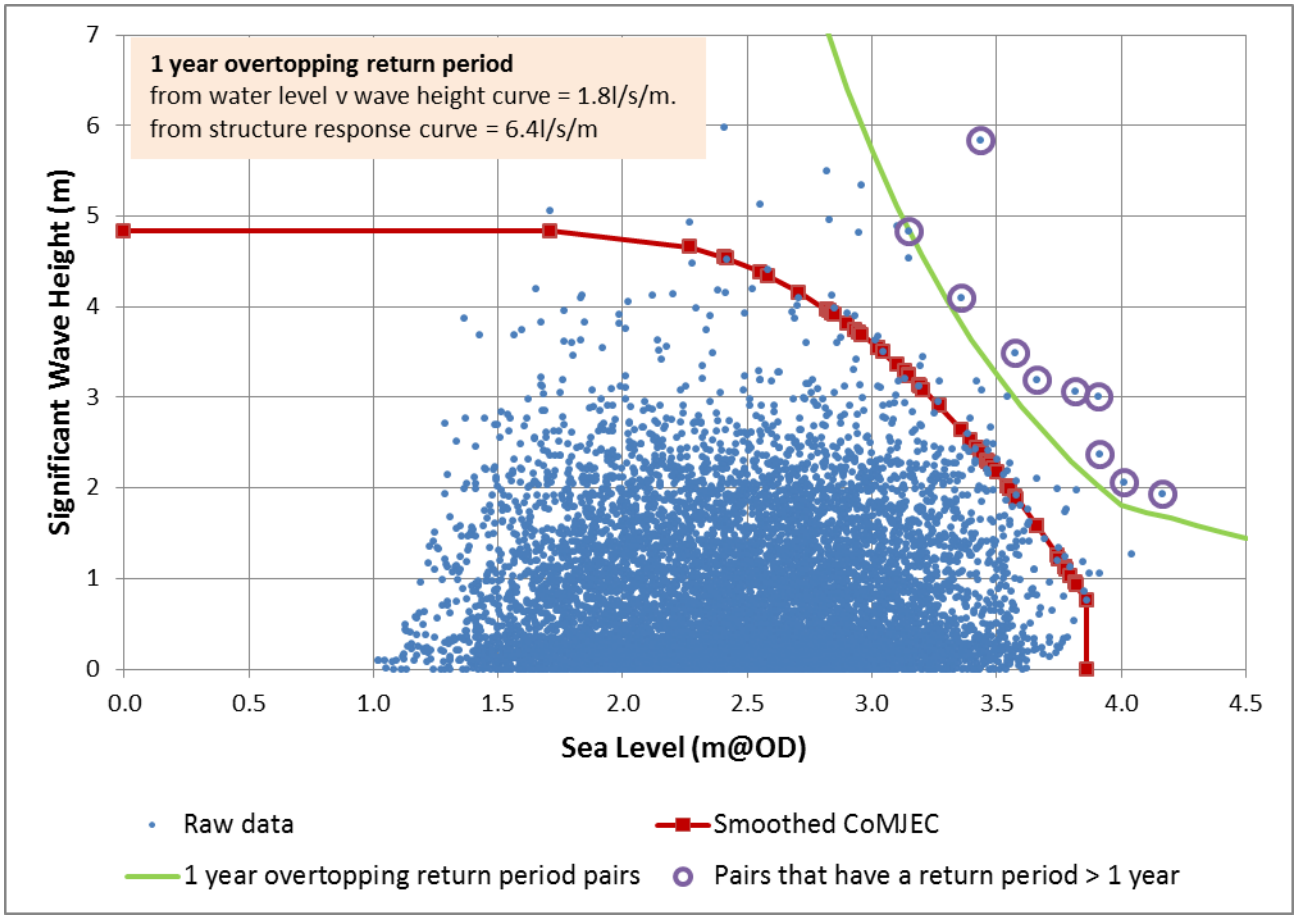


Figure 6. Comparison of the CoMJEC and the response variable approaches in the determination of a 1 year peak overtopping rate.

Approach	Statistical approaches commonly used		Comments
	JS	HT	
Composite Marginal Joint Exceedance Curve (CoMJEC)	yes	no	Heffernan and Tawn (2004) could equally be applied here. However, it is believed that few studies have used this approach to produce joint probability curves.
Intuitive Joint Probability Assessment (InJoPA)	n/a	n/a	The distribution of univariate extremes is a relatively simple task to define, so no specialised statistical methodology is necessary.
Response variable (RV)	yes	yes	

Table 1. Statistical approaches commonly used to define the joint probability relationship.