**Supplementary Material**

**Table A.** Mortality models adopted in this research

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Type | Name | Year of publishing | Function | Number of events based on | Number of data points |
| F1 | Waarts | 1992 |  | 1 | 91 |
|  | Waarts | 1992 |  | 1 | 91 |
|  | Isewan | 1985 |  | 1 | 30 |
|  | Jane | 1985 |  | 1 | 10 |
|  | Boyd | 2010 |  | 1 | 534 |
| F2 | Jonkman | 2009 | \* | 1 | Unknown |
| F3 | Jonkman | 2007 | \* | 6 | 158 |
| F4 | Zhang | 2020 |  | 1 | 3545 |

is probability of mortality, h is the water depth in m and is the rate at which water rise in m/hr.

\* μ and σ are categorized based on water depth, rise rate and velocity. Detailed equations can be found in Appendix A.

The equations of the mortality model in Jonkman et al. (2009):

053 when

(μ=5.20 and σ=2.00) when

Equations of the model in Jonkman (2007):

when and

(μ=1.46 and σ=0.28)

when and and or

(μ=7.60 and σ=2.75)

when or ( and ), and or

**Fig. A**

RFR in regions with different storm climates in CLaNs with different aspect ratios. Colored lines denote three different storm climates. Only F3 and F4 model results are presented here as the same reason explained in section 3.1.1.

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Description automatically generated with medium confidence