**Sensitivity of flood hazard and damage to modelling approaches**

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**Supplementary information 1**

The water depth percentiles presented in Table S1 – S4 are used as indicators of the proportion of the flooded areas at the time of maximum extent, and the extent of shallow water inundation which could cause impacts within the model domain from the HP and WR approach. As an example, the 10th percentile water depth for run 1, Jan 14 using the WR approach is 0.11 m. This indicates that 90% of the inundation in the model domain for this simulation is greater than 0.11 m. Further to this, the 99th percentile water depth for run 1, Jan 14 using the WR approach is 2.02 m. This indicates that 1% of inundation in the model domain exceeds this depth. The 100th percentile (maximum water depth) at the time of maximum inundation is also presented, however it should be noted these depths may represent one grid cell with very deep water, rather than representing inundation across the whole domain.

Table S1: Water depth percentiles for Jan 14 WR

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Percentile value | | | | | |
| Model run | **10** | **50** | **95** | **90** | **99** | **100** |
| 1 | 0.11 | 0.45 | 0.72 | 0.99 | 2.02 | 6.53 |
| 2 | 0.11 | 0.48 | 0.77 | 1.07 | 2.19 | 6.66 |
| 3 | 0.54 | 1.07 | 1.73 | 2.20 | 3.15 | 3.42 |
| 4 | 0.34 | 1.18 | 1.32 | 2.29 | 3.31 | 3.68 |
| 5 | 0.11 | 0.46 | 0.73 | 1.00 | 2.03 | 6.54 |
| 6 | 0.16 | 0.61 | 0.96 | 1.27 | 2.50 | 7.03 |
| 7 | 0.11 | 0.46 | 0.74 | 1.03 | 2.07 | 6.60 |
| 8 | 0.20 | 0.70 | 1.07 | 1.38 | 2.54 | 7.14 |

Table S2: Water depth percentiles for Jan 14 HP

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Percentile value | | | | | |
| Model run | **10** | **50** | **95** | **90** | **99** | **100** |
| 1 | 0.07 | 0.39 | 0.72 | 1.35 | 2.93 | 7.43 |
| 2 | 0.07 | 0.37 | 0.69 | 1.32 | 2.73 | 7.02 |
| 3 | 0.10 | 1.00 | 2.77 | 4.96 | 6.55 | 9.18 |
| 4 | 0.35 | 1.22 | 1.33 | 2.32 | 3.33 | 3.68 |
| 5 | 0.07 | 0.38 | 0.72 | 1.35 | 2.91 | 6.95 |
| 6 | 0.14 | 0.46 | 0.79 | 1.31 | 2.75 | 7.25 |
| 7 | 0.07 | 0.38 | 0.73 | 1.36 | 2.96 | 6.95 |
| 8 | 0.15 | 0.49 | 0.81 | 1.30 | 2.77 | 7.28 |

Table S3: Water depth percentiles for Dec 12 WR

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Percentile value | | | | | |
| Model run | **10** | **50** | **95** | **90** | **99** | **100** |
| 1 | 0.05 | 0.59 | 1.72 | 2.63 | 4.36 | 4.98 |
| 2 | 0.05 | 0.51 | 1.69 | 2.63 | 4.37 | 5.00 |
| 3 | - | - | - | - | - | - |
| 4 | - | - | - | - | - | - |
| 5 | 0.05 | 0.55 | 1.71 | 2.62 | 4.37 | 4.99 |
| 6 | 0.03 | 0.26 | 1.40 | 2.42 | 4.34 | 5.10 |
| 7 | 0.05 | 0.43 | 1.65 | 2.63 | 4.38 | 5.02 |
| 8 | 0.04 | 0.26 | 1.31 | 2.38 | 4.34 | 5.14 |

Table S4: Water depth percentiles for Dec 12 HP

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Percentile value | | | | | |
| Model run | **10** | **50** | **95** | **90** | **99** | **100** |
| 1 | 0.05 | 0.29 | 0.62 | 1.84 | 4.09 | 5.30 |
| 2 | 0.05 | 0.30 | 0.62 | 1.82 | 4.09 | 5.32 |
| 3 | 0.06 | 0.69 | 2.02 | 4.10 | 5.65 | 6.98 |
| 4 | 0.06 | 0.70 | 2.03 | 4.07 | 5.63 | 7.01 |
| 5 | 0.05 | 0.29 | 0.62 | 1.84 | 4.09 | 5.30 |
| 6 | 0.07 | 0.34 | 0.65 | 1.65 | 4.08 | 5.43 |
| 7 | 0.05 | 0.29 | 0.61 | 1.84 | 4.10 | 5.29 |
| 8 | 0.06 | 0.34 | 0.64 | 1.65 | 4.06 | 5.42 |