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Peter Brown

## ***Ventus vehemens et terribilis per totam Angliam: Responses and Reactions to a Short-term Crisis in the British Isles***

**Abstract:** Although many extreme weather events were documented throughout the medieval period, few are known in great detail due to a lack of detailed documentary and archaeological evidence. A case study with a high volume of evidence is the windstorm of 15 January 1362 which primarily affected southern and eastern England. Its effects and the responses of contemporary society in its aftermath are documented relatively widely across the British Isles, with standing building evidence supporting the written evidence at certain locations. As a result, it is possible to trace the short to medium term impact of this event including how the event was perceived, what reactions were taken across the different layers of medieval society and to what extent any preparations were made against ‘the next storm’.

**Keywords:** windstorms, medieval England, standing buildings, repairs, religious interpretations, responses, climate, memory

Extreme windstorms have the capacity to cause severe material damage both to man-made and natural resources. In the aftermath, structures must be repaired, felled trees must be cleared and any casualties require treatment or burial. Directly affected individuals and communities face immediate hardship and longer-term difficulties while for some these events can be fortuitous; builders and roofers may see a sudden spike in business while those with sufficient financial capital may be able to take advantage of low property prices resulting from storm damage. This remains true in the present, as demonstrated by recent events such as the 15–16 October 1987 storm<sup>1</sup> and the winter storms of 2013/14, although the insurance and re-insurance industries have emerged to provide some level of financial security. Such events have complex consequences with multi-layered effects across society but their impact in the past, especially before c. AD 1500, has rarely been considered in detail.<sup>2</sup> This is mainly due to the fact that, although sudden and unusual environmental anomalies such as extreme weather events and

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1 Risk Management Solutions, The Great Storm of 1987: 20–Year Retrospective. RMS Special Report, Newark 2007, pp. 14–15.

2 Some exceptions include: Christian PFISTER et al., The meteorological framework of and cultural memory of three severe winter-storms in early eighteenth-century Europe, in: *Climate Change 101*

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other natural disasters are topics frequently described by medieval chroniclers, it is rare for single events to be described independently by a high quantity of extant written sources.<sup>3</sup> One such case is the extreme windstorm of 15 January (St Maur's Day) 1362 which resulted in severe damage throughout southern England, as well as Ireland and northern France. The following day, the storm proceeded onto the coasts of north-western Germany and Denmark where severe flooding is reported. These floods have become known as the 'Grote Mandrenke'; the great drowning of men,<sup>4</sup> and while the storm's impact in continental Europe has been the subject of previous research,<sup>5</sup> its impact in the British Isles has not been considered in detail beyond the histories of individual towns and buildings where damage is recorded.<sup>6</sup> This contribution assesses the historical and material evidence for the St Maur's Day windstorm in the British Isles, reconstructing its impact whilst seeking to identify how contemporaries perceived and responded to its occurrence. This permits an assessment of the different ways in which 14<sup>th</sup> century English society responded to a short-term environmental crisis.

The impact of the 1362 storm in Britain is primarily known through the descriptions of chroniclers. There is some difficulty assessing to what extent these descriptions are contemporaneous as while some may have been composed soon after the event, others could have been recollected or copied from existing sources decades after the storm. Although not always a good indicator of reliability, the vast majority of sources agree on the date of the storm's occurrence, its timing and direction. Most state it struck on the evening of St Maur's Day (15 January) 1361,<sup>7</sup> a date which

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(2010), pp. 281–310; Rudolf BRÁZDIL/ Petr DOBROVOLNÝ, History of strong winds in the Czech lands. Causes, fluctuations, impacts, in: *Geographia Polonica* 74 (2001), pp. 11–27.

3 Exceptions include the 1333 flood of the Arno in Florence, for which see Gerrit J. SCHENK, '... prima ci fu la cagione de la mala provedenza de' Fiorentini ...' Disaster and 'Life World' – Reactions in the Commune of Florence to the Flood of November 1333, in: *The Medieval History Journal* 10 (2006), pp. 355–386, as well as the Carinthia Earthquake of 1348, for which see Christian ROHR, Man and Natural Disaster in the Late Middle Ages. The Earthquake in Carinthia and Northern Italy on 25 January 1348 and its Perception, in: *Environment and History* 9 (2003), pp. 127–149.

4 Nils HIBEL/ Bjørn POULSEN, *The Danish Resources c. 1000–1550*, Leiden 2007, pp. 47–48.

5 Maria K. Elizabeth GOTTSCHALK, *Stormvloeden en riveroverstromingen in Nederland (I de periode vóór 1400)*, Assen 1971, pp. 368–378; Franz MAUELSHAGEN, Disaster and Political Culture in Germany since 1500, in: Christof MAUCH/ Christian PFISTER (eds.), *Natural Disasters, Cultural Responses. Case Studies toward a Global Environmental History*, Lanham 2009, pp. 41–75, here pp. 49–50; Hanna HADLER et al., Geoarchaeological evidence of marshland destruction in the area of Rungholt, present-day Wadden Sea around Hallig Südfall (North Frisia, Germany), by the Grote Mandrenke in 1362 AD in: *Quaternary International* 473 A (2018), pp. 37–54.

6 For previous work on the storm see: Charles E. BRITTON, *A Meteorological Chronology to A.D. 1450*, London 1937, p.144; Michael HUNT, The Great Storm of 15 January 1362, in: *Journal of Meteorology* 5 (1980), pp. 61–63; Michael ROWE, The Storm of 16<sup>th</sup> October 1987 and a brief comparison with three other historic gales in southern England (1362, 1662, 1703), in: *Journal of Meteorology* 13 (1988), pp. 148–155.

7 Examples include: *Chronicon Abbatie de Parco Lude. The Chronicle of Louth Park Abbey*, ed. Edmund VENABLES, *Horncastle* 1891, pp. 40–41; *Chronica Johannis de Reading et Anonymi Cantuariensis*,

is also found in a contemporary legal document which references the storm.<sup>8</sup> Note that this date corresponds to 15 January 1362 by modern reckoning as, during the medieval period, the new year was commonly counted from Lady Day (25 March) rather than 1 January.<sup>9</sup> Outliers include ‘Knighton’s Chronicle’ which dates the storm to St Anthony’s Day (17 January),<sup>10</sup> probably a simple lapse of memory, and the Irish ‘Annals of the Four Masters’ which gives the year as 1363.<sup>11</sup> Errors of misdating, usually to one year before or after, are very common with this category of evidence<sup>12</sup> and whilst the Irish source could document a different storm in the following year, further evidence demonstrating that the St Maur’s Day storm certainly affected Ireland<sup>13</sup> suggests this is not the case. The timing of the event can be narrowed with some precision as a number of sources indicate the storm struck at evensong/vespers or around 6pm.<sup>14</sup> The majority of continental sources on the other hand, document the storm occurring on St Marcellus Day (16 January).<sup>15</sup> It therefore appears that after passing over England on the evening of 15 January, the storm arrived at the North Sea coasts of the Low Countries, Germany and Denmark early the following morning. This fits well with a chronology based on the speeds and progression of comparable modern storms such as the Great Storm of 1987, 15–16 October 1987, or the St Jude’s Storm, 28 October 2013. Had these storms arrived over England at 6pm, they would have reached the German and Danish coasts around 5am the following morning.<sup>16</sup> Although a number of chroniclers state that the storm continued for 7 days after St Maur’s Day,<sup>17</sup> this is almost certainly an exaggeration although the weather may have remained inclement during this period. All of the chroniclers who discuss the

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1346–1367, ed. James TAIT, Manchester 1914, p. 150; *The Brut or The Chronicles of England*. Part I, ed. Friedrich W. D. BRIE, London 1906, p. 315.

**8** London, The National Archives of the UK, JUST 2/18/58.

**9** Christian PFISTER et al., *Winter Severity in Europe. The Fourteenth Century*, in: *Climate Change 34* (1996), pp. 91–108, here p. 96.

**10** Henricus Knighton, *Knighton’s Chronicle 1337–1396*, ed. Geoffrey H. MARTIN, Oxford 1995, p. 185.

**11** John O’DONOVAN, *Annals of the Four Masters*, vol. 3, Dublin 1856, p. 625.

**12** PFISTER (note 9), p. 96.

**13** *Chartularies of St. Mary’s Abbey, Dublin: with the register of its house at Dunbrody, and Annals of Ireland*. Vol. 2, ed. John T. GILBERT, London 1884, p. 396.

**14** *Eulogium (Historiarum sive Temporis): Chronicon ab orbe condito usque ad annum domini M.CCC. LXVI*. Vol. 3, ed. Frank S. HAYDON, London 1863, p. 229; John Capgrave, *The Chronicle of England*, ed. Francis C. HINGESTON, London 1858, p. 221; Piers Plowman. A Parallel-Text Edition of the A, B, C and Z Versions, ed. Aubrey V. C. SCHMIDT, Kalamazoo 2011, pp. 176–177.

**15** GOTTSCHALK (note 5), pp. 371–376; Curt WEIKINN, *Quellentexte zur Witterungsgeschichte Europas von der Zeitwende bis zum Jahre 1850: Hydrographie*. Teil 1, *Zeitwende – 1500*, Berlin 1958, pp. 232–235.

**16** Data from [www.europeanwindstorms.org](http://www.europeanwindstorms.org). Accessed [05/05/2016], Copyright Met Office, University of Reading and University of Exeter. Licensed under Creative Commons CC BY 4.0 International Licence: [http://creativecommons.org/licenses/by/4.0/deed.en\\_GB](http://creativecommons.org/licenses/by/4.0/deed.en_GB).

**17** TAIT (note 7), p.151; BRIE (note 7), p. 315.

direction also agree that the storm came from the south or southwest.<sup>18</sup> The evidence therefore supports the identification of the St Maur's Day event as a high-magnitude extratropical windstorm which tracked from west to east, from southwest England across to the east coast, on the night of 15 January 1362 before proceeding across to the North Sea coasts of continental Europe early the following morning.

The impact of the storm in the affected regions can be gauged through the textual descriptions. Most of the chronicles provide qualitative statements describing widespread damage to structures and the felling of trees.<sup>19</sup> A typical example is the 'Chronicon Angliae Petriburgense' which describes damage to houses and mills as well as the felling of individual trees in addition to large tracts of woodland.<sup>20</sup> In some cases, local details such as the damage received by specific, and often prominent, buildings are included such as at the Dominican Friary in Dublin,<sup>21</sup> the Augustinian Friary in London, the bell towers of Bury St Edmunds, Suffolk, and Norwich,<sup>22</sup> Norfolk, as well as the gatehouse of the Benedictine Abbey of St Albans,<sup>23</sup> Hertfordshire. Some chroniclers provide anecdotal accounts of local occurrences. For example, at St Augustine's Abbey in Canterbury, Kent, a chaplain was killed after seeking shelter from the storm when a roof beam of the chapel of St Pancras was blown down into the nave.<sup>24</sup> Similarly, in London, an Augustinian friar was reportedly blown through a window by a particularly strong gust.<sup>25</sup> Such incidents, together with the recorded structural damage, would correspond to a storm of force 11–12 on the Beaufort Scale. This, together with the use of terminology describing the storm as an exceptional and unprecedented occurrence<sup>26</sup> makes it clear that this event was well beyond what contemporaries considered 'normal' during a typical winter storm season.

Beyond written chronicles, a number of other types of document provide evidence of the damage wrought by the storm. Many of these sources, however, only date the storm to the year 1362 so it must be assumed that they deal with the 15 January

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**18** Adamus Murimuthensis, *Adami Murimuthensis Chronica*, ed. Thomas HOG, London 1846, p. 196; TAIT (note 7), p. 150; VENABLES (note 7), p. 41.

**19** For example: *Polychronicon Ranulphi Higden Monachi Cetreensis*, Vol. 8, ed. Joseph R. LUMBY, London 1882, p. 412.

**20** *Chronicon Angliae Petriburgense*, ed. John A. GILES, London 1845, p. 172: *Domos et molendina innumera prostravit, arbores et integras silvas in multis locis a fundamentis evulsit.*

**21** See GILBERT (note 13), p. 396.

**22** *The Anonimale Chronicle 1333 to 1381*, ed. Vivian H. GALBRAITH, Manchester 1927, p. 50.

**23** *Gesta Abbatum Monasterii Sancti Albani*, Vol. 3, A.D. 1349–1411, ed. Henry T. RILEY, London 1869, p. 387.

**24** *William Thorne's Chronicle of Saint Augustine's Abbey Canterbury*, ed. A. Hamilton DAVIS, Oxford 1934, p. 564.

**25** *Chronicon Anonymi Cantuariensis*, ed. Charity SCOTT-STOKES/ Chris GIVEN-WILSON, Oxford 2008, p. 119.

**26** *Ibid.*, p. 118: *incepterunt tempestates horribiles numquam alias uise uel audite et uentorum turbines in Anglia.* MARTIN (note 10), p. 184: *orta est horribilis et nimis ualida tempestas uentorum, qualem nunquam retroactis temporibus non creditur a plebe fuisse uisam.*

event rather than any separate storms which occurred that year. Manorial accounts such as those from Thaxted, Essex, where two windmills and a grange were heavily damaged,<sup>27</sup> highlight the damage faced in affected rural areas. Damage was also felt at high status residences as is demonstrated by the works required at the Royal residence of Clarendon, Wiltshire, as a result of storm damage which particularly damaged the park pale.<sup>28</sup> The coroner's rolls provide further evidence of casualties, describing how two parishioners were killed inside the church at Longstanton, Cambridgeshire, when a tree was blown against the church, causing masonry to fall down upon them.<sup>29</sup> A particularly useful source are the *Registers of the Black Prince* which cover the administration of the estates held by the heir to the throne, Prince Edward. These provide details of felled trees in the Prince's parks as well as damage to housing, mills, manors and infrastructure across his estates.<sup>30</sup>

Where the textual evidence describes damage at specific, named structures and these survive into the present, standing building analysis can provide further evidence of the storm's impact. A good example is Norwich Cathedral, where the Romanesque arches on the ground and first floors are superseded by a later Gothic clerestory.<sup>31</sup> Although later remodelling has taken place, this stylistic disjuncture (Figure 1) must be a direct result of the storm which, in blowing from the east, caused the spire to fall into the presbytery, destroying the roof and upper stories in this area, a detail corroborated by the written evidence which records severe damage to the presbytery.<sup>32</sup> Similarly, the gatehouse at St Albans, which was built in the aftermath of the storm on the site of an earlier gatehouse and almonry which had been heavily damaged,<sup>33</sup> contains structural elements which predate the current structure. Triple-roll ribs in the vaulting of one of the ground floor chambers, for example, are most likely 13<sup>th</sup> century in date. A plausible scenario, therefore, is that these fragments belonged to the earlier structures, which were destroyed or heavily damaged by the storm and later re-used in the construction of the new gatehouse.<sup>34</sup>

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**27** Kenneth C. NEWTON, *Thaxted in the Fourteenth Century. An account of the manor and borough, with translated texts* (Essex record office publications 33), Chelmsford 1960, pp. 71, 75.

**28** London, The National Archives of the UK, E 101/460/2.

**29** In this account the date of the *magna tempestas* is given as the Saturday after the feast of St Hilary (15. January 1362): London, The National Archives of the UK, JUST 2/18/58.

**30** Register of Edward the Black Prince, Part IV, England, A. D. 1351–1365, ed. Michael C. B. DAWES, London 1933, pp. 416, 420, 426, 429, 431; Register of Edward the Black Prince, Part II, Duchy of Cornwall, A. D. 1351–1365, ed. Michael C. B. DAWES, London 1931, pp. 188–189.

**31** Francis WOODMAN, *The Gothic Campaigns*, in: Ian ATHERTON et al. (ed.), *Norwich Cathedral. Church, City and Diocese, 1096–1996*, London, Rio Grande 1996, pp. 179, 192.

**32** Henry WHARTON, *Anglia Sacra sive Collectio Historiarum*, vol. I, London 1691, p. 415.

**33** Rosalind NIBLETT/ Isobel THOMPSON, *Alban's Buried Towns. An Assessment of St Albans' Archaeology up to AD 1600*, Oxford 2005, p. 254.

**34** ROYAL COMMISSION ON HISTORICAL MONUMENTS (ENGLAND) (ed.), *A Guide to Saint Albans Cathedral*, London 2<sup>nd</sup> ed. 1982, p. 31.



**Figure 1:** The presbytery of Norwich Cathedral. Although the current clerestory was remodelled in the 15th century, the disjuncture between Romanesque and gothic architecture above the first floor is a direct result of damage caused on St Maur(us)'s Day 1362. (Photograph by the author).

In some cases, however, archaeological and standing building evidence cannot substantiate the written record. At Rochester Castle, Kent, for example, although extensive repairs took place between 1367 and 1370 motivated by storm damage, the castle had been in a state of disrepair and neglect since a siege in 1264.<sup>35</sup> Thus, although documentary evidence does describe the damage suffered in the storm<sup>36</sup> and the 14th century repairs do seem to have particularly focussed on the east curtain wall and the two towers in this area,<sup>37</sup> disentangling in detail the damage which occurred in 1362 as opposed to existing issues of disrepair and neglect proves impossible. Similarly, at Portchester Castle, Hampshire, although extensive works were instigated on 20<sup>th</sup> January 1362, a major part of which were roofing repairs employing plumbers and tilers, this cannot be correlated with the surviving archaeological evidence.<sup>38</sup> Furthermore, it is important to acknowledge the significant caveats which accompany any interpretation of material evidence connected to historically documented events such as the 1362 storm. Even in cases where archaeological or standing remains appear to bear out the scenario described by written sources, other interpretations remain viable. An example comes from the historically attested fire, ignited by a lightning bolt, at the Abbey of Strata Florida, Ceredigion, Wales, in 1284.<sup>39</sup> Although 19<sup>th</sup> century archaeological excavations at the site uncovered melted roofing lead, a detail specifically mentioned in the historical sources documenting the blaze,<sup>40</sup> this cannot be definitively linked to the 1284 event as, in addition to the possibility of an undocumented fire, the historical record attests to a number of other possible fire events. As a result, while much of the damage visible in standing buildings relating to the 1362 storm seems to closely match the damage reported by contemporary sources, it should be remembered that other explanations for these phases of damage and repair remain feasible.

One building which goes unmentioned by the documentary record in connection with the St Maur's Day storm can also be linked through a combination of standing building analysis and dendrochronological evidence. St Mary's Church, Ashwell, Hertfordshire, contains a graffito at the base of the tower which mentions the storm (Figure 2). The graffito is c. 2m above ground level and would have been challenging to carve from the current floor level. This fact, taken together with

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**35** Reginald ALLEN BROWN, *Rochester Castle*, London 1969, pp. 18–19.

**36** Alfred E. STAMP, *Calendar of Inquisitions Miscellaneous (Chancery)*, Volume III, London 1937, p. 282.

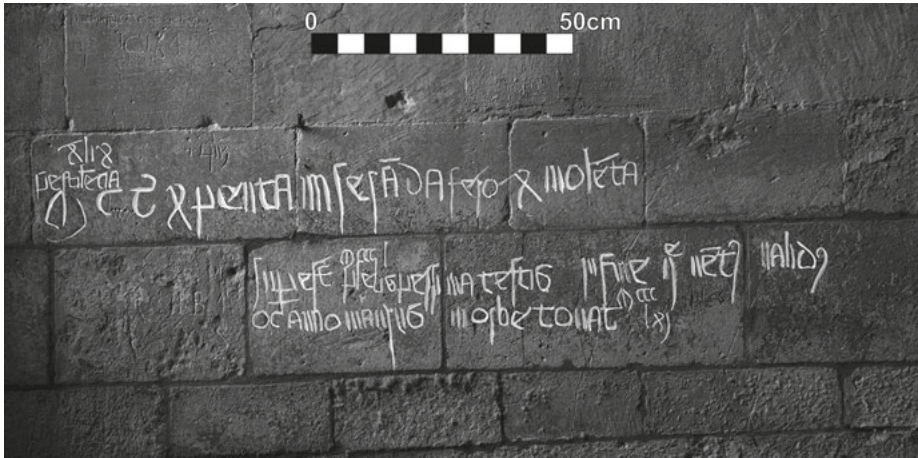
**37** ALLEN BROWN (note 36), p. 29.

**38** Barry CUNLIFFE/ Julian MUNBY, *Excavations at Portchester Castle*, Volume IV: Medieval, the Inner Bailey, London 1985, pp. 145, 302.

**39** *Annales Cestrienses: or Chronicle of the Abbey of S. Werburg, at Chester*, ed. Richard C. CHRISTIE, London 1887, pp. 115–117.

**40** Stephen W. WILLIAMS, *The Cistercian Abbey of Strata Florida: its history, and an account of the recent excavations made on its site*, London 1889, pp. 153–154.





**Figure 2:** The graffito at the base of the tower of St Mary’s Church, Ashwell, Hertfordshire. The inscription (highlighted) begins by describing the Black Death in 1350 with the last line quoting a line of popular verse which commemorates the storm of 1362 on the day of St Maur(us) (15 January). This can be translated as: “In the end, a mighty wind, Maurus, thunders in this year in the world, 1361” (Violet PRITCHARD, *English Medieval Graffiti*, Cambridge 1967, p. 182.) (Photograph by the author).

other nearby graffiti in the tower, which records wage information,<sup>41</sup> suggests that soon after the storm a number of masons were at work in the tower, probably with scaffolding in place. Externally, a fresh phase of construction above the first storey is visible and structural timbers from the tower have been dendrochronologically dated to 1365–1376.<sup>42</sup> As the chancel of the church was completed in 1368, and work on the tower continued until 1381,<sup>43</sup> it is possible, although unconfirmed, that the unfinished building was damaged by the St Maur’s Day storm, perhaps necessitating repairs and delaying the completion of the church.

Dendrochronological dating of timbers from contemporary structures may indicate a number of additional cases of storm damage. The tower of the church of St Peter and St Mary in Stowmarket, Suffolk, for example, is constructed around an internal timber framework felled in one phase during 1362/3.<sup>44</sup> That this is likely to have been a repair rather than a fresh construction is indicated by a will from 1453 which describes it as “the new tower”.<sup>45</sup> Similarly, at St Patrick’s Cathedral, Dublin, only 750m from

<sup>41</sup> Matthew CHAMPION, *Medieval Graffiti. The Lost Voices of England’s Churches*, London 2015, p. 209.

<sup>42</sup> Dan MILES/ Michael WORTHINGTON/ Martin BRIDGE, *General List*. Oxford Dendrochronology Laboratory, in: *Vernacular Architecture* 34 (2003), pp. 109–113, here pp. 110–111.

<sup>43</sup> Nikolaus PEVSNER, *The Buildings of England. Hertfordshire*, London 1977, p. 74–75.

<sup>44</sup> Robert E. HOWARD et al., Nottingham University Tree-Ring Dating Laboratory Results. *General List*, in: *Vernacular Architecture* 25 (1994), pp. 36–40, here p. 38.

<sup>45</sup> Nikolaus PEVSNER, *The Buildings of England. Suffolk*, Harmondsworth 1974, p. 443.

the documented storm damage at the Dominican Friary,<sup>46</sup> a timber has been dated to winter 1361/1362, the season of the storm.<sup>47</sup> In this case the damage itself has been interpreted as the result of a fire in the 1350s but the timber could have come from a tree felled by the storm. Another possible candidate is a low-status house from Long Wittenham, Oxfordshire, the timbers of which date to c. 1363.<sup>48</sup> While this close dating alone is inconclusive, documentary evidence does record damage to the local parish church of St Mary in the St Maur's Day storm<sup>49</sup> strengthening the possible identification of the house as a structure which either required repair or reconstruction as a result of storm damage.

Using the many different strands of evidence described above, although not all known cases are discussed, it is possible to plot the known points where damage was felt on the night of 15 January 1362. This is presented below (Figure 3, 1) and shows both a confidence rating, certain (red), high confidence (orange) and low confidence (yellow). 'Certain' locations are those where documentary evidence specifically describes damage on 15 January 1362 while those in the 'high confidence' category are locations where storm damage is reported in 1362, with the exact date of the storm not given. At those locations in the 'low confidence' category are the uncertain locations identified based on close dendrochronological dating, discussed above, and sites where storm damage, and often corresponding repairs, are documented in the immediate aftermath of the 1362 event but no explicit link is made in the sources to the St Maur's Day storm itself. In addition, the type of evidence presented (historical, structural, documentary or a combination) is shown in (Figure 3, 2). Although the available evidence does not permit many sites to be definitively attributed to the St Maur's Day storm, the evidence certainly attests to extensive damage throughout eastern England. According to a kernel density plot of these data (Figure 3, 3), London and its surroundings register as the epicentre of the damage and indeed urban areas must have focussed the damage with their higher densities of population and structures. It must be remembered however, that only the density of known, documented damage rather than the density of the total damage which occurred is mapped and damage was more likely to be recorded in areas of high population. This may explain why there is no known data from south Wales and little evidence from Cornwall and Devon although the storm almost certainly affected these areas. The known area of effect, and particularly the areas where damage certainly occurred, on the other hand, covered some of England's most populous counties (Figure 3, 4), especially

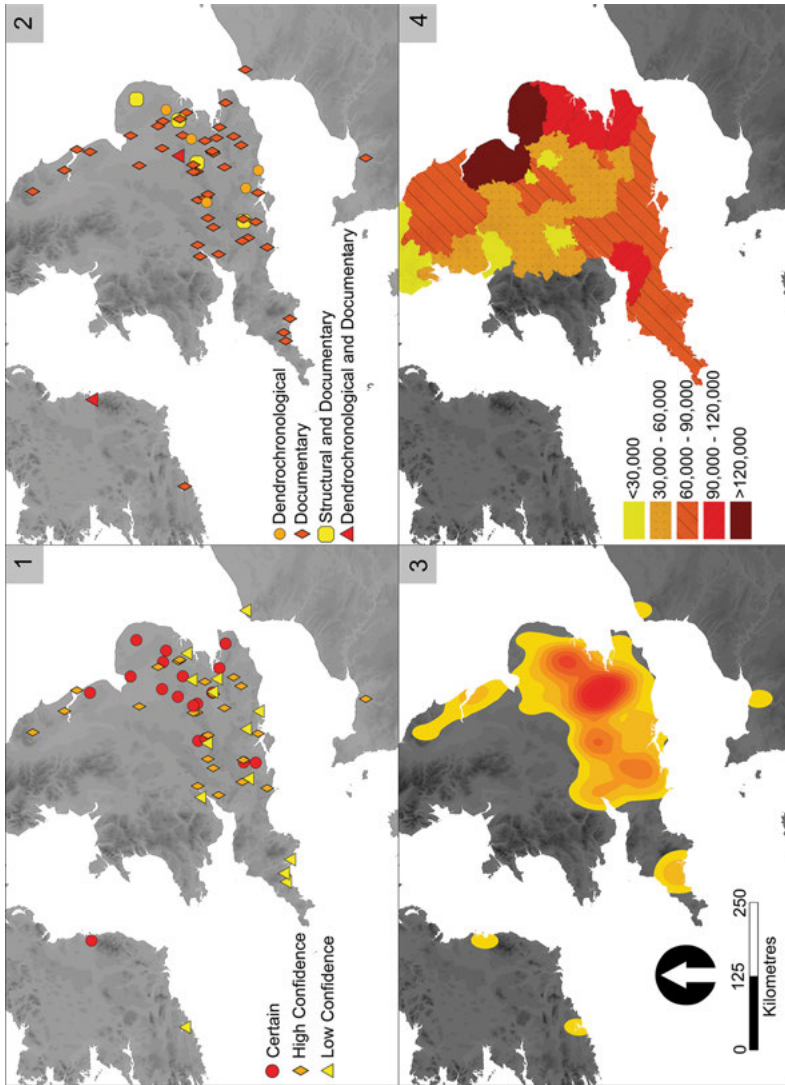
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<sup>46</sup> See GILBERT (note 13), p. 396.

<sup>47</sup> David M. BROWN, *Irish and English Dendrochronology*, in: *Vernacular Architecture* 41 (2010), pp. 119–122, here p. 120.

<sup>48</sup> Nat W. ALCOCK, et al., *Leverhulme Cruck Project. Results 1988*, in: *Vernacular Architecture* 20 (1989), pp. 43–45, here pp. 43–44.

<sup>49</sup> RCHM (Royal Commission on Historical Manuscripts), *Second Report of the Royal Commission on Historical Manuscripts*, London 1874, p. 128.



**Figure 3:** Four maps of the impact of the 1362 St Maur(us) windstorm in the British Isles. Clockwise from top left: (1) Confidence rating of data. (2) Different data types. (3) Kernel density plot of known damage created in ArcGIS 10.4. (4) Contemporary spread of the English population at the county level as derived from the poll tax return of 1377 (Stephen BROADBERRY et al., *British Economic Growth 1270–1870*, Cambridge 2015, pp. 25–26), only 15 years after the storm. (Created by the author).

Norfolk, Suffolk, Essex and Kent. Taken together the evidence agrees well with the view derived solely from the written evidence; that the storm originated from the south west and particularly severely affected the south east.

Despite the quantity and different types of source material, it is clear that the available evidence provides only a biased view of what occurred in the St Maur's Day storm. This is a result of the limited extent to which damage and repairs were recorded in addition to the survival of evidence, both written and structural, into the present. Ecclesiastical and seigneurial properties and interests are well represented while the immediate impact of the event on the lower classes, who were more likely to be illiterate and had less need to record expenses, is covered comparatively rarely. Although many of the sources describe trees being felled, there is no way to quantify or gauge the affected geographic extent. As a comparison, some 15 million trees were felled during the Great Storm of 1987<sup>50</sup> and although this number may have been elevated due to modern planting regimes and the fact that leaves were still on the trees,<sup>51</sup> a number in the same range must also have been felled in 1362. Relatively few areas where trees were felled, however, can be positively identified.<sup>52</sup> Another area for which there is conspicuously limited evidence is the storm's effect on shipping. The only known affected vessel, the *Tarrit*, was forced to shore at Plymouth by the storm and subsequently became the subject of a legal dispute after being plundered by the locals.<sup>53</sup> However, the case of the *Tarrit* cannot have been an isolated incident as, although no further specific cases are known in detail, one source does record that many other vessels were lost.<sup>54</sup> As a result of the various gaps in the available evidence, what can be said about the storm's impact on the lower classes, woodland in undocumented areas and shipping is limited and conjectural.

The most comprehensive previous assessment of the St Maur's Day storm compared it to the windstorms of 1662, 1703 and 1987.<sup>55</sup> These were similar in that they

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**50** Allen JRL (1992) Trees and their Response to Wind: Mid Flandrian Strong Winds, Severn Estuary and Inner Bristol Channel, Southwest Britain, in: *Philosophical Transactions of the Royal Society B* 338 (1286), pp. 335–364, here p. 340.

**51** Petr DOBROVOLNÝ/ Rudolf BRÁZDIL, Documentary evidence on strong winds related to convective storms in the Czech Republic since AD 1500, in: *Atmospheric Research* 67/68 (2003), pp. 95–116, here p. 107; Chris P. QUINE, Damage to trees and woodlands in the storm of 15–16 October 1987, in: *Weather* 43 (1988), pp. 114–118, here p. 115.

**52** Exceptions include Alveston, Warwickshire, see Worcester, Worcester Cathedral Library, E20, and possibly Watlington, Oxfordshire, see K S. B. KEATS-ROHAN, 'Most Securely Fortified': Wallingford Castle 1071–1540, in: K. S. B. KEATS-ROHAN/ Neil CHRISTIE/ David ROFFE (eds.), *Wallingford: The Castle and the Town in Context*, Oxford 2015, pp. 34–115, here p. 94.

**53** Rymer's Foedera, Volume I, 1066–1377, ed. Thomas D. HARDY, London 1869, p. 420; London, The National Archives of the UK, SC 8/247/12320.

**54** O'DONOVAN (note 11), p. 625: *A very great storm in this year threw down several churches and houses, and also sank many ships and boats.*

**55** ROWE (note 6), pp. 148–155.

were high magnitude events which tracked across southern England from west to east. As an analogy, the peak wind speed recorded during the 1987 storm was 196 km/h. Although not unusual for the British Isles as a whole, south-east of an imaginary line between Norwich and Southampton, such wind speeds have an estimated recurrence interval of over 200 years.<sup>56</sup> On average, this means that in this region, a storm of this magnitude sits well beyond living memory. As all the evidence indicates the St Maur's Day storm was a comparable phenomenon to the Great Storm of 1987, the long recurrence interval fits well with the chronicler's descriptions of the storm as the worst that could be recalled.

Just how unusual the St Maur's Day storm was can be further assessed through an analysis of the climatic and meteorological conditions prior to its occurrence. This can be reconstructed in very vague terms from information relating to the weather over the preceding months. Historical evidence from the second half of 1361 shows that, following a summer of drought in England,<sup>57</sup> sea ice was present in Iceland during the autumn<sup>58</sup> and by Christmas time fruit trees were in bloom near Paris.<sup>59</sup> The presence of sea ice suggests cold conditions in the Arctic while flowering trees indicate an unusually warm winter in northern France. This patchy and uncertain picture can be augmented with the addition of climatic proxy evidence for the early 1360s. These indicate a low-level spike in sea surface temperatures during the early 1360s which was sharply followed by cooling<sup>60</sup> and a peak in sea ice coverage in 1364.<sup>61</sup> Reconstructed summer temperatures across Europe signal high fluctuations between 1361 and 1362,<sup>62</sup> with anomalously cold summers in Slovakia during both years<sup>63</sup> and

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**56** Stephen D. BURT/ D. A. MANSFIELD, The Great Storm of 15–16 October 1987, in: *Weather* 43 (1988), pp. 90–110, here pp. 101–103.

**57** Peter F. BRANDON, Late-Medieval Weather in Sussex and Its Agricultural Significance, in: *Transactions of the Institute of British Geographers* 54 (1971), pp. 1–17, here p. 3; Astrid OGILVIE/ Graham FARMER, Documenting the Medieval Climate, in: Mike HULME/ Elaine BARROW (eds.), *Climates of the British Isles. present, past and future*, London, New York 1997, pp. 112–133, here p. 127.

**58** *Islandske Annaler indtil 1578*, ed. Gustav STORM, Christiana 1888, p. 359.

**59** Jeane de Venette, *The Chronicle of Jean de Venette*, ed. Jean BIRDSHALL/ Richard A. NEWHALL, New York 1953, p. 108.

**60** Alastair G. DAWSON et al., Greenland (GISP2) ice core and historical indicators of complex North Atlantic climate changes during the fourteenth century, in: *The Holocene* 17 (2007), pp. 427–434, here p. 431.

**61** Guillaume MASSÉ et al., Abrupt climate changes for Iceland during the last millennium. Evidence from high resolution sea ice reconstructions, in: *Earth and Planetary Science Letters* 269 (2008), pp. 565–569, here p. 567.

**62** Jürg LUTERBACHER et al., European summer temperatures since Roman times, in: *Environmental Research Letters* 11 (2016), pp. 1–12.

**63** Ulf BÜNTGEN et al., Filling the Eastern European gap in millennium-long temperature reconstructions, in: *Proceedings of the National Academy of Sciences* 110 (2013), Online Data available at: <http://www.ncdc.noaa.gov/paleo/treering.html> [Accessed 31/08/2016].

a 'great' drought in Croatia in spring 1362.<sup>64</sup> Meanwhile the phase of the North Atlantic Oscillation appears to have favoured higher magnitude storms at this time.<sup>65</sup> These proxies provide quantitative proof of the dramatic fluctuations in global atmospheric circulation which characterized the period from the late 13<sup>th</sup> century through to the end of the 14<sup>th</sup> century, with the late 1350s and early 1360s registering as one of the peaks of environmental instability between 1300 and 1500.<sup>66</sup> It is important to emphasise though, that there are great difficulties in attributing single events to climatic change, with windstorms a particularly uncertain phenomenon.<sup>67</sup> That being the case, the storm of January 1362 demonstrably occurred during a period of high climatic instability when the North Atlantic Oscillation favoured storms of increased magnitude. While it is difficult to make any unqualified statements, it is likely that the global climatic shifts in play at this time affected the magnitude and track taken by the storm.

Just as severe fluctuations were affecting atmospheric circulation, and perhaps as a 'teleconnection' between environment and society, unprecedented anomalies were also occurring in the world of man. Only a decade before the storm, the Black Death had reduced the population of England by approximately 40 percent.<sup>68</sup> This plague, understandably provoked great fear, not only as a result of the high mortality but also due to the unsettling thought that, as a sign of divine displeasure, worse could follow. Plague flared up once more in 1361, its first major resurgence since the Black Death, and against this troubling backdrop the occurrence of a windstorm of a magnitude beyond which nobody living could recall must have provoked heightened fear and alarm. The two 'pestilences', wind and disease, were listed together in a petition to parliament in October 1362<sup>69</sup> and some of the chronicler's accounts illustrate the popular mindset. The 'Eulogium Historiarum', for example, describes how some contemporaries believed the storm to be a divine punishment<sup>70</sup> while, similarly, an anonymous chronicler from Canterbury commented on the anxiety it caused amongst the

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**64** Andrea KISS/ Zrinka NIKOLIĆ, Droughts, Dry Spells and Low Water Levels in Medieval Hungary (and Croatia) I. The Great Droughts of 1362, 1474, 1479, 1494 and 1507, in: *Journal of Environmental Geography* 8 (2015), pp. 11–22, here pp. 13–14.

**65** Valérie TROUET et al., North Atlantic storminess and Atlantic Meridional Overturning Circulation during the last Millennium. Reconciling contradictory proxy records of NAO variability, in: *Global and Planetary Change* 84/85 (2012), pp. 48–55, here p. 53.

**66** Bruce M. S. CAMPBELL, *The Great Transition. Climate, Disease and Society in the Late-Medieval World*, Cambridge 2016, p. 339.

**67** National Academies of Sciences, Engineering, and Medicine, *Attribution of Extreme Weather Events in the Context of Climate Change*, Washington 2016, pp. 111–114.

**68** BROADBERRY (note 49), p. 14.

**69** Mark ORMROD, *The Parliament Rolls of medieval England, 1275–1504*, vol. 5 Edward III, 1351–1377, Woodbridge 2005, p. 142.

**70** HAYDON (note 14), p. 229: *unde creditur a nonnullis diram Dei fuisse flagellationem*.

English population.<sup>71</sup> During the medieval period, storms were widely believed to be demonic in origin with frightening folk stories often attached to their occurrences.<sup>72</sup> This is hinted at by one chronicler who blamed the fact that a joust had been scheduled to take place two days later as the root cause of the storm.<sup>73</sup> Although the Church had lifted its ban on jousting in 1316,<sup>74</sup> evidently some churchmen still regarded them as events which displeased God. Each of the participants in this particular event seem to have provocatively embraced this view by outfitting themselves as one of the seven deadly sins.<sup>75</sup> So perturbed was the anonymous Canterbury chronicler that he even went so far as to compare the storm to the Day of Judgment, a well-known event for Christians through Church teachings and popular culture. For example, the fifteen signs of doom associated with the apocalypse, included in popular poetry such as the early 14<sup>th</sup> century work 'The Pricke of Conscience', contained many elements which contemporaries could see around them, the coming of natural disasters, the destruction of buildings and high mortality of men.<sup>76</sup> We can even surmise that the foreboding miracles reported throughout 1361, including a solar eclipse, blood red rain and the appearance of a cross of blood in the air,<sup>77</sup> may have compounded the situation as such occurrences were frequently interpreted as ominous portents of the future.<sup>78</sup>

The Church appears to have capitalized on the state of fear among the populace through a variety of means. For example, although it is unknown whether the storm was the cause of damage to the belfry at the Augustinian friary of Clare, Suffolk, uncertainty for what awaited in the afterlife may explain why, in 1363, the son of a local alderman donated £100 towards the construction of a new bell-tower. This case reveals a motivation for such charitable acts, as the great generosity of the donation led to the appointment of a priest to hold prayers for the souls, both in life and death, of the benefactor, his parents and any others to which he was obligated.<sup>79</sup> Such prayers were believed to ease the passage of the individual and his family members from the troubled temporal realm into the kingdom of heaven. In the storm's aftermath charitable donations of wind-felled timber were also made by the Black Prince

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71 SCOTT-STOKES/ GIVEN-WILSON (note 25), p. 118–119: ... *et inhabitantes terram Anglie timor ac tremor sic exterruit quod nullus sciuit ubi secure potuit laticare, nam ecclesiarum campanilia, molendina aduentum ac mansiones multe ceciderunt ad terram absque magna corporum lesione.*

72 Carl S. WATKINS, *History and the Supernatural in Medieval England*, Cambridge 2007, pp. 58–59.

73 SCOTT-STOKES/ GIVEN-WILSON (note 25), p. 118–119.

74 Juliet R. V. BARKER, *The Tournament in England 1100–1400*, Woodbridge. 1986, pp. 70–83, 95.

James W. BRODMAN, *Charity and Religion in Medieval Europe*, Washington D. C. 2009, pp. 35–37.

75 TAIT (note 7), p. 151.

76 *The Prick of Conscience (Stimulus Conscientiae)*, ed. Richard MORRIS, Berlin 1863, pp. 129–131.

77 HOG (note 18), p. 196; LUMBY (note 19), p. 411.

78 WATKINS (note 72), pp. 47–48.

79 *The Cartulary of the Augustinian Friars of Clare*, ed. Christopher HARPER-BILL, Woodbridge 1991, p. 85.

to ecclesiastical institutions, such as the Dominican Friars of Dunstable<sup>80</sup> and the parish church of Great Heney,<sup>81</sup> Essex, but also to his lay tenants whose homes had been damaged, such as those at Torpel, Northamptonshire.<sup>82</sup> Charity of this kind may have been believed to offer remission for sins<sup>83</sup> but, more cynically, it also served the practical purpose of speeding the recovery of the Prince's tenants allowing them to resume rental payments as quickly as possible. Certainly, this was true of those outstanding debts overlooked by the exchequer in the aftermath of the storm.<sup>84</sup> Although the importance of charity was an integral part of the Christian worldview, financial practicalities meant that it was in the interests of landowners that their tenants were not pushed to a 'tipping point' by crises such as the storm.

For those without the resources to make sizeable charitable donations, similar spiritual benefits could be obtained through indulgencies. These amounted to reductions in the amount of time an individual's soul spent in purgatory and were offered in exchange for donations of money or labour, or to attract pilgrims, at a number of the structures damaged on St Maur's Day. Thus at Norwich Cathedral in 1363, an indulgence of 7 years and 280 days was granted to those who contributed towards the repairs made necessary by storm damage.<sup>85</sup> Lesser indulgences were also advertised at a number of other ecclesiastical institutions due to storm damage such as Cloyne Cathedral, County Cork,<sup>86</sup> the Benedictine Abbey of St John, Colchester, Essex<sup>87</sup> and the churches of Stone, Kent<sup>88</sup> and Whitechapel, London.<sup>89</sup> These measures presumably helped the affected Church properties to finance the required repairs although precisely how effective they were is unknown.

The fear and panic evident in the descriptions of the chroniclers and the theological dimensions associated with some reactions to the storm certainly do not explain the responses of all groups. Some directly benefitted from the widespread damage while others pragmatically turned the situation to their own advantage. Roofers and

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**80** Register of Edward the Black Prince, Part IV, England, A. D. 1351–1365, ed. Michael C. B. DAWES, London 1933, p. 417.

**81** *Ibid.*, p. 432.

**82** *Ibid.*, p. 431.

**83** James W. BRODMAN, *Charity and Religion in Medieval Europe*, Washington D. C. 2009, pp. 35–37.

**84** W. Mark ORMROD, *The Politics of Pestilence. Government in England after the Black Death*, in: W. Mark ORMROD/ Phillip G. LINDLEY (eds.), *The Black Death in England*, Stamford 1996, pp. 147–181, here p. 169.

**85** Calendar of entries in the Papal Registers relating to Great Britain and Ireland. Petitions to the Pope, Volume I, ed. William H. BLISS, London 1896, p. 418: "For an indulgence, during ten years, of seven years and seven quadragene to penitents who help to repair the cathedral church of Holy Trinity, Norwich, which has suffered from wind and storm."

**86** *Ibid.*, p. 414.

**87** *Ibid.*, p. 444.

**88** *Ibid.*, pp. 421–422.

**89** *Ibid.*, p. 468.



tilers, for instance, were in a strong position on the morning after the storm. The high demand for their services is demonstrated not only by the numerous reports of damaged buildings but also by the fact that in the storm's aftermath 123,500 tiles were purchased from one Roger 'tiler' at King's Langley, Hertfordshire, at a price of 5s 6d per thousand.<sup>90</sup> That some may have been tempted to exploit the sudden rise in demand is suggested by a royal decree which forbade tilers and roofers from raising the prices of their tiles or labour beyond what had been charged at Christmas 1361/1362. This accords with the concept of the just price championed by churchmen such as Aquinas who argued that "if ... one man [may] derive a great advantage by becoming possessed of the other man's property, and the seller be not at a loss through being without that thing, the latter ought not to raise the price".<sup>91</sup> The legislation also mirrored price fixing that had been enacted in England in the face of the Black Death<sup>92</sup> and the fact it was issued to the sheriffs throughout England illustrates that the storm was perceived to be a universal hazard.<sup>93</sup> The proclamation can be traced through the English administrative bureaucracy as it was reissued by the abbot of St Albans to the townspeople there<sup>94</sup> while the abbot of Peterborough wrote back to the Chancery to guarantee that the order was not being contravened within the lands administered by the abbey.<sup>95</sup> Profiteering from the situation can also be seen in the actions of Simon Islip, Archbishop of Canterbury. After the storm, Islip purchased land in Oxford in order to found a new University college to be called 'Canterbury Hall'. The source which describes this purchase strongly implies that the land was available because the buildings which had previously stood there had been damaged in the storm.<sup>96</sup> This case probably represents a fairly common occurrence in the years which followed in which those with reserves of financial capital were able to cheaply acquire property from those too poor to fund repairs themselves. Although contemporary moral thinking condemned making a profit from natural disasters, this did not prevent the Archbishop of Canterbury, England's foremost prelate, from turning the situation to the advantage of the Church.

In the weeks and months that followed, landowners such as the Black Prince were also determined to maximise profits in order to mitigate any financial losses.

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**90** A History of Hertfordshire: Volume IV, ed. William PAGE, London 1914, p. 265.

**91** Thomas AQUINAS, *Summa Theologica*, Volume Two, Containing Second Part of the Second Part, QQ. 1–189 and *Third Part, QQ. 1–90*, New York et al. 1947, pp.1513–1514.

**92** Robert BRAID, *Economic Behaviour, Markets and Crises. The English Economy in the Wake of Plague and Famine in the 14th Century*, in: Simonetta CAVACIOCCHI (ed.), *Le interazioni fra economia e ambiente biologico nell'Europa preindustriale secc. XIII-XVIII*, Firenze 2010, pp. 335–372, here p. 359.

**93** *Calendar of the Close Rolls, Edward III, Volume XI, 1360–1364*, ed. Henry C. MAXWELL LYTE, London 1909, p. 238.

**94** RILEY (note 23), pp. 46–47.

**95** STAMP (note 37), p. 177.

**96** WHARTON (note 33), p. 46.

This can be seen across the Prince's estates where profit-making and loss-minimizing activities were instigated such as selling off hay and wind-felled timber and putting a lime-kiln into operation to produce lime for resale in order to generate income.<sup>97</sup> Concern to mitigate the negative economic effects of the storm are further demonstrated by the fact that the Prince felt the need to re-negotiate a long-held custom that the parker, the administrator who oversaw the management of the park, at his estate of Berkhamsted, Hertfordshire, was entitled to the profits from the sale of any wind-felled timber on the estate. Instead, as a result of the unprecedented number of trees felled in 1362, the Prince offered a fixed annual sum of 100 shillings, amounting to a guaranteed but reduced rate compared to average earnings in previous years.<sup>98</sup> The management of the prince's estates was clearly relatively efficient and responsive to sudden shocks, standing in stark contrast to the foreboding and superstitious interpretations advanced by many of the chroniclers who documented the storm.

Such practicality is also evident in the decisions taken in the repairs to the structures themselves which were damaged on St Maur's Day. At Salisbury Cathedral, for example, the storm damaged both the uppermost c. 9m of the spire as well as the freestanding belfry. As the belfry was demolished in the late 18<sup>th</sup> century it is impossible to analyse the impact of the storm in this structure but the spire is extant and the repair pattern is observable. Perhaps most interestingly, dendrochronological analysis of the timbers in the spire's internal scaffold return felling dates between 1344–1376, at least a generation after the construction of the spire. The scaffold has therefore been interpreted as an insertion necessitated by storm damage in 1362,<sup>99</sup> which is attested by the documentary record.<sup>100</sup> Although this scaffold may have facilitated the repairs required to the spire, a possible interpretation is that it was intended to offer structural reinforcement against any future storm winds. This possibility is given credence by both the location of the scaffold, internal rather than external, as well as the choice of material, oak rather than lighter alder or pine more commonly used in temporary scaffolding.<sup>101</sup> A parallel comes from the documentary account of the rebuilding of the gatehouse at St Albans after the storm in which it is emphasised that the new gatehouse was covered in a strong lead roof.<sup>102</sup> As a sturdy roofing material, this may have been believed to offer improved protection against any similar future event. A comparable instance of the response of monastic landowners in the immediate aftermath of an environmental shock comes from the lands of Canterbury

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<sup>97</sup> DAWES (note 80), pp. 420, 429, 431.

<sup>98</sup> *Ibid.*, p. 464.

<sup>99</sup> Dan W. H. MILES et al., *The tree-ring dating of the tower and spire at Salisbury Cathedral, Wiltshire*, London 2004, pp. 20–22.

<sup>100</sup> BLISS (note 85), pp. 462–463; Calendar of entries in the Papal Registers relating to Great Britain and Ireland. Papal Letters, Volume IV, ed. William H. BLISS, London 1902, p. 89.

<sup>101</sup> MILES (note 99), p. 22.

<sup>102</sup> RILEY (note 23), p. 387: *et fortissimum tectum ipsius cum plumbo cooperuit.*

Cathedral Priory, where following the storm surge floods of 1287/88 high investment focussed on erecting dykes to protect land against future floods.<sup>103</sup> Perhaps as in this case, investment in available protection, a reinforced spire and more durable roofing, was the favoured way to protect against any future high winds. The difference in scale of the response likely owes both to the relative helplessness of humanity against storms compared to floods, as well as the long recurrence interval of the wind speeds experienced on St Maur's Day, which were without precedent, compared to North Sea storm surge tides, which occurred relatively regularly throughout this period.<sup>104</sup> There is no known evidence for comparable actions taken by lay landowners or amongst the peasant classes in the aftermath of January 1362, who were less likely to possess the required financial reserves, but given the paucity of both documentary and structural evidence, an absence of evidence certainly does not rule out the possibility that such measures may have been taken.

A number of lines of evidence demonstrate that in the years that followed the storm, its occurrence was not forgotten. Later manuscripts frequently contained short marginal notes or other references to the St Maur's Day storm<sup>105</sup> while a number of chroniclers writing soon afterwards recorded popular verses commemorating the event.<sup>106</sup> That these verses were widely known across the area of effect is demonstrated by the graffito from St Mary's Church, Ashwell, (Figure 2) which closely matches a verse given by a contemporary chronicler.<sup>107</sup> As discussed above, the available evidence suggests this graffito is likely to have been carved by a mason working in the tower. If this is the case, the verse was clearly known by both churchmen and laymen providing proof of its wide audience. Although there is no written evidence to substantiate it, another way in which the storm must have been commemorated was through the marks of damage and repair seen on many major ecclesiastical structures, as well as more humble buildings, throughout southern England. These damage patterns must have remained visible long after 1362 as many of the structures which had been damaged by the storm went unrepaired for long periods due to the scarcity of

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**103** Anthony GROSS/ Andrew BUTCHER, *Adaptation and Investment in the Age of the Great Storms. Agricultural Policy on the Manors of the Principal Lords of the Romney Marshes and the Marshland Fringe*, in: Jill EDDISON (ed.), *Romney Marsh. The Debatable Ground*, Oxford 1991, pp. 107–117, here pp. 108–110.

**104** M. BAILEY, *Per impetum maris. natural disaster and economic decline in eastern England, 1275–1350*, in: Bruce M. S. CAMPBELL (ed.), *Before the Black Death. Studies in the 'crisis' of the early fourteenth century*, Manchester, New York 1991, pp. 184–208.

**105** See for example: Durham, Durham University Library, MS Cosin V/III/19/R fol. 19r; San Marino, Huntington Library, HM/28174 fol. 143v; Elizabeth SOLOPOVA, *Manuscripts of the Wycliffe Bible in the Bodleian and Oxford College Libraries*, Liverpool 2016, p. 211.

**106** HOG (note 18), p. 196; *Annales Monastici*, Volume III, ed. Henry R. LUARD, London 1866, p. 477; HINGESTON (note 14), p. 221.

**107** HOG (note 18), p. 196; LUARD (note 106), p. 477: *Ecce flat hoc anno Maurus, in orbe tonat*. The underlined segment of the quote is exactly what was engraved in the tower at St Mary's Church, Ashwell.

available labour,<sup>108</sup> an enduring legacy of the Black Death and the renewed spread of plague in 1361. As a result, the visible damage must have served as active reminders of the storm's occurrence. The 1356 earthquake in Basel, Switzerland, provides a useful analogy as Basel's inhabitants could still point out the damage and repairs caused by the earthquake into the 16<sup>th</sup> century.<sup>109</sup> Similarly, damage following the 1362 storm, particularly in the case of large structures such as Norwich Cathedral, was both highly visible and required repairs that would have taken many years to complete. It seems almost certain therefore, that just as in Basel, the affected communities would have commemorated and remembered the storm which had necessitated the costly and lengthy repairs.

This contribution has sought to consider the evidence for the storm of St Maur's Day 1362. The various types of data discussed above, including both documentary and structural evidence, permit a particularly detailed reconstruction of an extreme storm from a pre-instrumental period. Beyond its identification as a severe storm which tracked across southern England, it is clear that this windstorm was an anomalous event beyond what would usually be expected during a normal winter storm season. This accords well with the ever-higher resolution climatic data attesting to the climatic variability which characterized this period, both as a whole and the decade of the storm in particular. In addition, the written evidence indicates that the storm was unprecedented in living memory and thus its occurrence provoked fear and alarm amongst certain sectors of society. This must have been particularly compounded by the recent memory of the Black Death and the resurgence of plague in the preceding year. The storm's cultural impact can be demonstrated by the popular verses recorded by chroniclers and the fact that one of these was inscribed at the church of St Mary's, Ashwell. Despite the immediate fear and alarm, however, in many respects pragmatic responses were adopted across the various strata of medieval society. Authorities were able to ease pressure on affected groups through legislation; fixing the prices of key commodities (roof tiles and labour) and overlooking debt repayments. At least in the case of the Black Prince, the storm's financial impact was managed through profit-making enterprises and careful management of the wind-felled timber. In the few cases where sufficient evidence survives, the repairs and reconstruction that came in the storm's wake may have aimed to reduce the risk of damage from a similar event in the future. From a modern-day perspective, although many of the contemporary descriptions of the St Maur's Day storm were heavily coloured by the medieval Christian worldview, sometimes emphasising superstitious interpretations, the various material ways in which society responded were, perhaps surprisingly, usually pragmatic, opportunistic and forward-thinking.

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**108** SCOTT-STOKES/ GIVEN-WILSON (note 25), pp. 118–119: ... *mansionesque et edificia per dictum uentum sic diruta pro defectu operariorum irreperata deformiter remanserunt.*

**109** Richard C. HOFFMANN, *An Environmental History of Medieval Europe*, Cambridge 2014, p. 307.