

ORPHANED ARE SCIENCE AND WISDOM WITHOUT THOSE TO FOSTER THEM:  
IRISH ANNALISTS, ENVIRONMENTAL CHALLENGES, AND COLONIAL RESISTANCE  
IN LATE-MEDIEVAL IRELAND FROM 1250-1348

By

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### Abstract

This work aims to evaluate the extent to which environmental and political drivers facilitated disruption in early colonial Ireland (1250-1348). Multi-proxy climate data are matched with historical records to track anthropogenic and environmental drivers of disaster during this period. Using the Old-World Drought Atlas (OWDA) dataset, precipitation and drought-year visualizations can be created. Then leveraging the accessibility of Irish annals through CELT, a corpus of digitized and translated texts, year-to-year manuscript entries can be compared to the environmental data to determine driving factors. Analyzing the period of 1250-1348 through the perspectives of Irish annalists and climate reconstructions highlights that the Black Death—traditionally considered the worst disaster of the medieval period—was preceded by a century of colonial and environmental hardships. By building out these contexts, this work seeks to challenge the place of the Black Death as a rupture in the historical record but rather demonstrate how it was a culmination of the hard times experienced by those living in Ireland during this period.

**Keywords:** colonization of Ireland, CELT, Old-World Drought Atlas, Irish annals, Annals of Innisfallen, Annalá Connacht, Annals of Ulster, Annals of Loch Cé, Annals of Ireland by Friar John Clyn, medieval environmental history, dendrochronology

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## Introduction

Documenting the complexities of medieval colonialism generally proposes a challenge as access to and evidence of the experiences of the colonized people tends to slip through the historical record. In the case of Ireland, a strong manuscript tradition reporting out the events of the years provides a unique example of this type of history. Through a comparative look at the annals, the contours of actualized medieval colonialism by the English become apparent. Correspondingly, the authors of the annals also pay attention to the non-human actors throughout these records. As such, the Irish annals provide a resource pool to examine both the anthropogenic and natural forces at play during the medieval colonial period (circa 1166-1348).

The 1166 invasion catalyzed changes throughout Ireland. Of interest for the following research are the dynamic shifts in rural production schemes by the installment of English manor systems. With warfare and resistance to the Anglo-Norman incursion throughout the late twelfth century and early thirteenth century, the sociopolitical and natural landscapes were consistently transfigured. The period of interest for this research begins in 1250, nearly a century after the initial colonization and a time understudied by environmental historians of medieval Ireland. Analyzing the period of 1250-1348 through the perspectives of Irish annalists and climate reconstructions highlights that the Black Death—traditionally considered the worst disaster of the medieval period—was preceded by a century of colonial and environmental hardships. By building out these contexts, this work seeks to challenge the place of the Black Death as a rupture in the historical record but rather demonstrate how it was a culmination of the hard times experienced by those living in Ireland during this period.

## Prologue: The English Colonization

### The Beginning of the End

So there fell in that place Muircertach (son of Niall) Ua Lachlainn, arch-king of Ireland. And he was the Augustus of all the North-West of Europe for valour and championship. And a few of Cenel-Eogain were killed there, namely, thirteen men. A great marvel and wonderful deed was done then: to wit, the king of Ireland to fall without battle, without contest, after his dishonouring the successor of Patrick and the Staff of Jesus and the successor of Colum-cille and the Gospel of Martin and many clergy besides [*by blinding Mac Duinnsleibhe Ua Eochadha*]. Howbeit, his body was carried to Ard-Macha and buried there, in dishonour of the successor of Colum-cille with his Community and Colum-cille himself and the head of the students of Daire fasted regarding it,—for his being carried to [*Christian*] burial.<sup>1</sup>

In 1166 the arch-king Muircertach, son of Niall, Ua Lachlainn, king of Cenél nEógain, was slain and the kingship passed to Ruaidhri Ua Conchobair.<sup>2</sup> According to Irish annalists, like the author(s) of the *Annals of Ulster*, Ua Conchobair's ascent was justified due to the previous king's severe and unjust transgressions against Mac Duinnsleibhe (Ua Eochadha), the king of Ulidia.<sup>3</sup> Ua Lachlainn's rapid ten-year expansion and five-year control of the land portended a new era of strong Irish kingship, inching closer and closer to the possibility of other arch-kings united under the banner of the high king of Ireland. A high king, in fact, without opposition. But, come 1166, Ua Lachlainn had not only treacherously slain Aedh Ua Maelfabhaill, the king of Carraic-Bracaidhe, but also blinded Mac Duinnsleibhe, who was under the protection of

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<sup>1</sup> Bartholomew Mac Carthy and William Hennessy, trans., "The Annals of Ulster" (College Road, Cork, Ireland, 1893), sc. U1166.10, CELT: The Corpus of Electronic Texts, <https://celt.ucc.ie//published/T100001A/index.html>.

<sup>2</sup> Mac Carthy and Hennessy, "The Annals of Ulster," sec. U1166.13.

<sup>3</sup> Mac Carthy and Hennessy, "The Annals of Ulster," sec. U1166.10.

Donnchadh Ua Cerbaill, the arch-king of Airgialla (Ulster).<sup>4</sup> The surrounding Irish kingdoms retaliated. Ruaidhri Ua Conchobair, king of Connacht and previously the heir-apparent to the high kingship of his father Tairdelbach Ó Conchobair, leveraged the missteps of Ua Lachlainn wherein he “received the pledges of the Men of Meath” and “the pledges of the Foreigners and of Mac Murchadha and of all Leinster.”<sup>5</sup> Donnchadh Ua Cerbaill pledged to Ó Conchobair as well and it was he who led the force that ended the life and reign of Muircertach Ua Lachlainn. For all intents and purposes, Ruaidhri Ua Conchobair was equipped to become the next high king from the north. However, before his triumphant return to his home in Connacht, Ruaidhri eliminated one of Ua Lachlainn’s remaining allies, “expelling Diarmait Mac Murchada, king of Leinster, over sea.”<sup>6</sup> This expulsion catalyzed the start of English colonialism in Ireland which fundamentally changed the political, social, and physical landscape of Ireland.<sup>7</sup>

The beginnings of the colonization of Ireland have been reviewed and characterized in a multitude of ways by various scholars of medieval Irish history. Some portray Mac Murchada’s flight and eventual request for English aid as a pseudo-accident, claiming that he only sought aid to reclaim his kingdom not to facilitate an invasion. However, other scholars emphasize the importance of geography in influencing Mac Murchada’s rule, his familiarity with Anglo-Saxon, Welsh, and Dutch powers largely cultivated by trade. Around a third of the entire eastern coastline of medieval Ireland was under Diarmat’s domain, including Dublin and Wexford, both

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<sup>4</sup> Mac Carthy and Hennessy, “The Annals of Ulster,” sec. U1166.3-8.

<sup>5</sup> Mac Carthy and Hennessy, “The Annals of Ulster,” sec. U1166.9; Seán Duffy, *The Concise History of Ireland* (Gill Books, 2005), 64–65. Which Foreigners? It’s difficult to know.

<sup>6</sup> Mac Carthy and Hennessy, “The Annals of Ulster,” sec. U1166.9.

<sup>7</sup> Throughout this work, Anglo-Norman and English will be used interchangeably. In the sources most often employed in this work, the authors refer to the invading forces as Foreigners, most often referring to the incursions of Anglo-Saxon and Anglo-Norman settlers seeking lordship. Furthermore, it is important to note that the sources refer to the English king most often as the King of the Saxons. In line with other scholarship produced from this period English and England will also be utilized. British or Britain will not be employed as these terms do not follow in the conventions of most scholars.

hubs of maritime trade.<sup>8</sup> Dublin was not only the primary religious center of western Ireland but also hosted numerous cultural groups. The primary contested resource were the ports, controlled by the Hiberno-Norse from 1014-1050. Irish kings, the Ua Briain and various kings of Leinster mainly, controlled the city until Mac Murchada's banishment in 1166. Mac Murchada's exploitation of Dublin's cosmopolitan nature and religious importance additionally allowed the king to maintain and develop foreign connections that many of the northeastern kingdoms lacked.<sup>9</sup> It was these connections that the banished Diarmat leveraged to regain his ancestral territories (Uí Chennselaig) and the kingdom of Leinster.

Fleeing to Bristol, Mac Murchada sought the aid of King Henry II of England (r. 1154-1189), believed to have had a tenuous acquaintance with the once and future king of Leinster.<sup>10</sup> The extent of their relationship, however, has been difficult to determine but Mac Murchada could have encountered Henry II as a business partner and/or as a political ally.<sup>11</sup> The flight to Bristol, however, did not result in an immediate meeting with the king as Henry II was in Aquitaine.<sup>12</sup> So, to Aquitaine Diarmat travelled, eventually gaining permission to hire soldiers within Henry's dominions—England and some parts of Wales. To retake Mac Murchada's former base of power, Ferns, the most favorable location to hire soldiers from was the Southernmost area of Wales.<sup>13</sup> At the time the lines of the Southern Welsh and the Anglo-Norman nobles had a fair amount of intermingling, but the areas left for conquest dwindled as Rhys ap Gruffard, king of Deheubarth, stymied the expansion of English royal authority. The

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<sup>8</sup> Robin Frame, *Colonial Ireland 1169-1369* (Four Courts Press, 2012), 10–11.

<sup>9</sup> Marie Therese Flanagan, *Irish Society, Anglo-Norman Settlers, Angevin Kingship: Interactions in Ireland in the Late Twelfth Century* (Clarendon Press, 1989), 74–75.

<sup>10</sup> “Song of Dermot and the Earl” (n.d.), ll. 216–265, p. 19–21, CELT: The Corpus of Electronic Texts, <https://celt.ucc.ie/published/T250001-001/text002.html>.

<sup>11</sup> Flanagan, *Irish Society, Anglo-Norman Settlers, Angevin Kingship*, 76; Frame, *Colonial Ireland 1169-1369*, 11.

<sup>12</sup> Duffy, *The Concise History of Ireland*, 65; Flanagan, *Irish Society, Anglo-Norman Settlers, Angevin Kingship*, 79.

<sup>13</sup> Flanagan, *Irish Society, Anglo-Norman Settlers, Angevin Kingship*, 79–80. More could be said and analyzed in connection to the Welsh borderlands and Irish borders of the period.

congestion of the Anglo-Norman nobility in Wales was a precondition that effectively determined the entry of Richard de Clare, or Strongbow, into Diarmat's campaign.<sup>14</sup> The force that Strongbow provided was the catalyst for the steady stream of violent incursions into southeastern Ireland largely by his kin, like Maurice Fitz Gerald and Raymond le Gros. The 'Song of Dermot' accounts for approximately 4,988 deaths of which 4,968 were most likely native warriors, a documentation of the destruction in the wake of the foreign forces invited by Mac Murchada.<sup>15</sup> Though an early family matter, the actions of Mac Murchada and Strongbow reverberated not only across Ireland but also across the water to England, ultimately catalyzing the slow, destructive, and vicious colonization of Ireland by the English.

### **Fit for the King's Men: Henry II and The Beginning of Systemic Colonization**

The attention of Henry II in the late twelfth century on the implications of Anglo-Norman colonization lags a few years behind Mac Murchada's initial invasion in 1169 with hired soldiers from the king's dominion. In 1170, the marriage of Strongbow to Aoife, Diarmat's daughter, granted the Anglo-Norman invader power over lands outside the control of the English Crown, posing a potential threat to Henry II.<sup>16</sup> The closure of the English ports to Irish merchants in 1171 signaled the king's stance on Strongbow's steady accumulation of power:

Her-aftyр spronge tythyngges of the Erle & of þe englysshe-men ynto england ; &, as  
maner ys, myche me made more; & that the Erl hade aproped to hym, nat only leynestre,  
bot other londes also, that, by no right ne by law, to hym ne to hys wfy longen. The  
kyngе sent anoon, & forbeed that, 'out no lond that were yn hys power, ne shold no

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<sup>14</sup> Frame, *Colonial Ireland 1169-1369*, 14.

<sup>15</sup> Nicholas Vincent, "Angevin Ireland," in *The Cambridge History of Ireland*, ed. Brendan Smith, 1st ed. (Cambridge University Press, 2018), 210, <https://doi.org/10.1017/9781316275399.011>.

<sup>16</sup> Flanagan, *Irish Society, Anglo-Norman Settlers, Angevin Kingship*, 113–15, 118–19; Frame, *Colonial Ireland 1169-1369*, 15.

shyppen passe yn-to Irland war comen, shold ayeyn come yn-to englande, with-yn þe next ester, or they sholden de dyssheryted & ex[y]led out of lond for euer.<sup>17</sup>

The economic hold not only reflected poorly on Strongbow's ability to manage Dublin, as Diarmat Mac Murchada passed in May of 1171, but the Irish kings facing new opposition in Leinster did not sit idly by.<sup>18</sup> Ruaidhri Ua Conchobair led a force, including Tighearnan Ua Ruairc and Murchadh Ua Cerbhail, to retake the city. Ultimately, the incursion resulted in the Strongbow's, finally recognized as an earl, retention of Dublin and retaliatory destruction of resources by both the allied Irish and Anglo-Saxon invaders.<sup>19</sup> The conflicts ensured that the allied northern Irish kings did not formally recognize Strongbow's claims thus leaving the earl to rely on Henry II to legitimize his rule. He thereby offered up the lands he had won through alliance, marriage, and battle to a king who had denied Strongbow official recognition before.<sup>20</sup> More importantly, the eventual relinquishing of his lands to Henry II ran contrary to Irish tradition, ultimately opening Ireland to a form of conquest not previously experienced.

The questionings of legitimacy of Mac Murchada and Strongbow's dealings pervade scholarly literature of the early Irish colonial period. For all intents and purposes, as Marie Therese Flanagan illuminates, Strongbow's marriage to Aoife both chafed and aligned with

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<sup>17</sup> Giraldus Cambrensis, "The English Conquest of Ireland: Founded on Giraldus Cambrensis" (London, 1896), pt. 1.12-20.

<sup>18</sup> "Diarmaid Mac Murchadha, King of Leinster, by whom a trembling sod was made of all Ireland, —after having brought over the Saxons, after having done extensive injuries to the Irish, after plundering and burning many churches, as Ceanannus, Cluain-Iraird, &c.,—died before the end of a year *after this plundering*, of an insufferable and unknown disease; for he became putrid while living, through the miracle of God, Colum-Cille, and Finnen, and the other saints of Ireland, whose churches he had profaned and burned some time before; and he died at Fearnamor, without *making* a will, without penance, without the body of Christ, without unction, as his evil deeds deserved." John O'Donovan, trans., "The Annals of the Kingdom of Ireland by the Four Masters" (Dublin, Ireland, 51 1848), sec. M1171.4, p. 1183, CELT: The Corpus of Electronic Texts, <https://celt.ucc.ie/published/T100005B/index.html>.

<sup>19</sup> O'Donovan, sec. M1171.18, p. 1185. Strongbow had beef with the King of England, mostly of relevance if one wanted to examine the peculiarities of colonization because of currying favor with the King. Strongbow comes off as a man of contradiction, and his nephew's hate for him did not do much to endear historians to his other qualities.

<sup>20</sup> Flanagan, *Irish Society, Anglo-Norman Settlers, Angevin Kingship*, 119.

marriage practices documented in medieval Ireland.<sup>21</sup> As legitimacy for Irish rulership depended on pledges, people, and dealing with armed opposition, the emphasis on kingly lineage was largely a constructed framework by modern medieval scholars—such as Edmund Curtis, F.J. Byrne, and Eoin MacNeill—relying on property laws regarding inheritance.<sup>22</sup> The introduction of a system that required a regnal lineage to the Irish political landscape fundamentally appears to have chafed with the organization of Irish kingship pre-colonization, as Flanagan highlights in her work.<sup>23</sup> It was asserted by Giraldus Cambrensis (Gerald of Wales) that Pope Adrian IV issued a papal bull in 1155, *Lauabiliter*, granting King Henry II the divine right to invade Ireland on religious grounds.<sup>24</sup> Cambrensis, the nephew of Strongbow, claimed to produce an extant a version of *Lauabiliter* in his 1188 *Expugnatio Hibernia* (The Conquest of Ireland). However, Cambrensis' version was never verified, and the existence of official document remains in doubt. Medieval scholar Colin Veach highlights a few rationales for the apparent farce; later tacit permission from the Pope allowed the king to stymie the flight of English political fugitives, control the movement of Irish mercenaries for the English crown, and claim power over the Irish Sea at large.<sup>25</sup> Additionally, with the murder of Thomas Beckett, the retroactive provision of permission to invade Ireland fit into the religious propaganda of the burgeoning English empire under Henry II's rule.<sup>26</sup> By 1171, Henry II had secured Dublin, the surrounding territories, and the castles under Strongbow's command.<sup>27</sup> 1177 heralded the installation of English mense lords

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<sup>21</sup> Flanagan, *Irish Society, Anglo-Norman Settlers, Angevin Kingship*, 79–112.

<sup>22</sup> Flanagan, *Irish Society, Anglo-Norman Settlers, Angevin Kingship*, 81–82.

<sup>23</sup> Flanagan, *Irish Society, Anglo-Norman Settlers, Angevin Kingship*, 89.

<sup>24</sup> Giraldus Cambrensis, *The Conquest of Ireland*, trans. Thomas Forester, Medieval Latin Series (Cambridge, Ontario: In Parentheses Publications, 2001), 50–51. Later justifications for colonialism mostly enumerated all of the issues with the Irish people, according to the English. They misused their land, their kingship system was odd, their monastic systems were incorrect, and their general disposition was barbarous.

<sup>25</sup> Veach, “Henry II and the Ideological Foundations of Angevin Rule in Ireland,” 8.

<sup>26</sup> Veach, “Henry II and the Ideological Foundations of Angevin Rule in Ireland,” 4.

<sup>27</sup> Flanagan, *Irish Society, Anglo-Norman Settlers, Angevin Kingship*, 122–23; Cambrensis, “The English Conquest of Ireland:,” chap. XXXII, pp. 76, 78; O'Donovan, “The Annals of the Kingdom of Ireland by the Four Masters,”

in the southernmost areas of the island, violating previous agreements between the Irish kings and the English crown, and Henry II's assignment of the lordship of Ireland to his ten-year old son John.<sup>28</sup> It became clear that the King had claimed all of Ireland as a part of his burgeoning empire and would continue to ignore and manipulate the agreements between the Irish people, the early Anglo-Welsh settlers, and his country. These colonialist actions by Henry II validated the presence and incursion of English forces, claiming that Ireland was Anglo-Norman was a colonial venture contrasting sharply with the rationale behind the crusading of the period.

### **Transformations Under Henry II's Rule: Law, Liberty, and Land**

The invasion of Anglo-Norman nobility and settlement changed the sociopolitical landscape of Ireland irrevocably. Specifically, infeudation processes facilitated by English migration and settlement to the eastern coasts forcibly transferred Irish fealty from local kings to the newly arrived English mense lords beholden to the political aims of the English crown.<sup>29</sup> In contrast to the Norman invasion of England almost a hundred years previous, the early occupation of Ireland was divided into four primary blocks that also comprised the military service owed to the English crown: 100 knights from Leinster, 50 from Meath, and 60 divided between the two grantees of Cork.<sup>30</sup> While military service was imposed in areas claimed by Anglo-Norman invaders, the lands of the church were held as fee farms (*frankalmoign*), thereby removing the majority of ecclesiastical landholdings from the more militarized services they had

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sec. M1171.29, p. 1187; Frame, *Colonial Ireland 1169-1369*, 18–23; James Lydon, *The Lordship of Ireland in the Middle Ages* (Four Courts Press, 2003), 39–43. Strongbow ultimately ended up serving Henry II until the earl's death in 1176, earning back the lands he had earned through his marriage to Aoife Mac Murchada. His line, however, was short lived and the kingdom of Leinster fell back into the management of English lords installed by the king in 1177.

<sup>28</sup> Lydon, *The Lordship of Ireland in the Middle Ages*, 52–53.

<sup>29</sup> Duffy, *The Concise History of Ireland*, 69.

<sup>30</sup> Jocelyn Otway-Ruthven, "Knight Service in Ireland," *The Journal of the Royal Society of Antiquaries of Ireland* 89, no. 1 (1959): 1.

historically engaged in.<sup>31</sup> While mandatory military service from the Irish populace was scant, the establishment of these colonial administrators came with conversions and shifts in local powers. Land holdings changed from pre-Invasion *trícha cét* units to similar but distinctly Anglo-Norman cantreds, signifying a new scheme of control across Anglo-Norman controlled Ireland landscape.<sup>32</sup> Manor systems were primarily how the English established control in newly occupied areas as it established support bases for occupation via tenurial relationships, modeling occupied areas to fit the feudal scheme of England.<sup>33</sup> These relationships had tangible social and economic impacts, mostly for Anglo-Norman colonists, while also impacting environmental health with the shift in land management practices.<sup>34</sup> While manor systems provided insular social systems, they additionally disrupted the previously established Irish economies.<sup>35</sup> All in all, the manor systems stratified Ireland through shifts in agricultural techniques and holdings but also through legal organization.

In counties under control of the English crown, like Dublin and Waterford, the magnates (great lords) wielded power over whole counties and lordships. Barons (holders of around 40,000 acres of land) were particularly responsible for the integration and operation of the new manor system in Ireland.<sup>36</sup> These baronies were additionally responsible for the introduction of English

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<sup>31</sup> Otway-Ruthven, 2. However, it is important to highlight that although church lands were largely removed from military feudalism under the English crown, the dynamics of being designated as fee farms was more complicated on the community level. There are instances of “double-dipping” where military sub-tenants were also subjected to fee farm rent. Furthermore, church lands that became agricultural resources were treated similarly by Anglo-Norman lords for matters of wardship, marriage, and escheat, although they were ostensibly legally exempt from management in those matters. Fundamentally, the English policies towards Irish monastic communities could be a thesis in and of itself because of the clashing of mainland European church hierarchy with the more individualistic worship developed over 600 years in Ireland.

<sup>32</sup> Paul MacCotter, “Functions of the Cantred in Medieval Ireland,” *Peritia*, January 1, 2005, 310, [https://www.academia.edu/2053262/Functions\\_of\\_the\\_cantred\\_in\\_medieval\\_Ireland](https://www.academia.edu/2053262/Functions_of_the_cantred_in_medieval_Ireland).

<sup>33</sup> Mark Keegan, “The Archaeology of Manorial Settlement in West County Limerick in the Thirteenth Century,” in *The Manor in Medieval and Early Modern Ireland*, ed. James Lyttleton and Tadhg O’Keeffe (Four Courts Press, 2004), 17.

<sup>34</sup> Keegan, “The Archaeology of Manorial Settlement in West County Limerick in the Thirteenth Century,” 17–18.

<sup>35</sup> Otway-Ruthven, “The Organization of Anglo-Irish Agriculture in the Middle Ages,” 3–4.

<sup>36</sup> MacCotter, “Functions of the Cantred in Medieval Ireland,” 315.

common law to the Irish landscape, while competition between baronial courts, whose geographical jurisdictions overlapped, were responsible for excessive fees levied on the Irish populace.<sup>37</sup> Not only did the distribution and enactment of new governing systems breed financial distress for taxed people caught between two baronies, but settlement landscapes were overturned from their traditional use, as seen in the lordship (liberty) of Meath.<sup>38</sup> Settlement patterns in Meath reveal that Anglo-Norman migrants tended to utilize existing monastic structures to establish their manorial systems.<sup>39</sup> Additionally, these systems relied on commercial agriculture, as seen with the treatment of ecclesiastical holdings as fee farms. However, this transition to commercialized agriculture was supported by existing the Irish farming families who were incorporated as tenants, sometimes unfree tenants known as *betaghs*.<sup>40</sup> Associations of artefact rich assemblages with higher status items have often been found in concert with evidence of substantial agricultural activity.<sup>41</sup> Archaeological investigations of the late twelfth century to the mid-thirteenth century reflect this transition in land use, but do not entirely capture

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<sup>37</sup> MacCotter, “Functions of the Cantred in Medieval Ireland,” 315–16.

<sup>38</sup> Niamh Curtin, “Pottery Production in Twelfth–Fifteenth-Century Ireland as an Indicator of Cultural, Social and Economic Relationships,” *The Journal of Irish Archaeology* 28 (2019): 142. According to Curtin, “in medieval studies, the term ‘Gaelic Irish’ does little to convey the complex system of familial and political ties that bound members of a vast array of chiefdoms and kin groups to each other. Similarly, the term ‘Anglo-Norman’ is insufficient to describe the range of ethnic identities and associations experienced by those who came to Ireland in the twelfth century and the generations that followed.” However, in the years of early settlement, much of the competition between the barons appears to have been largely political as the main threats to their power were the Irish kings not folded under the control of the English crown. Later absenteeism, competition abroad, and the Bruce invasion did change the relationship between these baronies and their tenants. But, importantly, even for those English colonists born in Ireland, they viewed themselves as distinctly different than the Irish.

<sup>39</sup> Margaret Murphy, “Digging with Documents: Late Medieval Historical Research on the M3 in County Meath,” in *Roads, Rediscovery and Research: Proceedings of a Public Seminar on Archaeological Discoveries on National Road Schemes, August 2007* (National Roads Authority, 2008), 120, [https://www.google.com/url?sa=t&source=web&rct=j&opi=89978449&url=https://www.tii.ie/technical-services/archaeology/publications/archaeologymonographseries/Mon-5-Ch-11-Murphy.pdf&ved=2ahUKewj5x6uX3tGFAXVxHkQIHZiwBNwQFnoECBIQAQ&usg=AOvVaw0bpZzvsHs3\\_\\_JWyVwUwraN](https://www.google.com/url?sa=t&source=web&rct=j&opi=89978449&url=https://www.tii.ie/technical-services/archaeology/publications/archaeologymonographseries/Mon-5-Ch-11-Murphy.pdf&ved=2ahUKewj5x6uX3tGFAXVxHkQIHZiwBNwQFnoECBIQAQ&usg=AOvVaw0bpZzvsHs3__JWyVwUwraN).

<sup>40</sup> Gardiner, “Landscape and Farming in the North of Ireland in the Late Middle Ages and Early Modern Period,” 119; Murphy, “Digging with Documents: Late Medieval Historical Research on the M3 in County Meath,” 121; Otway-Ruthven, “The Organization of Anglo-Irish Agriculture in the Middle Ages,” 4.

<sup>41</sup> Murphy, “Digging with Documents: Late Medieval Historical Research on the M3 in County Meath,” 123.

the extent to which the Anglo-Norman colonization might have accelerated the transformation of the Irish landscape.<sup>42</sup> While palynological work detailed growing deforestation and increases in cereal pollens throughout this period, this time had been largely ignored by historians interested in the environmental history of late-medieval Ireland.<sup>43</sup> The archaeological record still attests to how the Irish land was shifted more towards commercial agriculture under English barons.

### Clash of Rulership Systems

As highlighted in the circumstances of the Anglo-Norman entrance into Ireland, war was an integral aspect of multiple generations of Irish political systems to the development of feudal systems of governance. Pre-invasion Ireland was dominated by various kingships, the most important of these kings is typically thought to be the high king of Ireland (*Ardri*). However, in stark contrast to the forms of governance developed in the wake of the later Magna Carta (AD 1215), the might and authority of a provincial king was more directly tied to their military might and pledges with rulers of smaller regions, generally traditionally held by a family or clan, as opposed to authority bestowed by a singular law tract.<sup>44</sup> The title, then, of high king itself required not only control of the specific province but also control or amicability with every other provincial kingship, as seen with the case of Muircertach Mac Lochlainn and Ruaidhri Ó Conchobair. Many of the high kings in the Irish annals seem to have been awarded high kingship

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<sup>42</sup> K. W. Nicholls, *Gaelic and Gaelicized Ireland in the Middle Ages* (Lilliput Press, 2003), 5.

<sup>43</sup> Sarah H. Lomas-Clarke and Keith E. Barber, "Palaeoecology of Human Impact during the Historic Period: Palynology and Geochemistry of a Peat Deposit at Abbeyknockmoy, Co. Gaiway, Ireland," *The Holocene* 14, no. 5 (July 1, 2004): 721–31, <https://doi.org/10.1191/0959683604hl750rp>; Edwina E. Cole and Fraser J.G. Mitchell, "Human Impact on the Irish Landscape during the Late Holocene Inferred from Palynological Studies at Three Peatland Sites," *The Holocene* 13, no. 4 (May 1, 2003): 507–15, <https://doi.org/10.1191/0959683603hl616rp>. A greater discussion of the above research and why these reconstructions are limited is covered in a later section of this work.

<sup>44</sup> Charles Doherty, "Kingship in Early Ireland," *The Kingship and Landscape of Tara*, January 1, 2005, 13–14, [https://www.academia.edu/42808142/Kingship\\_in\\_Early\\_Ireland](https://www.academia.edu/42808142/Kingship_in_Early_Ireland); Nicholls, *Gaelic and Gaelicized Ireland in the Middle Ages*, 50. There is much debate over the intricacies of the utilization and integration of Brehon law in medieval Irish kingships. However, much of the contemporary surviving perspectives on Irish kingship of the period of interest are from the English perspective. Hence, it is difficult to determine the actual strictures and practices because the legal practices that survived are from the invading group.

posthumously, though entries do refer to arch-kings when chroniclers were ostensibly creating manuscripts:

Tempull mór Dairi do denum la comarba Coluim Cille, .i., la Flaithbertach, mac in espuic h-Ui Brolcain & la samudh Coluim Cille & la Muircertach h-Ua Lochlainn, la h-airdrigh n-Erenn. Ocus tairnic cloch in tempaill moir sein Daire, i faelet nocha traighed, fri ré cethorchat laa.<sup>45</sup> (*Annals of Ulster* U1164.6, p.147, edited by Seán Mac Airt and Gearóid Mac Niocaill, <https://celt.ucc.ie/published/G100001A/index.html>)

The great church of Daire was built by the successor of Colum-cille, that is, by Flaithbertach, son of the bishop Ua Brolchain and by the Community of Colum-cille and by Muircertach Ua Lochlainn, arch-king of Ireland. And the [top] stone of that great church, wherein there are ninety feet [in length], was completed within the space of forty days.<sup>46</sup>

While the title of high kingship changed over the course of Anglo-Norman colonization, the dynamics of warfare and violence in pre-Invasion Ireland collided with the customs and expectations of English mense lords installed by King Henry II. The main modalities of Irish warfare were harrying—brief but repeated pillaging—and cattle raiding.<sup>47</sup> Accounts of both harrying and cattle raiding by annalists highlight the particularly destructive nature of these practices as they usually resulted in fires and destruction of crops.<sup>48</sup> Cattle raiding was critical for

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<sup>45</sup> “The Annals of Ulster” (Dublin, Ireland, 1983), sec. U1164.6, CELT: The Corpus of Electronic Texts, <https://celt.ucc.ie/published/G100001A/index.html>.

<sup>46</sup> Mac Carthy and Hennessy, “The Annals of Ulster,” sec. U1164.6.

<sup>47</sup> Colm Donnelly and Eileen Murphy, “Violence in Later Medieval Ireland: The Osteoarchaeological Evidence and Its Historical Context,” in *Becoming and Belonging in Ireland AD 1200-1600: Essays in Cultural Practice*, ed. Eve Campbell, Elizabeth FitzPatrick, and Audrey Horning (Cork: Cork University Press, 2018), 110.

<sup>48</sup> Namely, churches are recorded as the primary, potentially unintended, targets of the fires. As the annalists themselves had significant religious ties, the destruction of places of gathering and worship were particularly important.

kingships who desired greater access to both cattle and agricultural resources. Pre-Norman Ireland is estimated to have had 45,000 family farms in operation, excluding farmed land tended to by monasteries and lay tenants.<sup>49</sup> Cattle were essential in a twofold manner as oxen were used to plough fields, and milk cows were loaned to the ‘clients’ of kings. The relationship between the Irish kings and their populace was akin to redistributive economies wherein the smaller non-warrior class supported those who secured and protected their lands. The flow of resources traveled between the provincial kings, regional kings, and the (free) people under their protections.<sup>50</sup> Cattle raiding, then, was not necessarily employed to only steal the animals but to also deprive troublesome rulers of their people, taking them as hostages.<sup>51</sup> In the pre-colonization years detailed in various annals, numerous mentions of hostage and cattle exchanges follow passages detailing harrying, depredations, or raiding, emphasizing a central aspect of Irish political customs.<sup>52</sup>

By the eleventh century, these kingships would muster troops to engage in these campaigns, selecting from noble freemen (*grad flatha*) and employing foreign mercenaries to serve under his command.<sup>53</sup> These kings maintained a standing coalition of full-time soldiers known as *teaghlach* who composed the core of the approximately 2,000 strong fighting force, with others drawn from *trícha cé* divisions of the land.<sup>54</sup> With the increased militarization of the

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<sup>49</sup> Paul V. Walsh, “Irish Warfare: Irish Warfare During the Norman Invasion,” *Medieval Warfare* 6, no. 4 (2016): 16; Liz FitzPatrick, “Raiding and Warring in Monastic Ireland,” *History Ireland* 1, no. 3 (1993): 17–18.

<sup>50</sup> Walsh, “Irish Warfare,” 13.

<sup>51</sup> Walsh, “Irish Warfare,” 16.

<sup>52</sup> O’Donovan, “The Annals of the Kingdom of Ireland by the Four Masters”; Mac Carthy and Hennessy, “The Annals of Ulster”; William Hennessy, “Annals of Loch Cé” (1871), CELT: The Corpus of Electronic Texts, <https://celt.ucc.ie/published/T100010A/index.html>; Seán Mac Airt, “Annals of Inisfallen” (1950), CELT: The Corpus of Electronic Texts, <https://celt.ucc.ie/published/T100004/index.html>; Martin Freeman, “Annála Connacht” (Dublin, Ireland, 1970), <https://celt.ucc.ie/published/T100011/index.html>; Liz FitzPatrick, “Raiding and Warring in Monastic Ireland,” *History Ireland* 1, no. 3 (1993): 16–18.

<sup>53</sup> Walsh, “Irish Warfare,” 14.

<sup>54</sup> Walsh, “Irish Warfare,” 14.

Irish political landscape, Diarmat Mac Murchada's inability to muster and keep enough was fatal and so the seeking out of mercenary troops in England was, technically, an adequate solution.<sup>55</sup> But, these established military forces, especially those allied and under Ruaidhri Ua Conchobair, and experience were the earliest strongholds of resistance against the English colonization.

With the conversion and styling of occupied territories into manorial systems, these colonial administrators effectively modeled themselves off the previous Irish kings. As the settlement and consolidation of the conquest of Ireland was largely an early political endeavor for the Anglo-Normans, as ecological and economic factors impacted the Irish people at large first, these lords were able to reign over the allotted English-controlled territory and strike out to locations under speculative grants.<sup>56</sup> However, as James Lydon emphasizes, Henry II's betrayal of agreements with the Irish kings sparked violent resistance to infeudation processes.<sup>57</sup> Lydon characterizes the feudal system as a "foreign body" that had been forcibly introduced to Ireland, resulting in continuous rejection from the Irish populace for the entirety of the middle ages.<sup>58</sup> Irish opposition was additionally fueled by the mistreatment of the provincial and regional rulers by the Lord of Ireland in the late 12<sup>th</sup> century and future king of England, John (r. 1199-1216).

However, John's 1185 visit to Ireland not only sparked a new wave of colonization but also began the pattern of relying on the justiciar as the sword of an absentee ruler.<sup>59</sup> The establishment of this office by Henry II created a geographically more proximate hand of the King. But the justiciar largely functioned as the king's tool to check his magnates to prevent the existence of another Strongbow. In 1210, King John arrived in Ireland with a large force to quell

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<sup>55</sup> Walsh, 14–15.

<sup>56</sup> Lydon, *The Lordship of Ireland in the Middle Ages*, 52–53. Think of speculative grants as approval from a king for his subjects to violently claim territories that are not actually a part of the king's actual dominions.

<sup>57</sup> Lydon, *The Lordship of Ireland in the Middle Ages*, 53.

<sup>58</sup> Lydon, *The Lordship of Ireland in the Middle Ages*, 53.

<sup>59</sup> Doherty, "Kingship in Early Ireland," 67–68.

the disobedience and growing power of his magnates, not only reclaiming the loyalty of the three western kingdoms but also secured the lordships of Meath, Ulster (Uliad), and Limerick.<sup>60</sup> Until the king's death in 1216, the allied English and Irish lords made no moves against the Crown but the elimination of the threat of John spurred a steady increase in violence amongst the Irish kings, lords, and English magnates as well as continued resistance of English rule.

The successive English rulers, Henry III (r. 1216-1272) and Edward I (r. 1272-1307), largely left Ireland to the administration of justiciars and is sometimes characterized as a period of decline of Anglo-Norman settlement.<sup>61</sup> Decline, however, might be a misnomer, the more appropriate term is transformation. While the direct interference of the English kings reduced, the agents of English colonization remain documented in numerous Irish annals, created in locations across the island. From 1250-1348, the relationships between the English lords, Irish lords, and Irish kingships transformed in accordance with internal and external tensions. Combined with the economic and environmental upheavals, approximately a hundred after initial invasion was marked by constant conflicts across the island. But, most critically, what appears in various Irish annals as cycles of disruption from the mid-thirteenth to mid-fourteenth centuries reflects a complicated confluence of circumstances driven by environmental and human agents. The countryside-devastating aftermath of regularized violent conflicts and oscillating climate, prolonged the periods of resource scarcity for all inhabitants of the island, in turn intensifying unfavorable living conditions in Ireland, even before the entry of the Black Death in 1348.

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<sup>60</sup> Lydon, *The Lordship of Ireland in the Middle Ages*, 70–71.

<sup>61</sup> Lydon, *The Lordship of Ireland in the Middle Ages*; Nicholls, *Gaelic and Gaelicized Ireland in the Middle Ages*, 14–15.

## Methodology: Inter-Annual Records and Historical Research

### Histories of Climate and Society: Challenges and Approach

To investigate changes in the land and society during a time of targeted resource destruction and burning of structures makes an analysis of the environment through the archaeological record difficult. However, the land itself contains remnants of the past which can help historians better understand the contours of historical human behavior and the greater climatic trends they experienced. Palynology provides a look into the plant species whose pollen was preserved—usually in a bog given their ubiquity in Ireland—which in turn allows for the assessment of deforestation and reforestation patterns. Pollen analysis can also be used to investigate patterns of agriculture, especially important in the period the field of dendrochronology provides a solution to this absence in the archaeological and historical record. One of the pioneers of dendroarchaeology, Mike Baillie, an Irish dendroarchaeologist, highlights one of the hiccups that many researchers of this period in Irish history encounter: lack of extant Irish oaks for tree-ring dating.<sup>62</sup> However, work in more recent years from Scotland and Southern England have provided researchers with temperature, precipitation, and drought indices from the late medieval period. These resources allow for other researchers to recognize years and periods of medieval climate variability and extremes. Some of these datasets have been inputted into the International Tree Ring Database (ITRDB) or have crafted visualization tools for their data.<sup>63</sup> These open-access databases enable the utilization of

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<sup>62</sup> Michael G. L. Baillie, “The Belfast Oak Chronology to AD 1001,” *Tree-Ring Bulletin* 37 (n.d.): 3–4, <http://hdl.handle.net/10150/260372>; Michael G. L. Baillie, *A Slice Through Time: Dendrochronology and Precision Dating* (B. T. Batsford Ltd, 1995), 26–27, 124–125. There are chronologies from Ireland that now extend into the early 13<sup>th</sup> century, taken from more forested areas of western Ireland.

<sup>63</sup> As with the Old-World Drought Atlas.

different historical data in inquiries into the past, especially for times where there are records of observations that help enrich our understandings of the past with this scientific verification.

Proxy data and climate reconstructions bring about their own challenges, as overreliance on quantitative and qualitative data have driven scholars to purport narratives of societal collapse. Scholarly debates regarding the ecocide narrative of Rapa Nui and the perception of the sudden collapse of Great Angkor are exemplars of this type of erroneous construction.<sup>64</sup> Rather than center on collapse narratives, histories of climate and society (HCS) can be employed in the construction and investigations of multi-faceted societal resilience made possible through interdisciplinary analysis.<sup>65</sup> The goal of HCS should be to utilize both qualitative and quantitative data to enrich understandings of the past, providing new or confirming anticipated contexts in which past peoples lived. However, the greatest pitfall of this methodological approach is when correlation is equated to causation.

Qualitative scholarship often characterizes climate change as a force that caused social change, but climatic pressures are better understood as narrowing, widening or redistributing the range of possible human action. Simplistic approaches to causation are encouraged by the tendency in HCS scholarship to ignore the uncertainties that are involved in connecting large-scale climatic trends to local weather events—let alone connecting weather events to human responses in the distant past

As such, the utilization of multi-proxy data in concert with historical records from 1250-

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<sup>64</sup> Brendan Buckley et al., “Climate as a Contributing Factor in the Demise of Angkor, Cambodia,” *Proceedings of the National Academy of Sciences of the United States of America* 107 (March 1, 2010): 6748–52, <https://doi.org/10.1073/pnas.0910827107>; “Island-Wide Characterization of Agricultural Production Challenges the Demographic Collapse Hypothesis for Rapa Nui (Easter Island),” accessed January 10, 2025, <https://doi.org/10.1126/sciadv.ado1459>; Gregory T Cushman, Trisha Jackson, and Johannes J Feddema, “Ecologies of Resilience: The Many Colonizations of Rapa Nui (Easter Island), c. 1200–Present,” *The American Historical Review* 129, no. 4 (December 1, 2024): 1501–41, <https://doi.org/10.1093/ahr/rhae466>.

<sup>65</sup> Dagomar Degroot et al., “Towards a Rigorous Understanding of Societal Responses to Climate Change,” *Nature* 591, no. 7851 (March 2021): 539–41, <https://doi.org/10.1038/s41586-021-03190-2>.

1348 will be critically presented, not as a confirmand of erratic climate conditions causing societal change, but as a tool to highlight a concurrence of events during this period.<sup>66</sup>

Combining proxy data from multiple researchers not only allows for greater verification of trends but also allows for the detailing of concurrent conditions recorded by different proxies.

### **Palmer Drought Severity Index (PDSI), the Old-World Drought Atlas (OWDA), and the International Tree Ring Database (ITRDB) Datasets**

Armed with climate reconstructions as interpretive tools, the climatic experiences of late medieval Ireland varied considerably. These conditions appear to have laid the foundation for weather—and pluvial—related food scarcities, which medieval annalists provided observations of phenomena that coincided with famines. These observations across various Irish locations and years paint a quite dreary picture of the countryside. Bruce M.S. Campbell and Francis Ludlow’s publication grappling with this period provides critical context regarding climate developments for this period in Irish history.<sup>67</sup> Their work centers on the consideration that climate variations were significant historical agents of change. In late medieval Ireland investigating the “array of climate variables reveals a complex picture of ongoing episodic change, in which no combination of climatic circumstances ever persisted for long or recurred in quite the same configuration.”<sup>68</sup> Campbell and Ludlow posit that high levels of volcanic activity between 1170 and 1300 catalyzed the constantly shifting conditions, with the .<sup>69</sup> The occurrences of mid to high-latitude eruptions throughout this period disrupted the relatively stable climatic conditions in the early part of the twelfth century with spurts of short-term climate anomalies.<sup>70</sup>

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<sup>66</sup> Degroot et al., 542.

<sup>67</sup> Bruce Campbell and Francis Ludlow, “Climate, Disease and Society in Late-Medieval Ireland,” *Proceedings of the Royal Irish Academy* 120 (2021): 159–252.

<sup>68</sup> Campbell and Ludlow, “Climate, Disease and Society in Late-Medieval Ireland,” 167.

<sup>69</sup> Campbell and Ludlow, “Climate, Disease and Society in Late-Medieval Ireland,” 194.

<sup>70</sup> Campbell and Ludlow, “Climate, Disease and Society in Late-Medieval Ireland,” 194.

Moreover, Campbell and Ludlow build their climate chronologies through an intense investigation of tree-rings from English oak woodlands, with a dearth in the Irish oak record, in concert with Irish annals and English records on grain yields and prices. The breadth of Campbell and Ludlow's investigation leaves a bit to be desired, especially when approaching environmental history with tree-ring reconstructions, as they do not leverage the fact that these records provide information on annual and seasonal growth trends.<sup>71</sup> But their utilization of tools such as the Old-World Drought Atlas (OWDA) provide a starting point for more focused inter-annual and decadal research.

Drought indexes utilize temperature, soil moisture storage, and precipitation data from climate proxies (generally tree-rings) to model years of increased dryness and wetness. The Palmer Drought Severity Index (PDSI) was developed by Wayne C. Palmer in the 1960s to "develop an index which would allow space as well as time comparisons of drought statistics."<sup>72</sup> While modified over the years, PDSI remains one of the most prominent tools in tree-ring reconstructions across the globe, even with its drawbacks mathematically when examining droughts effects less than twelve months.<sup>73</sup> One of the greatest uses of PDSI values is in the creation of dendrochronological networks, especially drought atlases. The atlases provide gridded annual resolution maps of summer drought, usually with color coded PDSI values. Positive values indicate wet years, negative values indicate dry years, and normal value years are denoted by zero (see Figure 1). The spatial dimensions captured by drought atlases allow for not

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<sup>71</sup> And identifiable inter-annual variability is a prerequisite for a species that can be used for tree-ring reconstructions.

<sup>72</sup> Wayne C. Palmer, "Meteorological Drought," Research Paper (Washington, D.C.: U.S. Weather Bureau: Office of Climatology, 1965), 4, [https://www.droughtmanagement.info/literature/USWB\\_Meteorological\\_Drought\\_1965.pdf](https://www.droughtmanagement.info/literature/USWB_Meteorological_Drought_1965.pdf).

<sup>73</sup> Huiqian Yu et al., "Modified Palmer Drought Severity Index: Model Improvement and Application," *Environment International* 130 (September 2019): 104951, <https://doi.org/10.1016/j.envint.2019.104951>.

only accessible presentations of this data, but the visualization allows eases the comparison of PDSI values with historical records, archaeological finds, and other climate models.

The Old-World Drought Atlas (ODWA) is a 106-chronology tree-ring networks that provides not only map visualizations of drought and pluvial reconstructions but also contains an open access data to be utilized in time series extractions.<sup>74</sup> These time series capture variability for June, July, and August (JJA) PDSI values for specific geographical regions and can be visualized and the data access through the Old World Drought Atlas web application (see Figure 1).<sup>75</sup> By using this tool, the dynamics of decadal wet/dry summers for Ireland as a whole can be mapped, with the lack of the oak chronology still providing a barrier for the creation of more focused, regional assessments. And though PDSI values are widely utilized to assess drought conditions, the historically wet years modeled from the dataset which are also of interest as these years tended to have far more drastic effects on agriculture. Utilizing the time series provides a significant advantage when compared to other historical information, as this data demonstrates inter-annual and decadal variability which can then be compared to other year-based information, like the various annals of Ireland.<sup>76</sup>

### **The Production, Use, and Applications of the Irish Annals**

What limits both the chronicler and the tree is their life spans; a human's is around fifty years and the tree's anywhere from one to a thousand years.<sup>77</sup> Trees store annual information in their rings, but the records of people tend to be more fleeting. For starters, there are innumerable

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<sup>74</sup> Edward R. Cook et al., "Old World Megadroughts and Pluvials during the Common Era," *Science Advances* 1, no. 10 (November 6, 2015): 2, <https://doi.org/10.1126/sciadv.1500561>.

<sup>75</sup> Dorian J. Burnette, "The Tree-Ring Drought Atlas Portal: Gridded Drought Reconstructions for the Past 500–2,000 Years," *Bulletin of the American Meteorological Society* 102, no. 10 (November 4, 2021): 953–56, <https://doi.org/10.1175/BAMS-D-20-0142.1>; Dorian J. Burnette, "Old World Drought Atlas," Tree-Ring Drought Atlas Portal, accessed January 10, 2025, <http://drought.memphis.edu/OWDA/>.

<sup>76</sup> Important to note is that the reconstructions for Ireland most likely depend on chronologies from Scotland and England as there is a dearth of extant trees from the mid-13<sup>th</sup> and through the late 14<sup>th</sup> century in Ireland.

<sup>77</sup> Valerie Trouet, *Tree Story: The History of the World Written in Rings* (Johns Hopkins University Press, 2020), 36.

lost histories and many that survived are biased, produced for and by the literate, a typically elite minority of society who had their own reasons for chronicling. The Irish chronicling tradition, however, provides a unique resource for medieval historians due to the breadth of time covered and the multiplicity of surviving manuscript groupings. The annals, a type of chronicle produced well into the 16<sup>th</sup> century, span the geographies of the island and languages. The vast majority follow the kalend tradition of event recording, providing—much like tree-rings—the ability to examine annual trends and variability.<sup>78</sup> Four major groupings have been assigned to the various surviving manuscripts by locality or by style, as most chroniclers recorded events within regions they lived. The groups include: Clonmacnoise, Cuana, Connacht, and the regnal chronicles.<sup>79</sup>

Literary sources, like the annals, were not penned by faceless individuals—though their names may not be known. As such commonalities arise in these works. These groupings of sources relies on both locality and the shared histories of the people who contributed to each work (see Figure 2). The Clonmacnoise chronicles are grouped by subject matter, presumed to have been developed to record the affairs of the Clonmacnoise monastery until its termination in 1227.<sup>80</sup> The association of these source with a monastic site make sense in a threefold manner. Pre-fourteenth century, monasteries tended to produce and reproduce manuscripts, craft their own year-lists as records of festival days and maintain a requisite number of literate community members who could contribute events from their own lifetimes to a chronicle.<sup>81</sup>

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<sup>78</sup> Daniel P. McCarthy, *The Irish Annals: Their Genesis, Evolution, and History* (Four Courts Press, 2008), 9, <http://archive.org/details/irishannalstheir0000mcca>.

<sup>79</sup> McCarthy, *The Irish Annals*, 8–9.

<sup>80</sup> McCarthy, *The Irish Annals*, 10–11.

<sup>81</sup> Christopher De Hamel, *A History of Illuminated Manuscripts* (London : Phaidon Press, 1994), 74–108, <http://archive.org/details/historyofillumin0000deha>; Christopher De Hamel, *Scribes and Illuminators* (Toronto ; Buffalo : University of Toronto Press, 1992), 34–37, <http://archive.org/details/scribesilluminat0000deha>.

The Cuana group contains interjections in each manuscript body from the now lost ‘Liber Cuanach,’ attributed to the author ‘Cuana.’<sup>82</sup> The contributor and compiler from Adam—1019 has been identified as Cuán Ua Lothcháin, though difficulty pinpointing the author’s existence outside of the chronicles is challenging. After 1019, these annals in this group begin to diverge and detail events across various regions, as seen in the *Annals of Innisfallen* and the *Annals of Ulster*. The most substantial Irish annals of the medieval period come from the Connacht group. These sources have the benefit of the position of *ollamh* (professor) of the Uí Conchobair dynasty’s history.<sup>83</sup> With a dedicated position established in Roscommon from 1231 to 1482 for the individual serving as the Uí’s historian, these chronicles are unique because of their production compilations from a secular institution.<sup>84</sup> Not every one of these chronicles aligns with a person, place, or position; in fact, one of the most studied manuscripts, *The Annals of the Kingdom of Ireland by the Four Masters vol.1-6*, does not fit within any category utilizing a combination of regnal and kalendrical dating. Additionally, one of the best chronicles for information about the Black Death in Ireland is that of Friar John Clyn, author of *The Annals of Ireland*, who is only identified because of a single self-identification in his work:

Now I, Friar John Clyn of the order of Minors and convent of Kilkenny, have written in this book these noteworthy deeds that happened in my time, that [I know] by faithful eye witness or by worthy reliable report. And lest these notable records should be lost with time and recede from memory of future people, [I] seeing these many evils and the whole world as it were in a bad situation, among the dead, expecting death when it should come, I have brought together in writing, just as I have truthfully heard and examined. And lest

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<sup>82</sup> McCarthy, *The Irish Annals*, 11.

<sup>83</sup> McCarthy, *The Irish Annals*, 11–12.

<sup>84</sup> McCarthy, *The Irish Annals*, 10.

the writing should perish with the writer and the work fail together with the worker, I am leaving parchment for the work to continue if, by chance, in the future a man should remain surviving, and anyone of the race of Adam should be able to escape this plague and [live] to continue this work [I] commenced.<sup>85</sup>

Regionality not only allows for the sorting of annals by geography but has a tangible impact on the attentions given to specific events. The six annals selected as detailed in the previous paragraph, are largely attributed to areas that eventually fell under the purview of English colonial administrators. As seen in Figure 2, most of the locations attributed to each annal had some form of colonial relationship with England. However, western regions like Connacht and Ulster became Irish-ran lordships unlike the eastern coast where production of these annals appears absent.<sup>86</sup> The production of these annals in a period of geographic upheavals, negotiations, and identity transformations makes it difficult to pinpoint the exact allegiances of the annalists. Combined with the knowledge that these authors relied upon older writers—whose own identities and responsibilities likely impacted reporting on certain events—an assessment of who the authors were is muddled. As highlighted previously, who these records were produced for, proves to be the best metric of identification with specific ethnic groups.

Utilizing environmental data in concert with records from the period facilitates a critical investigation into the components that historians utilize to construct narratives about the past. Drs. Ludlow and Campbell's lengthy article outlining the major climatological trends of late medieval (1000-1500) Ireland acts as a basis for the methodology employed in this research.<sup>87</sup> However, where Ludlow and Campbell contextualize disease and adverse living conditions

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<sup>85</sup> John Clyn, *The Annals of Ireland* (Four Courts, 2007), 250–52.

<sup>86</sup> Nicholls, *Gaelic and Gaelicized Ireland in the Middle Ages*, 207–8.

<sup>87</sup> Campbell and Ludlow, "Climate, Disease and Society in Late-Medieval Ireland."

within the realms of the economy and the climate, this seeks to explore the applications of annual records on a smaller scale.<sup>88</sup> With the backbone of Ludlow and Campbell's work, I posit whether these periods of disruption were driven by environmental catalysts or by anthropogenic forces. Furthermore, I seek to understand not only factors that might have intensified periods of hardship but to also seek out tangible nuances in how environmental shifts and other events were perceived by the largely Irish authors. Climate reconstructions support that the mid-thirteenth through the mid-fourteenth centuries were a time of extremes, the annals, then, allow for the selection and inclusion by historical authors of what they, or the authors before them, believed to be the driving factors of strife in a time of immense reorganization, upheaval, and resistance.

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<sup>88</sup> Campbell and Ludlow; Bruce M. S. Campbell, *The Great Transition: Climate, Disease and Society in the Late-Medieval World* (Cambridge: Cambridge University Press, 2016), <https://doi.org/10.1017/CBO9781139031110>. The comparative element appears to have been brought in by Campbell whose work, as seen in *The Great Transition*, highlights the connections between climate, disease, and society in the late-medieval period through a heavily economic focus.

### **Regional Violence, Identity Formation, and Environmental Disruption (1250-1300)**

Very bad weather in that year, and general warfare between the foreigners and Gaedil of Ireland. And there was a great famine in the same year so that multitudes of poor people died of cold and hunger and the rich suffered hardship.<sup>89</sup>

#### **Introduction**

From 1250 through 1300, three major episodes of desolation in Ireland, largely environmentally driven, can be identified: 1250-1255, 1257-1263, and 1269-1272.<sup>90</sup> The incidences and records for famine, mass animal death, and harvest failures align with PSDI values of extreme variability, highlighting environmental unpredictability and fluctuations as key disruptors. However, abrupt changes to the Irish landscape were not the sole drivers of destruction. Shifts in the behaviors of Irish kings and the English lords contributed and most likely intensified harmful living conditions and restrictions to resource access. To track the impacts of natural and human violence in these sources, some contextualization for pre-colonial is needed.

There are many ways to approach warfare but a look at scholarly work on the early Irish chiefdoms is a good place to start. Blair Gibson identifies two main modes of warfare that dominated and shaped the Irish landscape pre-Norman invasion: expansionist warfare and hegemonic warfare.<sup>91</sup> Expansionism was used to bring more territory under the command of a chiefdom. Gibson argues that the second could not exist without the first, as hegemonic warfare solidified allegiances and identities under the banner of an Irish king. The consolidation of the group crafted the prerequisite social conditions and positions for the allotment of administrative

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<sup>89</sup> Mac Airt, "Annals of Inisfallen," sec. AI1272.2.

<sup>90</sup> A single year, 1286, is marked by an exceptionally wide-reaching cattle plague, but this incident appears almost entirely environmentally driven, as will be discussed later.

<sup>91</sup> D. Blair Gibson, "Was There a Method to Their Madness? Warfare, Alliance Formation, and the Origins of the Irish Medieval State," in *Human Conflict from Neanderthals to the Samburu: Structure and Agency in Webs of Violence* (Springer, Cham, 2020), 40, [https://doi.org/10.1007/978-3-030-46824-8\\_4](https://doi.org/10.1007/978-3-030-46824-8_4).

duties, eventually creating a state-level system of governance in the case of the Irish kings.<sup>92</sup> While these delineations are useful generalizations of pre-Norman Irish warfare, these types of warfare tend to strictly categorize relationships that were more politically and socially complex than is generally presented by scholars. The height of the transitivity and organization of Irish warfare, and related violence, occurred in the period in question—the mid-thirteenth to mid-fourteenth century—with adoption, adaptation, and rejection of Irish pre-colonial systems by not only foreign (English) and pseudo-foreign (generations of Anglo-Welsh-Irish) powers.<sup>93</sup> The assumption of these strategies of violence by colonizing forces fundamentally transformed and warped the original, more-sustainable system, perpetuating constant conflict across Ireland.

### **Irish Warfare: From Monasteries to Magistracies**

To understand warfare in late medieval Ireland throughout in the mid-thirteenth century, the most common utilizations of violence pre-invasion must be reviewed. Sweeping political shifts during the early medieval period (c. 431-1169) were followed by a surge of violence and increased contests between Irish kings; Gibson argues that the intensification of warfare paralleled bids for the installations of political figureheads, generally kinsmen, to increase an individual king's political power.<sup>94</sup> Consolidations of territory via kin installation were a method of territorial expansion, though unless the new administrator could prove their mettle to the people, these maneuvers tended to fail. Scholars tend to emphasize the political sides of war but largely ignore the established uses like the more common and largely unchanged attempts for resource acquisition.<sup>95</sup> While some scholars correctly critique the blanket assumption that

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<sup>92</sup> Gibson, "Was There a Method to Their Madness?," 40–41.

<sup>93</sup> Background and adjacent to these elements were religious developments across the whole island. The connection between the Irish kings, English lords, and settler colonialism are best tackled in a different work.

<sup>94</sup> Gibson, "Was There a Method to Their Madness?," 51.

<sup>95</sup> Gibson, "Was There a Method to Their Madness?," 51–52.

medieval communities were unmoved by violence, raiding appears as a regularized part of Irish culture.<sup>96</sup> As mentioned previously, cattle raiding was a particular avenue of resource acquisition.<sup>97</sup> Epic tales like *Táin Bó Cúailnge* (the Cattle Raid of Cooley) from the Ulster Cycle attests to cattle being the catalyst of the conflict.<sup>98</sup> Interdisciplinary work has solidified the importance of cows in the Early Medieval period, as “the cow was the basic unit of wealth” with social status largely tied to the number of productive cattle one oversaw.<sup>99</sup> Moreover, these domesticates eventually fell into the resource pools of monastic sites, making them prime targets of the violence that was endemic to Ireland.

Precolonial archaeology supports the historical record and this supposition. Monastic sites constructed during the medieval period feature defensive structures like round towers and large enclosures.<sup>100</sup> Furthermore, these settlements contained smaller communities, with tradespeople living in the areas in addition to monastic activity. Militarization, however, was necessary in the early medieval period. Due to the consolidation of goods in monasteries, the locations were prime targets, especially during times of scarcity. The incidences and consolidations of high crosses at later early medieval sites (c. 900-1100), corroborate Gibson’s political assimilation theory while also indicating the continuance of habitation, unless total destruction befell a monastery.<sup>101</sup> Individual militarization of these sites allowed for a ruler to not

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<sup>96</sup> Thomas Finan, “Violence in Thirteenth-Century Ireland,” *Eolas: The Journal of the American Society of Irish Medieval Studies* 4 (2010): 86.

<sup>97</sup> Colm Donnelly and Eileen Murphy, “Violence in Later Medieval Ireland: The Osteoarchaeological Evidence and Its Historical Context,” in *Becoming and Belonging in Ireland AD 1200-1600: Essays in Cultural Practice*, ed. Eve Campbell, Elizabeth FitzPatrick, and Audrey Horning (Cork: Cork University Press, 2018), 110.

<sup>98</sup> Ciaran Carson, *The Táin: A New Translation of the Táin Bó Cúailnge* (Penguin Classics, 2007), xii–xiii.

<sup>99</sup> Finbar McCormick, “Agriculture, Settlement and Society in Early Medieval Ireland,” *Quaternary International*, Agrarian Archaeology in Early Medieval Europe, 346 (September 30, 2014): 121, <https://doi.org/10.1016/j.quaint.2013.10.040>.

<sup>100</sup> FitzPatrick, “Raiding and Warring in Monastic Ireland,” 1993.

<sup>101</sup> FitzPatrick, “Raiding and Warring in Monastic Ireland,” 1993, 16–17; Gibson, “Was There a Method to Their Madness?,” 51. Even still, the multi-period habitation of sites indicates strong reuse and ties to monastic structures.

only muster greater forces but allowed for each dynast to wield the manpower of these locations as they saw fit.<sup>102</sup> The Anglo-Norman invasion—and subsequent cycles of colonization—arrived largely in the aftermath of consolidation but fundamentally shifted the utilization of warfare in Ireland irrevocably. Most importantly, the systems and goals of violence differed with each political entity, competing with and eventually heightening destruction near a century after the initial entrance of the invaders.

### **An Age of Disruption: Migration and Identity Formation**

What followed in the subsequent generations after Strongbow's takeover of Leinster not only brought about the influx of settlers into Ireland but spurred a genesis of multicultural, interconnected systems of governance, administration, and conflict. Critically connected to these developments was a burgeoning identification with ethnic identities on the island. Production of pottery wares in the easternmost regions of Ireland followed the form and styles of the greater Anglo-Norman world, indicating retention of identities by migrants who followed the waves of colonization.<sup>103</sup> Easterly trade connections were essential for the folding of Ireland into the orbit of Anglo-Norman economic systems as port-towns facilitated connections with other ports located about the Irish Sea and Europe writ-large. The English crown profited from the transfer of goods from areas like Flanders, Gascony, Gdansk, Spain, and Portugal.<sup>104</sup> Migrant and Anglo-Norman dominated areas, like Wexford and Dublin, were essential in the solidification of trade but the expansion and enveloping of the Irish populace into the European economies was inherently exploitative.

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<sup>102</sup> FitzPatrick, "Raiding and Warring in Monastic Ireland," 1993, 17.

<sup>103</sup> Curtin, "Pottery Production in Twelfth–Fifteenth-Century Ireland," 150–51.

<sup>104</sup> Curtin, "Pottery Production in Twelfth–Fifteenth-Century Ireland," 150.

AD 1254 saw the gifting of Ireland and Aquitaine by Henry III to his heir Edward I, claiming Ireland as property of the English crown in perpetuity. This dispensation meant that the installed barons and lords would be beholden to the desires of whomever was the king of England. Functionally, the whims of the English king would now formally dictate the lives of those living in Anglo-Norman controlled areas.<sup>105</sup> The supposed uncivility of the Irish people in English-produced sources, like Giraldus Cambrensis and the Venerable Bede, justified the continuous English incursion—from the perspective of the colonizing agents. The Irish annalists paint a different picture and understanding of the changes occurring in their communities during this period.

### **Anthropogenically and Environmentally Driven Change**

King Henry III's granting and official claiming of even more Irish land like Connacht forced Irish leaders to act through multiple avenues. Various representatives made their way to the King of England over the three years after Henry's declaration; the consolidation and meeting of the differing systems of rule initially appeared adequately negotiated in the entries of *Annála Connacht*. In 1255, envoys from the king Fedlim O Conchobair, the Archbishop of Tuaim also journeyed with petitions, and Muiris Mac Gerailt are all recorded as having been sent to meet with the English King.<sup>106</sup> The response of the king was to send a Justiciar to Ireland in order to "settle the territory of Ireland among the barons and knights," who assured O Conchobair that he "should suffer no diminishing of territory or estate so long as this Justiciar held office in Ireland."<sup>107</sup> However, even with eventual allotment of cantreds to O Conchocair,

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<sup>105</sup> James Lydon, "The Years of Crisis, 1254–1315," in *A New History of Ireland: Volume II, Medieval Ireland 1169–1534*, ed. Art Cosgrove (Oxford University Press, 2008), 180–81, <https://doi.org/10.1093/acprof:oso/9780199539703.003.0008>.

<sup>106</sup> Freeman, "Annála Connacht," sec. 1255.6-1255.9.

<sup>107</sup> Freeman, "Annála Connacht," sec. 1256.16-17.

the assurances of the Justiciar only secured peace with the external colonial agents, the Irish systems of governance survived. Depending on the agreements between the reigning Irish kings, the external powers, and internal opposition, the stability of a region could quickly be overturned.

Other annals, like those of Innisfallen, were characterized by conflicts between the English and the Irish, referred to in the historical record as the Foreigners and the Gaedil. In these annals, the first utilization of Gaedil is in reference to the united Irish against the Anglo-Normans in 1177.<sup>108</sup> The use of this term to identify the Irish people of a region, increases in frequency throughout the latter half of the thirteenth century. The events that are chronicled, which fall into the periods of disruption, see an increase in documented unification of Irish forces versus the foreigners. This increased identification of people with an ethnic identity in the historical record, rather than their familial association, acts as a potential marker of communal solidarity in the face of largely anthropogenically driven conflicts. Dispersed throughout the records are observations of non-anthropogenic forces like drought, intense rainfall, and disease—forces which align with intensification and spread of violence across the island.

### **1250-1254: Golden Harvest in the Fall**

Rapid changes documented by climate reconstructions from 1250-1254 align with entries in the annals that reported an intensely hot summer followed by approximately two years of plentiful harvest. This five-year period, though dotted with skirmishes, burnings, drought, and destructive weather, contains the only universally positive entries from the annalists in the period under study describing plentiful harvest throughout Ireland. Furthermore, these first years of rapid change are excellent examples of slight mismatch between the documented climatic shifts

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<sup>108</sup> Hennessy, “Annals of Loch Cé,” sec. LC1172.3; Mac Airt, “Annals of Inisfallen,” sec. LC1172.3.

and the timing of human observations.<sup>109</sup> Examining the PDSI values taken from the data visualization tool of the OWDA for 1250-1255 provides year-to-year and regional patterning of drought intensity across Ireland (see Figure 3). Over the six years pictured, the vacillation between high drought and high moisture years is depicted. To look to the impact on the historical population experiencing these changes, we must examine the content of the years documented in the annals. The event that links these years together, in terms of disruption, is the drought that occurred in 1252 across the island. Every annal mentions this event, *The Annals of the Four Masters* in particular detailing that:

Great heat and drought prevailed in this Summer, so that people crossed the *beds of the* principal rivers of Ireland with dry feet. The reaping of the corn crops of Ireland was going on twenty days before Lammas *the 1st of August*, and the trees were scorched by the heat of the sun.<sup>110</sup>

The impact on the harvest in the Connacht region is the most detailed of the entries regarding the 1252 drought, correlating with the more easterly regions where PDSI values were higher.

Following the drought, however, are two years of notably good harvest all throughout Ireland.

Across the six sources the year 1253 is highlighted as the best year for summer harvest; 1254,

wetter than the year previous according to PDSI values, was remarked by the chronicler of

*Annála Connacht* as “a very tranquil year, with a great plenty of acorns and of milk and of all

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<sup>109</sup> The climatic shift, followed by the lag effect in the historical record not only reflects on the necessity of more work in finding Irish tree ring samples for these years but more importantly demonstrates the multitude of event types—and their duration—that appear to have followed rapid changes in the environment.

<sup>110</sup> O’Donovan, “The Annals of the Kingdom of Ireland by the Four Masters,” sec. M1252.9. The phrasing in the *Annals of Loch Cé* entry LC1252.9 is almost identical to the description in *The Four Masters*; however, as both records largely grapple with the source material from the Connacht region, a common source shared between the two is likely. Furthermore, the assembling of the *The Four Masters* is often thought to have been later than the regional assemblages of events. Hence, the phrasing could be exact because the authors copied one another. However, there is considerable overrepresentation of the Connacht region in this assembly of primary sources.

other good things.”<sup>111</sup> The relative stability of these years only appears after examining the instability and vacillations of the climate years previous and upon examining the latter years. The reprieve in the form of notably good harvests and positive events, in general, is an abnormality in the period under study.<sup>112</sup> Moreover, the plentiful harvest of 1253 and 1254 is less documented than the drought of 1252; each manuscript contains a mention of the drought, but the good harvests are only documented in two distinct regions, Ulster and Connacht.<sup>113</sup> These years stand out as the annalists find company in the misery that plagued their homeland.

### **1255-1263: Ashes in the Summer**

In 1257, Mt. Samalas, located on Lombok Island (Indonesia) and a part of the Rinjani volcanic complex, erupted. The impact of volcanic eruptions globally has been widely studied and can result in rapid changes on a global scale, the impacts later recorded in tree rings, ice cores, and contemporaneous historical documents. The eruption resulted in cold summers in the Northern Hemisphere, a Guillet et. al. article highlighting that “Western Europe, Siberia and Japan experienced strong cooling, coinciding with warmer-than-average conditions over Alaska and northern Canada.”<sup>114</sup> Critically, Guillet et. al. and other researchers have verified that Salamas’ eruption, though notable as the culprit of the largest sulphate spike in the Common Era, likely had little long-term impacts for those in Western Europe.<sup>115</sup> In Ireland, the PDSI values demonstrate that the pluvial of 1255 continued through and into 1256, with the remaining years

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<sup>111</sup> Freeman, “Annála Connacht,” sec. 1254.14. Which honestly is such a nice sentiment, I miss the days of actual seasons that didn’t completely wipe out a bunch of infrastructure across the United States.

<sup>112</sup> Campbell and Ludlow, “Climate, Disease and Society in Late-Medieval Ireland,” 165–66.

<sup>113</sup> Freeman, “Annála Connacht,” sec. 1253.14; Hennessy, “Annals of Loch Cé,” sec. LC1253.12; Mac Carthy and Hennessy, “The Annals of Ulster,” sec. U1253.7. As the descriptions in the Loch Cé and Annála Connacht are almost word-for-word, they appear to describe the exact same circumstances of plentiful harvest.

<sup>114</sup> Sébastien Guillet et al., “Climate Response to the Samalas Volcanic Eruption in 1257 Revealed by Proxy Records,” *Nature Geoscience* 10, no. 2 (February 2017): 123, <https://doi.org/10.1038/ngeo2875>.

<sup>115</sup> Céline M. Vidal et al., “The 1257 Samalas Eruption (Lombok, Indonesia): The Single Greatest Stratospheric Gas Release of the Common Era,” *Scientific Reports* 6, no. 1 (October 10, 2016): 2–3, <https://doi.org/10.1038/srep34868>.

of the decade and even into 1263 having positive PDSI values (see Figure 4). Hence, the climate of Ireland was far wetter in these years but not due to the eruption of the volcano. But disruptive events still came to pass, including burning, famine, crop death, and disease which appear multiple times in the historical records.<sup>116</sup> 1255-1263 are years on the island wherein identified anthropogenic causes drove disruption and the global shifts in the climate variability had little to no impact.

One of the more striking contrasts during this time between England and Ireland is the 1257 famine, thought to be connected to the eruption of Samalas. Figure 5 captures the observed impacts of the eruption in the year following.<sup>117</sup> The apparent switch between an early 1258 warm winter followed by cold and wet conditions of 1259 have been suggested as possible catalysts for the incidences of famine across Europe and Western Eurasia.<sup>118</sup> These conditions might have catalyzed the famine in England, as recorded in the *Chronicles of the Mayors and Sheriffs*:

In this year, there was a failure of the crops; upon which failure, a famine ensued, to such a degree that the people from the villages resorted to the City for food; and there, upon the famine waxing still greater, many thousand persons perished; many thousands more too would have died of hunger, had not corn just then arrived from Almaine.<sup>119</sup>

Failure to resolve this crisis would reflect poorly on any ruler and was exceptionally disastrous given that this famine occurred during the beginning of a tumultuous time in English political

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<sup>116</sup> Cook et al., “Old World Megadroughts and Pluvials during the Common Era.” See dataset referred to in this publication. It is accessible at NOAA Paleoclimatology: <https://www.ncei.noaa.gov/access/paleo-search/study/19419>.

<sup>117</sup> Guillet et al., “Climate Response to the Samalas Volcanic Eruption,” 124.

<sup>118</sup> Vidal et al., “The 1257 Samalas Eruption (Lombok, Indonesia),” 2.

<sup>119</sup> H. T. Riley, ed., *Chronicles of the Mayors and Sheriffs of Longon* (London: British History Online, 1863), sec. Chronicles of the Mayors and Sheriffs: 1257-8, <https://www.british-history.ac.uk/no-series/london-mayors-sheriffs/1188-1274/pp31-42>.

history.<sup>120</sup> In the same year, King Henry III—indebted and under pressure from his least favorite barons—had exiled his four Poitevin half-brothers and had agreed to a new form of government as outlined by the Provisions of Oxford.<sup>121</sup> This agreement would fall apart by 1261 with “an armchair struggle devoid of bloodshed” and some serious political conniving by Henry III.<sup>122</sup> But England remained in duress as 1263-1267 saw Simon de Montfort, Earl of Leicester, assemble a coalition of barons against Henry III, and even later Edward I, resulting in the Second Baron’s War.

Where English sources pinpoint the sequence of crop failure to famine, the Irish annalists crafted do not present any odd sightings nor were overly concerned with crop failure. In fact, the 1250s through early 1260s were full of battles, fire setting, alliances, and movement of power. As the barons in England struggled to be recognized by their king, the installed Anglo-Norman lords and barons of Ireland largely operated outside of the directives of the King, the latter half of the thirteenth century traditionally cast as a time of absenteeism. What remains constant throughout these years are the records of widespread hostings, raids, and detailed battles. These numerous records paint a picture of Irish armies combatting colonial incursions, with little to no external interference by the English nobility nor tangible influences by changes in the climate.<sup>123</sup>

Among the most notable coalitions of Irish forces during this period was that of Brian Ua Neill, king of Tir-Eogain, due to his rise as the arch-king of Northern Ireland. His reign united many of the ousted Irish rulers and provided others with the might and means to resist paying tribute to the English Crown. Most apparent, however, in the entries describing his rise and

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<sup>120</sup> H.W. Ridgeway, “What Happened in 1261?,” in *Baronial Reform and Revolution in England, 1258-1267*, ed. Adrian Jobson (Boydell & Brewer, 2016), 90, <https://doi.org/10.1017/9781782048992.007>.

<sup>121</sup> Clyn, *The Annals of Ireland*, 144.

<sup>122</sup> H.W. Ridgeway, “What Happened in 1261?,” in *Baronial Reform and Revolution in England, 1258-1267*, ed. Adrian Jobson (Boydell & Brewer, 2016), 90, <https://doi.org/10.1017/9781782048992.007>.

<sup>123</sup> The restriction of using the annals is the tendency for some authors to have a bit of tunnel vision. During times of less intense warfare, the annalists focused more on matters of the weather, religious figures, and harvests.

untimely death, is a separation of perspectives on Ua Neill's overall impact in histories. From a multitude of entries, the king's rise and fall can be constructed: 1241 saw his seizing of the kingship of Tir-Eogain (Cenel nEogain in other entries), in 1246 he orchestrated the death of the king of Oirrthir,<sup>124</sup> he organized a rout and despoiled a castle in Loch-Eirne in 1248.<sup>125</sup> 1252 he submitted to the new English Justiciar of Ireland and began a campaign with multiple incursions into the politically instable Ulster in 1253. By 1258 he had secured alliances and hostages throughout Ireland being given "the kingship of the Gaels of Ireland."<sup>126</sup> The battle of Druimderg, the battle of Down, fought May sixteenth, 1260, secured Ua Neill's legacy but ultimately sent northern Ireland into upheaval as a multitude of the Irish nobility, including Neill himself, were killed.<sup>127</sup> Importantly, the annalists' records of this event demonstrate the diverging perspectives of contemporary authors in assignment of combatants with identity markers such as Irish or English, Gael or Gall, and Foreigners or Gaidhil.

Each annalist who documented this event provided slightly different memories of the action, some including actors after the death of Ua Neill and others staunchly pointing to Ua Neill as the sole instigator of the battle. The *Annals of Ulster* simply note that a battle was fought, and an enumeration of the dead Irish nobility follows, this pattern of naming the dead holds as a tradition across annals and throughout the various years.<sup>128</sup> *Annalá Connacht*, *Annals of the Four Masters*, and the *Annals of Loch Cé* detail a slightly different course of events. All three records state that the death of Ua Neill and the defeat of his forces by the people of

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<sup>124</sup> Murchadh O'hAnluain, if anyone was curious.

<sup>125</sup> Mac Carthy and Hennessy, "The Annals of Ulster," sec. U1246.5, U1248.4, U1252.7, U1253.4, U1258.

<sup>126</sup> Freeman, "Annála Connacht," sec. 1241.6, 1253.10, 1255.17, 1258.9, 1259.8; Hennessy, "Annals of Loch Cé," sec. LC1241.7, LC1246.11, LC1253.8, LC1255.16, LC1258.7, LC1259.3; O'Donovan, "The Annals of the Kingdom of Ireland by the Four Masters," sec. M1241.4, M1246.7, M1252.4, M1252.8, M1252.12, M1253.10, M1258.12.

<sup>127</sup> John Clyn, *The Annals of Ireland* (Four Courts, 2007), 144. See section 1260.

<sup>128</sup> Mac Carthy and Hennessy, "The Annals of Ulster," sec. U1260.1.

Downpatrick were followed by incursions of Anglo-Norman forces against other Irish nobility. The battle of Down and the following events reveal the modes of competition between Irish kings and English lords vying for territory in the late thirteenth century, ultimately demonstrating that the Anglo-Norman actors had largely assimilated with and became a part of the violence and power struggles endemic to systems of governance in medieval Ireland.

On an additional note, there is much to be picked apart here with the construction of each entry regarding the battle of Down and the subsequent events; the crafting of certain narratives largely demonstrate the “allegiances” of the authors of each entry by the way they frame protagonists and the language of ethnic identifying markers that are employed. This entry, across multiple people and in a variety of tongues, embodies the crafting of a hegemonic Irish identity in the face of consistent Anglo-Norman settlement, disruption, and systems of governance. Even within the authors, it is demonstrated that these identities are not rigid, nor did they come about as a byproduct of later translation. It would be worthwhile, later, to investigate these works not in translation to piece out the variations that we can seem in terms of creating in-group and out-group identities in the medieval period.

An area for future research lies in the impact that this intensified violence had on the landscape of Ireland. Fire emerges across the annalistic records as an essential component of the pillaging, raiding, and battles of this period. While controlled burning had been utilized for agricultural management, the fire setting described in the historical records refer to the destruction of buildings (sometimes churches).<sup>129</sup> Moreover, the annalists were particularly

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<sup>129</sup> The gap in the Irish oak chronology also means that we cannot examine tree rings for evidence of fire scars nor has there been a large-scale assessment of fire on the Irish landscape for this period. Also, studies of Irish agriculture during the late-medieval period are not as detailed as those of the early medieval period, many researchers largely jumping to the disruption of the Black Death and ignoring much of the late thirteenth and early fourteenth century.

invested in mentioning the explicit destruction of crops via fire.<sup>130</sup> Joseph P. Hupy highlights fire as the “first [weapon] capable of rendering widespread environmental destruction upon the physical landscape.”<sup>131</sup> From 1257-1264, sixteen different burnings have been preliminarily identified, three clustered between 1258-1259 and three between 1260-1262 (see Figure 6).<sup>132</sup> Incidences of burning aligned with consistently followed by crop death/destruction events recorded in the annals, most easily seen in between 1259 and 1262.<sup>133</sup> Due to the gap in the Irish oak chronology also means that we cannot examine tree rings for evidence of fire scars nor has there been a large-scale assessment of fire on the Irish landscape for this period. Also, studies of Irish agriculture during the late-medieval period are not as detailed as those of the early medieval period. With many researchers largely jumping to the disruption of the Black Death and ignoring much of the late thirteenth and early fourteenth century, evaluating the extent to which the Irish countryside was impacted remains difficult.

### **1263-1273: A Bloody Winter**

Amidst the fallout of Brian Ua Neill’s multiple incursions into Ulster, the annalist of 1263 records that a “great destruction *was inflicted* on people this year by plague and by famine.”<sup>134</sup> The misfortune of the 1263 famine in Ulster was confined to the region and to the year. Five years later, in 1268, brought about another “great unbearable famine in Ireland,” this

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<sup>130</sup> A bit like Odysseus and his cheese.

<sup>131</sup> Joseph P. Hupy, “The Environmental Footprint of War,” *Environment and History* 14, no. 3 (2008): 408, <https://doi.org/10.3197/096734008X333581>; Baillie, “The Belfast Oak Chronology to AD 1001.”

<sup>132</sup> John Clyn, *The Annals of Ireland* (Four Courts, 2007), 142; “The Annals of Ulster” (Dublin, Ireland, 1983), sec. U1254.5, U1261.3, CELT: The Corpus of Electronic Texts, <https://celt.ucc.ie/published/G100001A/index.html>; John O’Donovan, trans., “The Annals of the Kingdom of Ireland by the Four Masters” (Dublin, Ireland, 51 1848), sec. M1257.9, M1257.14, M1259.14, M1260.12, M1260.14, M1261.10, M1261.11, M1261.12, M1262.3, CELT: The Corpus of Electronic Texts, <https://celt.ucc.ie/published/T100005B/index.html>; William Hennessy, “Annals of Loch Cé” (1871), LC1258.12, CELT: The Corpus of Electronic Texts, <https://celt.ucc.ie/published/T100010A/index.html>.

<sup>133</sup> See Figure 7 for JJA PDSI atlas from 1358-1363.

<sup>134</sup> Mac Carthy and Hennessy, “The Annals of Ulster,” sec. U1263.11.

one spanning multiple years and the entire island.<sup>135</sup> Campbell and Ludlow characterize this event as a serious harvest-related crisis, their investigations into weather and climate trends identifying similar crises earlier in the thirteenth century.<sup>136</sup> While the 1252 drought resulted in late harvests and scorched trees, the unusually wet summers—as seen with June, July, August PDSI values—appear to be the catalyst for severe winters recorded by annalists in the years following. The famine scheme (i.e. the climate precursors for famine) for Ireland is demonstrated as most impactful during years of prolonged cold and/or extremely wet conditions.<sup>137</sup> Ljungqvist, Seim, and Collet provide a rationale for the lack of famine during the 1252 drought, pinpointing that Northern European harvest systems tended to be impacted by consistently colder temperatures rather than long-term droughts.<sup>138</sup>

From palynological and artifactual evidence, scholars have been able to identify some of the crops that were cultivated in Ireland, beginning in the early medieval period. With flat arable land available, grains like barley and oats were the cereals of choice.<sup>139</sup> In the temperate climate, corn-drying kilns were a necessity; these kilns helped farmers dry grain for storage, prepare it for milling, and were used to prevent rot of the harvest.<sup>140</sup> As a country with high rainfall, the

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<sup>135</sup> Mac Carthy and Hennessy, sec. U1268.3.

<sup>136</sup> Campbell and Ludlow, “Climate, Disease and Society in Late-Medieval Ireland,” 196–97.

<sup>137</sup> Fredrik Ljungqvist, Andrea Seim, and Dominik Collet, “Famines in Medieval and Early Modern Europe—Connecting Climate and Society,” *Wiley Interdisciplinary Reviews: Climate Change* 15 (October 3, 2023): 6–7, <https://doi.org/10.1002/wcc.859>. Ljungqvist et. al.’s critique of a lack of a quantitative assessment of specific climate parameters as possible contributors to famine are correct and many different fields would benefit greatly from this research. However, Ludlow and Campbell utilize climate records in conversation with annals and economic histories, highlighting that causes of famine are not simply environmental—they are as multicausal as any war.

<sup>138</sup> Ljungqvist, Seim, and Collet, “Famines in Medieval and Early Modern Europe,” 8.

<sup>139</sup> Muiris O’Sullivan and Liam Downey, “Early Medieval Cereal Cultivation and Processing,” *Archaeology Ireland* 33, no. 4 (2019): 49.

<sup>140</sup> Niall Brady, “Food Production in Medieval Ireland, Aspects of Arable Husbandry,” 137–39, accessed May 6, 2025, [https://www.academia.edu/28115431/Food\\_production\\_in\\_medieval\\_Ireland\\_aspects\\_of\\_arable\\_husbandry](https://www.academia.edu/28115431/Food_production_in_medieval_Ireland_aspects_of_arable_husbandry); Muiris O’Sullivan and Liam Downey, “Early Medieval Cereal Cultivation and Processing,” *Archaeology Ireland* 33, no. 4 (2019): 50; Tara Doyle, “Hair of the Dog: Evidence of Early Medieval Food Production and Feasting at Ballyvass, Co. Kildare,” in *Dining and Dwelling: Proceedings of a Public Seminar on Archaeological Discoveries on National Road Schemes, August 2008*, Archaeology and the National Roads Authority Monograph Series (Dublin: National Roads Authority, 2009), 58, <https://doi.org/10.7486/DRI.h1291v613>.

utilization of these kilns was essential in ensuring that the climatic conditions did not trigger an early germination of a desired crop.<sup>141</sup> The wetter the season, the greater the chance for scarcity.

The annalists' records of the 1268-1273 famine not only document the widespread crop failure but also present the famine in association with anthropogenic and meteorological events.

According to the author of the *Annals of Innisfallen*, 1272 brought

Very bad weather in that year, and general warfare between the foreigners and Gaedil of Ireland. And there was a great famine in the same year so that multitudes of poor people died of cold and hunger and the rich suffered hardship.<sup>142</sup>

Throughout the five-year period, misfortune was also documented by other authors as “great, unbearable famine,” “hunger and great destitution,” “severe plague,” and “scarcity in all Erin.”<sup>143</sup> The hunger faced by all is a clear throughline represented in the records but the impressions of the hardship diverge. While Friar John Clyn was occupied with the concurrent plague, the author(s) of the *Annals of Innisfallen* points to a stark difference between the wealthy and the poor. Namely, the poor died, and the rich did not. The descriptive nature of the deaths of the poor, they “died of cold and hunger,” contrasted with simply “suffering hardship” remains

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<sup>141</sup> Muiris O’Sullivan and Liam Downey, “Early Medieval Cereal Cultivation and Processing,” *Archaeology Ireland* 33, no. 4 (2019): 51. In addition to the use of kilns for continued agricultural produced, the adoption of watermills in early church sites and then to greater communities highlights a shift towards greater processing of cultivated cereals across Ireland.

<sup>142</sup> Seán Mac Airt, “Annals of Inisfallen” (1950), sec. AI1272.2, CELT: The Corpus of Electronic Texts, <https://celt.ucc.ie/published/T100004/index.html>. When compared to the Great Famine of the 1310s and 1320s in Ireland, the scarcity experienced appears to have been more protracted; however, this interpretation is founded in reliance on the information provided in the annals which do not generally qualify the living conditions of all peoples suffering hardship. While parallels to the later famine can be drawn, this long-term scarcity could be read as a reflection of what was to come with the later famine.

<sup>143</sup> “The Annals of Ulster” (Dublin, Ireland, 1983), sec. U1268.3, CELT: The Corpus of Electronic Texts, <https://celt.ucc.ie/published/G100001A/index.html>; Martin Freeman, “Annála Connacht” (Dublin, Ireland, 1970), sec. U1268.3, <https://celt.ucc.ie/published/T100011/index.html>; William Hennessy, “Annals of Loch Cé” (1871), sec. LC1270.6, CELT: The Corpus of Electronic Texts, <https://celt.ucc.ie/published/T100010A/index.html>; John Clyn, *The Annals of Ireland* (Four Courts, 2007), 148. A thorough dive into the nuances of these manuscript translations is most likely needed; without access to the original text in the original language, there might be context missing. Overall, the rhetorical style and the variations across these primary sources could be a dissertation in an of itself.

one of the few entries reflecting on the lived experiences of the non-elite in the Irish annals.<sup>144</sup>

General warfare, as mentioned by the chronicler(s) of Innisfallen, also took their toll on both the people and the land.

The battle of Áth an Chip is a nice name for an accumulation of events that are recorded as potentially devastating the lands around Connacht in 1270. A series of engagements can be found in the 1270-1271 entries of *Annála Connacht*, *Annals of Ulster*, *Annals of the Four Masters*, and *Annals of Loch Cé*. Over the course of two years, seven castles were destroyed in northern Ireland and numerous towns were burned in the crossfire of a war between the Earl of Ulster, Walter Burke, and Aed Ua Conchobair, the king of Connacht.<sup>145</sup> In all the entries of this period, a multitude of kings rise up, kill their challengers, and were often killed by other challengers or those who would see their kingdom absorbed into theirs. Furthermore, post-Áth an Chip, the antagonistic entries are largely concentrated on raiding, castle destruction, and depredations committed by both the Irish and the English. Against the backdrop of island-wide famine, the intensification to fast-paced raiding and striking out for resources aligns with the “hardship” faced by the elites as described in the *Annals of Innisfallen*.<sup>146</sup> Instead of calling on external resources, especially with Crusade of Edward I occurring in the same year, the return to combat as a resource acquisition strategy aligned with Irish patterns of governance, accepted by the Anglo-Norman barons as necessary methods when in famine.

In the latter half of the thirteenth century a complex interplay of climate variability and aggregation of Anglo-Norman invaders into traditional Irish warfare practices. Both elements

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<sup>144</sup> Mac Airt, “Annals of Inisfallen,” sec. AI1272.2. Death associated purely with hunger is rare in these records so the comments on cold could reflect unusually chill temperatures—which could possibly be verified with proxy data—or the living circumstances of the non-landed elite.

<sup>145</sup> Freeman, “Annála Connacht,” sec. 1270.1-1271.10.

<sup>146</sup> Mac Airt, “Annals of Inisfallen,” sec. AI1272.2.

concurrently impacted the records of the Irish annalists, with histories of war and violence the privileged narrative. The environmental actors of the period, like the Samalas eruption and the exceedingly wet years, still played important roles. Samalas' impact appears to have had little impact on Ireland in contrast to England and Central Europe. The famine of 1268-1273 was likely triggered by a sequence of cool, damp years, with intensified warfare further exacerbating the hardship experienced by all (but especially the poor). Absenteeism on the part of the English King left the Anglo-Norman occupying forces to strike out, maintain, and establish their bases of power. In turn, the folding of foreigners into the skirmishing patterns of pre-colonial Irish warfare maintained traditional behaviors but was recorded as more destructive and more frequent in the memories of the Irish annalists. The multicultural transformation and clash between the resisting Irish and the colonizing Anglo-Norman fundamentally cannot be divorced from the environmental histories of Ireland. During this period, the actions of people were not only impacted by the land but their conflicts—colonial and communal—impacted the land itself.

## **Fire Across the Landscape, Invasion from the North, the Great Famine, and All that Came After (1300-1348)**

Many afflictions in all parts of Ireland: very many deaths, famine and many strange diseases, murders, and intolerable storms as well.<sup>147</sup>

### **Forays and Fires: Combat and Destruction in Early Fourteenth Century Ireland**

The fourteenth century began without significant shifts in the behaviors of the Irish kings and their Anglo-Norman competitors. However, the continued raiding meant that the destruction of the landscape continued onward, unceasing and detrimental for the wars to come. Across the six annals, forty-three distinct burning events can be identified from 1300-1348; twenty of these occurred between 1302 and 1314 (see Figure 8). The persistence of these behavioral patterns and increased conflict with the largely autonomous Anglo-Norman lords is reflected in the historical record, with each annalist documenting continuous conflict, alliances, betrayal, and slaughter across Ireland. And while the patterns of violence continued onwards from the late thirteenth century, the near constant recording of island-wide conflict by the annalists reveals targeted resource destruction rather than acquisition, as seen in the previous century.

An early example of this behavior can be examined in the *Annals of Ulster*, where in 1303 the author documents a series of events in in Ros-comain:

The Foreigners of all Ros-comain were in great part killed by Donnchadh O'Cellaigh, king of Ui-Maine, at Ath-escrach-Cuan, where fell Philip Munnter and John Munnter and Matthew Drew and other persons were either killed, or left *wounded*, or captured.

Diarmait Mac Diarmata the Foreigner and Cormac Mac Ceithernaigh were taken there and their forces were allowed to depart under condition. And the Sheriff of Ros-comain

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<sup>147</sup> Freeman, “Annála Connacht,” sec. 1315.19.

was also taken there *along with his force* and they were all allowed to depart upon sufferance. And they made peace. *This happened* because the town of *Ahascragh* was burned by Edmund Butler.<sup>148</sup>

In examining the information on this specific conflict, the inciting incident was the burning of the town of *Ahascragh* by the eventual Earl of Carrick, Edmund Butler.<sup>149</sup> The widespread exacting retaliation by Donnchadh O'Cellaigh is typical of the Irish kings in this period, the administration of punishment at Ath-escrach-Cuan against the Munnters and Matthew Drew aligns with patterns of the late 13<sup>th</sup> century. The Anglo-Norman agents were targeted as well as their people, still typical of the earlier period; however, the extension and consolidation of alliances with Diarmait Mac Diarmata the Foreigner and Cormac Mac Ceithernaigh models the behaviors of Irish kings in similar entries. It is in these early days of the 14<sup>th</sup> century that the return to continual raiding and warfare morphed into a different beast entirely. As the annalists recount, the combatants, Irish and Anglo-Norman, fully embracing wholesale destruction of resources, burning employed to lay waste to castles, towns, and churches.

Without evidence of fire scars and scant archaeological evidence, the extent to which and how these documented burnings affected the landscape is difficult to suppose. Outside of what the intentional fire setting targeted, that is. If one were to map the burnings plotted against fire starting during a raid, a pattern emerges. The annalists emphasize the intentional targeting of cereal crops by the combatants, one such author commenting that “the Clann-Muirchertaigh went into Magh-Ceidne, and the corn crops of the district of Cairbre, and a great part of the corn of Tir-Oililla, were burned by them; and the corn crops of the Corann also were destroyed and burnt

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<sup>148</sup> Mac Carthy and Hennessy, “The Annals of Ulster,” sec. U1303.3.

<sup>149</sup> 1303 saw the succession of Edmund Butler to his older brother’s position, in the year also earning the appointment of *custos Hiberniae*.

by them.”<sup>150</sup> While the fighting between the Irish and Anglo-Norman communities continued, Francis Ludlow refers to the maneuvers such as these as “scorched earth” techniques, citing the violence as canted more towards systematic resource destruction rather than the acquisition seen in previous years.<sup>151</sup> While the annals do not provide context for the changes in warfare, they do document the shifts in technique but notably lack entries referencing the cascading impacts of war (like famine, disease, etc). An examination of climate reconstructions within the context of economic variability provides greater insight into the lack of famines recorded in the annals during this time.

### **1300-1314: Environmental and Economic Preconditions to the Bruce Invasion**

From 1303-1306, Ireland faced a drought with a longer internal duration and greater PDSI values than those of the 1252 drought identified by annalists. This drought went unremarked by the authors of those works. And though this drought spanned more time than that of the thirteenth century, the impact of prolonged dry conditions in Western Europe as “droughts were largely benevolent for agricultural production based on cereals and wine, which easily tolerate dry weather conditions if excessive hydric stress doesn’t block vegetation growth.”<sup>152</sup> As palynological and documentary evidence has attested, Irish cereal crops were hardy, similar if not the same as the English varieties.<sup>153</sup> Hence, English yield patterns likely occurred in medieval Ireland as well and, with caution, provide evidence for similar geographic trends.

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<sup>150</sup> Hennessy, “Annals of Loch Cé,” sec. LC1307.17.

<sup>151</sup> Francis Ludlow, “Three Hundred Years of Weather Extremes from the Annals of Connacht,” *Journal of Postgraduate Research [Now: Trinity Postgraduate Review]* 5 (2006): 53.

<sup>152</sup> Martin Bauch et al., “A Prequel to the Dantean Anomaly: The Precipitation Seesaw and Droughts of 1302 to 1307 in Europe,” *Climate of the Past* 16, no. 6 (November 25, 2020): 2, <https://doi.org/10.5194/cp-16-2343-2020>.

<sup>153</sup> Work on early medieval Irish agriculture attests to this pattern, though this connection needs greater substantiation. Many scholars of Irish history during this period operate under this assumption but the lack of a comparative study is problematic. The most relevant but, and unfortunately inaccessible to me, is Finbar McCormick, Thomas R. Kerr, Meriel McClatchie, and Aidan O’Sullivan’s *Early Medieval Agriculture, Livestock and Cereal Production in Ireland, AD 400–1100*.

Before 1310, two seasons of hot summers (1304 and 1305) produced excellent harvests of vineyards in both England and France; by 1310, a downturn in yields reflects the “deteriorating weather conditions of the 1310s anomaly” (see Figure 9).<sup>154</sup> The cold/wet period that precipitated the Great Famine in the 1310s had not yet impacted the Irish landscape during the most intensive years of crop burning pre-Bruce Invasion. In fact, with a stable yield, the targeted burnings of surplus resources make more sense, tactically, for the Gaelic Irish to destroy. Instead, the violence and damages during the first decade of the 14<sup>th</sup> century might rather be connected to the sharp economic divides between independent Gaelic lordships and colonial territories. Though the following presentation of the Irish economy as connected to this rise in violence is speculative, as the writings of the annalists do not directly cite these tensions.

The crux of the violence, as it emerged in these early years of the 1300s, could have been rooted in fundamentally incompatible utilizations of land by the Gaelic lords and the Anglo-Norman colonizers. In uprooting and seizing territories, the development of colonies within Ireland supported changes in demography and wealth around the island, not only consolidating land for manorial systems but also for the creation of urban areas.<sup>155</sup> The shift to manor systems mostly in eastern Ireland facilitated immense wealth gaps with the west by 1302; the work of Chris Chevallier highlights that the western wealth disparity and lack of information available from parishes, most specifically in Connacht, parallels the regions wherein historical records of conflict exist (see Figure 10).<sup>156</sup> Moreover, Chevallier emphasizes that the lower valuations in wealth of the Gaelic Irish do not signify impoverishment, as the primary evidence utilized in the investigation does not account for pastoral holdings, gifts, goods traded in barter, directly

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<sup>154</sup> Bauch et al., “A Prequel to the Dantean Anomaly,” 6.

<sup>155</sup> Chris Chevallier, “What Was the Distribution of Wealth in Ireland c. 1300?,” *History Ireland*, January 1, 2019, 19, [https://www.academia.edu/39723668/What\\_was\\_the\\_distribution\\_of\\_wealth\\_in\\_Ireland\\_c\\_1300](https://www.academia.edu/39723668/What_was_the_distribution_of_wealth_in_Ireland_c_1300).

<sup>156</sup> Chevallier, “What Was the Distribution of Wealth in Ireland c. 1300?,” 20.

consumed goods, and plunder from raids.<sup>157</sup> While the rise of violence cannot be directly tied to these long-term economic changes, work like Chevallier's provides essential context for determining what pressures might have spurred the increasing records of crop burning during the start of the 14<sup>th</sup> century.<sup>158</sup>

The relative reprieve from 1308-1310 did not last. Atlas visualization demonstrates the oscillating PDSI values, the scattered conditions of 1310 made way for three years of drought, followed by a pluvial from 1314-1317 (see Figure 11). Throughout the 1310s, the abrupt fire setting continued, accompanied by crop destructions. But the pluvial beginning in 1314 had far greater impacts as the excessively wet conditions not only impacted food production in Ireland but the majority of Northern Europe as a whole.<sup>159</sup> The Great Famine of 1315-1317, where really only southern Italy was spared, coincided with the Bruce Invasion (1315-1317) which brought more violence, damage to the countryside, political jockeying, disease, resource destruction, and shifting territorial control to the island already in flux.<sup>160</sup>

### **1319-1330: The Ramifications of the Bruce Invasion**

Edward Bruce, the destroyer of all Erinn in general, both Foreigners and Gaeidhel, was slain by the Foreigners of Erinn, through the power of battle and bravery, at Dun-Delgan...and no better deed for the men of all Erinn was performed since the beginning

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<sup>157</sup> Chevallier, "What Was the Distribution of Wealth in Ireland c. 1300?," 21.

<sup>158</sup> Giraldus Cambrensis, "The English Conquest of Ireland: Founded on Giraldus Cambrensis" (London, 1896), 70. What is known, however, are the opinions of the English regarding the utilization of land by the Irish during the initial wave of colonization. Gerald of Wales provides a good example: "Very few sorts of fruit-trees are found in this country, a defect arising not from the nature of the soil, but from want of industry in planting them; for the lazy husbandman does not take the trouble to plant the foreign sorts which would grow very well here."

<sup>159</sup> Edward R. Cook et al., "Old World Megadroughts and Pluvials during the Common Era," *Science Advances* 1, no. 10 (November 6, 2015): 3, <https://doi.org/10.1126/sciadv.1500561>.

<sup>160</sup> This sentence is an oversimplification and a condensing of the immediate impacts of the Bruce Invasion against the climatic conditions described. In hindsight, this research limited to the three year period would have been a more approachable project for the current length of this work. As such, a more detailed dive into the Bruce Invasion, the Great Famine, and the 1314-1317 pluvial is relegated to future research.

of the world, since the Fomorian race was expelled from Erinn, than this deed; for theft, and famine, and destruction of men occurred throughout Erinn during his time, for the space of three years and a half; and people used to eat one another, without doubt, throughout Erinn.<sup>161</sup>

Scarcity did not end with the death of Edward Bruce and the destruction of the invasion forces, which left many of those living on the island inheritors of a scarred land. Burnings intensified throughout the mid-1310s; thirteen individual burnings of towns, churches, and castles are accounted for in the annals from 1314-1316. The chaos throughout the land is also reflected in the records of Irish kings fighting to keep ahold of their positions amongst two invading forces; as Chevallier highlights, the addition of Scottish pillaging combined with the dearth of resources in the wake of the Great Famine eventually earned them the enmity of both the Irish and colonial forces.<sup>162</sup> By 1318, the intensified pillaging and the periods of burning lulled with a return of political leaders organizing assassinations, betrayals, quick raids, and peace-making ventures. But the people of Ireland at large still did not know peace. While the Bruce Invasion scorched the land, the anomalous meteorological and climatological patterns impacted a group particularly essential for human survival: the cattle.

While the monetary importance of cattle had changed during the early-medieval and colonial periods, their essential role in Ireland's subsistence regimes took on a different form. Shifts in the construction of forts, specifically ring-fort typologies, align with the reduction of pastoralism across some regions of the island, due to new encounters with other economic and

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<sup>161</sup> Hennessy, "Annals of Loch Cé," sec. LC1318.7. See comment above, assessments of cannibalism in this period in Ireland would be relegated to future research, potentially armed with a knowledgeable bioarcheologist.

<sup>162</sup> Chris Chevallier, "Mapping and Measuring the Impact of the Bruce Invasion," *History Ireland* 27, no. 5 (2019): 17.

religious systems.<sup>163</sup> For example, Cistercian communities post-invasion established monasteries in Anglo-Norman controlled lands, largely focused on better agricultural quality, and further developed mixed farming economies.<sup>164</sup> The recognition of these monasteries as agricultural boons, coinciding with a calmer climate of the early thirteenth century, saw the allotment of feudal rights to these communities.<sup>165</sup> In turn, the palynological findings, like those of the Abbeyknockmoy Bog, demonstrate a rise in cereal-type pollens during this period. However, other regions, like All Saints and Ballygisheen Bog provide evidence for the use of farmland for pasture in concert with zooarchaeological evidence from residences of noblemen.<sup>166</sup> Overall, the English colonization and transformation of the natural and economic landscapes of Ireland further reduced the efficacy of traditional pastoralism.<sup>167</sup> Furthermore, shifts towards rural settlement patterns that could support a surplus of goods for increasingly urbanized colonial centers relied more upon arable agriculture than animal husbandry.<sup>168</sup> But even with the agricultural reorganization, these animals did not lose their presence in the eyes of the annalists, as attested by the great cattle plague known as Maeldornnaigh.

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<sup>163</sup> Ring-fort typologies and their uses are beloved by many a medieval Irish scholar. As such, I encourage a deep dive into the debates of researchers past as my own assessment generalizes this already generalized architectural phenomenon.

<sup>164</sup> Sarah H. Lomas-Clarke and Keith E. Barber, “Palaeoecology of Human Impact during the Historic Period: Palynology and Geochemistry of a Peat Deposit at Abbeyknockmoy, Co. Gaiway, Ireland,” *The Holocene* 14, no. 5 (July 1, 2004): 727, <https://doi.org/10.1191/0959683604hl750rp>.

<sup>165</sup> Sarah H. Lomas-Clarke and Keith E. Barber, “Palaeoecology of Human Impact during the Historic Period: Palynology and Geochemistry of a Peat Deposit at Abbeyknockmoy, Co. Gaiway, Ireland,” *The Holocene* 14, no. 5 (July 1, 2004): 726–27, <https://doi.org/10.1191/0959683604hl750rp>.

<sup>166</sup> Edwina E. Cole and Fraser J.G. Mitchell, “Human Impact on the Irish Landscape during the Late Holocene Inferred from Palynological Studies at Three Peatland Sites,” *The Holocene* 13, no. 4 (May 1, 2003): 501–12, <https://doi.org/10.1191/0959683603hl616rp>; Niall Brady, “Food Production in Medieval Ireland, Aspects of Arable Husbandry,” in *Food in the Medieval Rural Environment: Processing, Storage, Distribution of Food*, ed. Jan Klapste and Petr Sommer (Brepols Publisher, 2011), 139, [https://www.academia.edu/28115431/Food\\_production\\_in\\_medieval\\_Ireland\\_aspects\\_of\\_arable\\_husbandry](https://www.academia.edu/28115431/Food_production_in_medieval_Ireland_aspects_of_arable_husbandry).

<sup>167</sup> Finbar McCormick, “The Decline of the Cow: Agricultural and Settlement Change in Early Medieval Ireland,” *Peritia* 20 (January 1, 2008): 219, <https://doi.org/10.1484/J.Peri.3.632>.

<sup>168</sup> McCormick, 221; Eric Guiry et al., “Changing Human-Cattle Relationships in Ireland: A 6000-Year Isotopic Perspective,” *Antiquity* 97, no. 396 (December 2023): 1436–52, <https://doi.org/10.15184/aqy.2023.163>.

The earliest notice of the mass cattle death is an entry dated to 1318 in the *Annals of Ulster* with the final entry referring to the murrain in *Annalá Connacht* for 1325. Little is provided by the authors regarding the symptoms experienced by the herds outside of describing the sickness as a “plague,” “cattle destruction,” and “a great murrain of the cows.”<sup>169</sup> Pinpointing the actual illness is a bit moot; however, the other entries around this disaster provide contextualization for the enduring cattle death. Utilization of fire setting as an integral component of warfare not only resulted in destruction of buildings and crops—a primary concern of the annalists—but also tended to result in the thieving of cattle.<sup>170</sup> The more concrete evidence, however, are the wet/cold conditions that predated and persisted through the Bruce Invasion, as corroborated by climate reconstructions from this period. Researchers of medieval subsistence crises generally point to the Great Famine of 1315-1317 as “the worst subsistence crisis in terms of mortality in northwestern Europe during the entire past millennium.”<sup>171</sup> However critically, as some scholars have noted, the Central European “concurrent large-scale outbreak of a highly lethal cattle disease...wiped out  $\approx$  60% of all livestock on the European continent.”<sup>172</sup> Most research dealing with the British Isles during the Great Famine and the cattle plague focuses on the impact felt in England and Wales due to the surviving documentation of vacillating English credit certificates. While access to animal goods, from both sheep and cattle,

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<sup>169</sup> Mac Airt, “Annals of Inisfallen,” sec. AI1321.3; Freeman, “Annála Connacht,” sec. 1321.5; Mac Carthy and Hennessy, “The Annals of Ulster,” sec. 1318.7.

<sup>170</sup> Mac Airt, “Annals of Inisfallen,” sec. AI1315.1. The first entry of the year 1315 of the *Annals of Inisfallen* provides evidence for the impact to both Irish infrastructure and the environment. The author notes the burning of towns and churches by the Scots, the retaliatory Irish forces whose leader explicitly sought to preserve his lands, and the actions of the scattered Anglo-Normans.

<sup>171</sup> Fredrik Ljungqvist, Andrea Seim, and Dominik Collet, “Famines in Medieval and Early Modern Europe—Connecting Climate and Society,” *Wiley Interdisciplinary Reviews: Climate Change* 15 (October 3, 2023): 5, <https://doi.org/10.1002/wcc.859>. As this crises occurred at the same time as the Bruce Invasion, teasing out what aspects of the crises fall into the historical idea of the Great Famine is difficult. The annalists themselves associate the famine, disease, and general mass disorder as a consequence of Edward Bruce’s ambitions. Every author celebrates and praises the death of Edward, as if his death was signified a turning point in Irish history.

<sup>172</sup> Ljungqvist, Seim, and Collet, “Famines in Medieval and Early Modern Europe—,” 5.

was shuttered for the poor, increases in these certificate values highlights price gouging by merchants in the face of restricted supply.<sup>173</sup> Maeldornnaigh, the named and persistent cattle plague in the Irish annals, has not received the same attention by scholars, likely due to a lack of access to the documents employed in analyses that facilitate a more economic investigation.

What a comparative look does allow for, however, is the highlighting of disease transmission to Ireland and persistence in the landscape. Pathogenesis is rare, hence the pestilence which caused the Maeldornnaigh likely came from elsewhere. A starting date of 1318, as attested in the more eastern *Annals of Ulster*, places the transmission contemporary to the dates of subsistence and economic impact in England.<sup>174</sup> Hence, linking the occurrence of this disease to the English crisis connects the Maeldornnaigh to the origins of the panzootic. The Great Bovine Pestilence (GBP) is suspected to have spread westward from Asia<sup>175</sup> and hit Central Europe by 1315, the western mainland in around 1317, Denmark and then to the British Isles, including Ireland, in 1318.<sup>176</sup> Various diagnoses as to the GBP's pathogen have been postulated, including anthrax, foot-and-mouth disease, and rinderpest.<sup>177</sup> Of the three, rinderpest has been most exhaustively considered as the culprit of the cattle panzootic. The spread of infected cows aligns with later and better documented rinderpest outbreaks, like the seven-year rinderpest panzootic during the late nineteenth century in East and South Africa.

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<sup>173</sup> Pamela Nightingale, *Enterprise, Money and Credit in England before the Black Death 1285–1349* (Cham: Springer International Publishing, 2018), 225–26, <https://doi.org/10.1007/978-3-319-90251-7>.

<sup>174</sup> Philip Slavin, "The Great Bovine Pestilence and Its Economic and Environmental Consequences in England and Wales, 1318–50," *The Economic History Review* 65, no. 4 (November 2012): 1239–66, <https://doi.org/10.1111/j.1468-0289.2011.00625.x>; Nightingale, *Enterprise, Money and Credit in England*, 226.

<sup>175</sup> This generalization requires a dubious side-eye as the tendency of previous researchers is to tentatively hand wave away from Central Europe and eastward. Further interrogation is needed as this makes no sense to me.

<sup>176</sup> Slavin, "The Great Bovine Pestilence."

<sup>177</sup> Timothy P. Newfield, "A Cattle Panzootic in Early Fourteenth-Century Europe," *The Agricultural History Review* 57, no. 2 (2009): 176; Nightingale, *Enterprise, Money and Credit in England*, 226; Slavin, "The Great Bovine Pestilence."

The later African panzootic has received more attention, due not only to the documentation during the outbreak, but also to the disruption of traditional tribal structures because of the mass cattle death.<sup>178</sup> This outbreak provides a point of comparison to the Maeldornnaigh but ultimately it is difficult to pinpoint the long-term effects of the loss of stock when relying on the Irish annals.<sup>179</sup> The authors do point to three times of scarcity, appearing to reference the famine that began in 1315 which stretched into the mid-1320s as the cattle plagued raged.<sup>180</sup> Rather than seeing an increase in the contests between territorial powers in a bid for the dwindling resources, as observed during the beginning of the fourteenth century, the annalists provide few descriptions of conflict. Reconciling this silence in the record requires a look at the manuscripts themselves as aspects like marginalia and the overall condition of the document are lost in the digital versions of these sources. There is a narrative where the disruption and prolonged nature of the Great Famine in Ireland, compounded by the destruction of the Bruce Invasion, might have resulted in the deaths of the original chroniclers of this period. Without a closer, and likely in person, analysis of these records, a conclusion cannot currently be drawn.

In contrast to the loss of detail regarding warfare and violence, the extensive nature of disease documentation in the Irish annals' accounts for two human disease outbreaks which ran rampant from 1324-1328. Ciara Crawford's dissertation is an excellent investigation into not only the documentation of medieval disease outbreaks though the work stops before the outbreaks of the fourteenth century. Most important is Crawford's identification that the Irish annalists tended to recognize and document specific ailments. She characterizes the annal entries

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<sup>178</sup> Clive A. Spinage, "Rinderpest the Great Panzootic and Its After Effects," in *African Ecology* (Springer, Berlin, Heidelberg, 2012), 1054, [https://doi.org/10.1007/978-3-642-22872-8\\_22](https://doi.org/10.1007/978-3-642-22872-8_22).

<sup>179</sup> There is a possibility of the intentional transfer of diseased cattle into Ireland, but this theory cannot be verified. And a consultation of English and Irish sources focused on trade during this period is needed.

<sup>180</sup> Hennessy, "Annals of Loch Cé," sec. 1318.7; Mac Carthy and Hennessy, "The Annals of Ulster," sec. 1325.3; Clyn, *The Annals of Ireland*, 174.

as depicting the “symptomatic, prophylactic and naturalistic elements related to cause of illness,” of which specific illnesses are generally able to be identified.<sup>181</sup> For the earlier of the two outbreaks, called *Slaedán*, Crawford’s work provides no clarity as to this disease’s identity, but the *galar brecc* outbreak in the late 1320s bears resemblance to earlier types of specked diseases identified in her investigation.

Unlike the GBP, the first of the outbreaks named *Slaedán* (1325-1328) did not result in the mass death of the Irish populace but rather in their almost universal suffering. *Slaedán*, *slaghdán* in modern Irish, directly translates to the Cold, and was an ailment that plagued the populace for three years. The annalists refer to the illness as a “general visitation” and attest to the sickness lasting “for three or four days successively, every person who took it. It was second *in pain* only to the agony of death.”<sup>182</sup> Of the diseases discussed, *Slaedán* is notable for its pervasiveness rather than a high death toll associated with the illness; moreover, the transmission of the illness from the east to west is documented by the annalists. 1325 heralded the beginning of the Cold in Ulster with the disease being recorded in 1328 in the western-oriented sources, possibly evidence of a second wave or new variant of the illness.<sup>183</sup> While this staggering could also be a documentation error, it provides compelling evidence for the importance regional variance and the impacts of geography on the spread of disease in medieval Ireland, even in the case of non-fatal illnesses.

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<sup>181</sup> Ciara Crawford, “Disease and Illness in Medieval Ireland” (Dissertation, The National University of Ireland: Maynooth, 2011), 6, <https://mural.maynoothuniversity.ie/id/eprint/3573/1/CrawfordPhD.pdf>.

<sup>182</sup> O’Donovan, “The Annals of the Kingdom of Ireland by the Four Masters,” sec. M1328.8.

<sup>183</sup> Mac Carthy and Hennessy, “The Annals of Ulster,” 1325.4; Freeman, “Annála Connacht,” sec. 1328.4; Hennessy, “Annals of Loch Cé,” sec. LC1328.3.

The second of the two, *galar brec*, is recorded in 1327 as an epidemic across Ireland “which brought destruction on people small and great, in this year.”<sup>184</sup> Unlike *Slaedán*, Crawford’s dissertation provides some context for what this disease might have been. *Galar* is an Old Irish term translates to ‘sickness’ or ‘disease’ and routinely was attached to a descriptor of the illness in the sources Crawford analyzed.<sup>185</sup> The descriptor, *brec* (or also *breac*), appears as a form of the Middle Irish *breccaid* meaning ‘to speckle.’ A speckled disease, then, can be identified as some sort of pox or measles, though the origin of the epidemic and symptoms other than spots (with an end result of death) are lacking. While there are many poxes, especially described throughout the medieval period, most translations of these records refer to the disease as smallpox. Unlike the Great Bovine Pestilence—where the environmental, economic, and social conditions allowed for the spread of the disease—this single-year epidemic did crop up in other regions, which makes contextualizing the transmission difficult. Regardless, the unceasing disruptions in the decade post-Bruce Invasion were not only driven by the destruction that the invasion wrought but also demonstrates the epidemiological and health impacts of this time of instability.

The first nearly thirty years of the fourteenth century in Ireland were characterized by an enduring subsistence crisis which intensified because of climatological and anthropogenic events. The pluvial which brought about the Great Famine in Ireland endured when compared to other Northern European counterparts, likely due to alignment, disruption, and destruction brought about the Bruce Invasion. Before and during the invasion, cereal crops and cattle were among the resources burned and stolen, respectively. The fluctuating power association with

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<sup>184</sup> Hennessy, “Annals of Loch Cé,” sec. LC1327.4. It is also important to note that the smallpox outbreak in 1324 is also recorded in the *Annals of Ulster* but the environmental trends later discussed align with the PDSI values from 1324 as well.

<sup>185</sup> Crawford, “Disease and Illness in Medieval Ireland,” 8. For example *galar fuail* meant ‘urinary disease.’

resource accumulation and military might snowballed into a period of sociopolitical instability, as the annalists attest even after the death of Edward Bruce. Furthermore, the entrance of the GBP in 1318 compounded and extended the subsistence crisis, an additional resource depleted for nearly six years. Alongside the cattle plague, outbreaks of disease universally increased suffering, the populace likely immuno-suppressed after years of poor diet and displaced from near-constant war. The extent to which the conditions in Ireland were unique in their unfolding and duration remains an avenue of future study, especially given the exploitative relationship between mainland England and the Irish economy.

### **1335-1348: Not by Gods or Kings, but By the Rats**

From 1335-1348, the variability between climate extremes appears reduced but this period immediately before the Black Death had the annalists reporting similar hardships akin to previous years (see Figure 12). Friar John Clyn's entry for 1335 enumerates these events:

In the week before the Purification [2 February 1335], for eight days there was heavy snow, very harmful to animals but more dangerous as injurious to men so that some of them (as it is said) were killed by fire and many maimed; it afflicted an innumerable number severely with inflammation of the feet, pain and wounds and it destroyed and wrecked mills, pools and bridges by the ice breaking. This suffering, killing and maiming of men happened on Tuesday, namely the last day of January [Tuesday 31 January 1335] and particularly because of the hunting of hares.<sup>186</sup>

As Clyn suggests, the heavy snowfall led not only to disaster from the whims of nature but also spurred on the violence of man. The reprieve from fire setting ceased in 1335 but quickly ceased after the snowfall as once again, the cattle began to die. Not only were the animals impacted by

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<sup>186</sup> Clyn, *The Annals of Ireland*, 214.

the snow, but the lull in violence ceased, raiding resumed, and expeditions by leaders went out to retrieve spoils which could include “several horses, and a few steeds, and a great quantity of small cattle.”<sup>187</sup> The raids coincided with poor crop yield and famines in the late 1330s, akin to the behaviors of much earlier Irish kings striking out to collect resources from neighbors in times of scarcity. In a sense, the flames of competition between territorial leaders were tamped by the need to survive in the aftermath of the tumultuous thirty years previous. However, resistance to colonial occupation persisted, the *Annals of Loch Cé* providing commentary on the expulsion of Foreigners from Luighne and Corann in between reports on livestock and crop death.<sup>188</sup> Across the sources, reports of crop and animal loss, short-term engagements, and a buildup to conflicts of greater scales—like those of the early fourteenth century—reported.

The pattern to the entries might reflect on the normalization of scarcity for the successors of earlier Irish kingships as 1250-1348. Stability, however, was not in the cards for those alive as by 1348 “a great *plague* raged in Ireland.” The plague that not only drastically changed the demography of medieval Europe but one that also heralded the end of the story for many of the most critical informants of this period: the annalists.<sup>189</sup> While it is erroneous to say that the Black Death was not a massive transformational force of the fourteenth century, the notion of the plague as the singular disaster of the period is equally erroneous. As demonstrated from 1250-1348 in colonial Ireland, people experienced consistent hardship, regularized warfare, subsistence crises, and disease in their day to day lives. With these contexts in mind, traditionally historic events like the Black Death become less of a rupture in the case of medieval Ireland and

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<sup>187</sup> Hennessy, “Annals of Loch Cé,” sec. LC1336.8.

<sup>188</sup> William Hennessy, “Annals of Loch Cé” (1871), sec. LC1388.4, LC1339.3, CELT: The Corpus of Electronic Texts, <https://celt.ucc.ie/published/T100010A/index.html>.

<sup>189</sup> O’Donovan, “The Annals of the Kingdom of Ireland by the Four Masters,” sec. M1349.5. Half of the sources used in this investigation stop before or at 1348, barring the sources who share evidence from Connacht.

more of the culminating event that marks the bad times. The works of the Irish annalists allow for this shift in perspective as they were (largely) contemporary voices of the chaotic years. Their narrative begets an interrogation of the traditional assumptions of medieval historians and encourages researchers to look closer at the year-to-year observations by past peoples rather than from the bird's eye view of the present.

### **Future Directions**

This research covers a long period and only touches the surface level of what the annals and multi proxy climate data can tell us about the colonial period in Ireland. For example, a deeper analysis of the palynological data might work towards building an understanding of the developing subsistence regimes in the later medieval period. A large component missing from this research is a full integration and assessment of precolonial and colonial archaeology. Leaving out the artifactual and architectural was an intentional due to the time constraints and scope of this research, though the ideal execution of this project relies on multidisciplinary work. A future analysis would also require the consultation of the historical sources in their manuscript forms, whether in-person or digitized. CELT is a fantastic resource but the development of my questions and interest in the composition of the physical text requires different access.

A narrowing of the research focus, like limiting an intense analysis to the early fourteenth century would also have allowed for a greater investigation and discussion of the Irish crises from 1315-1328. The Bruce Invasion, an already complicated topic, requires a dedicated study to tease out the complex interactions between the environmental and anthropogenic drivers of disaster. The thoughts presented in this work are a small portion of the interactions documented by the annalists of Ireland during the times of hardship. Policy by the colonial forces also needed greater research and substantiation as the form of colonial incursion employed by the Anglo-Norman lords was both assimilative and dividing, a consistent behavioral paradox featured in the historical record. Overall, this understudied period of Irish environmental and colonial history can and should be recognized as a unique entity, a protean time amongst years of immense global changes.

### Appendix

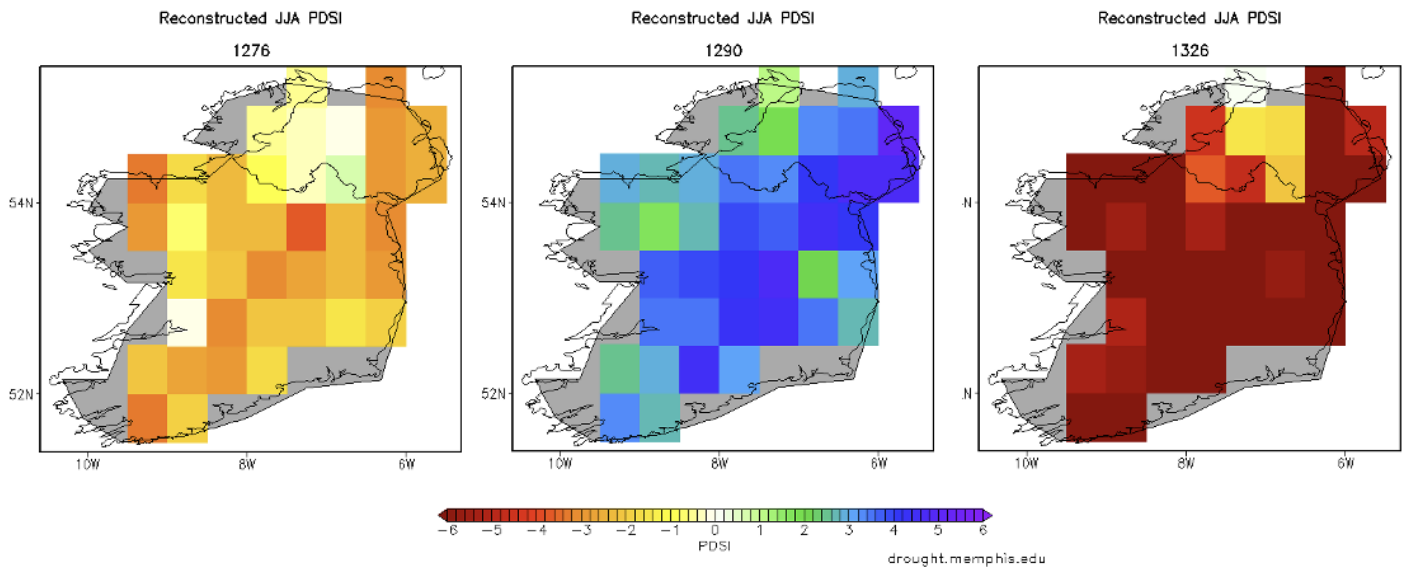


Figure 1: June, July, and August PDSI Values visualized using the Old-World Drought Atlas visualization tool. From Burnette, D.J., 2021: The Tree-Ring Drought Atlas Portal: gridded drought reconstructions for the past 500-2000 years. Bulletin of the American Meteorological Society, 102, 953-956.

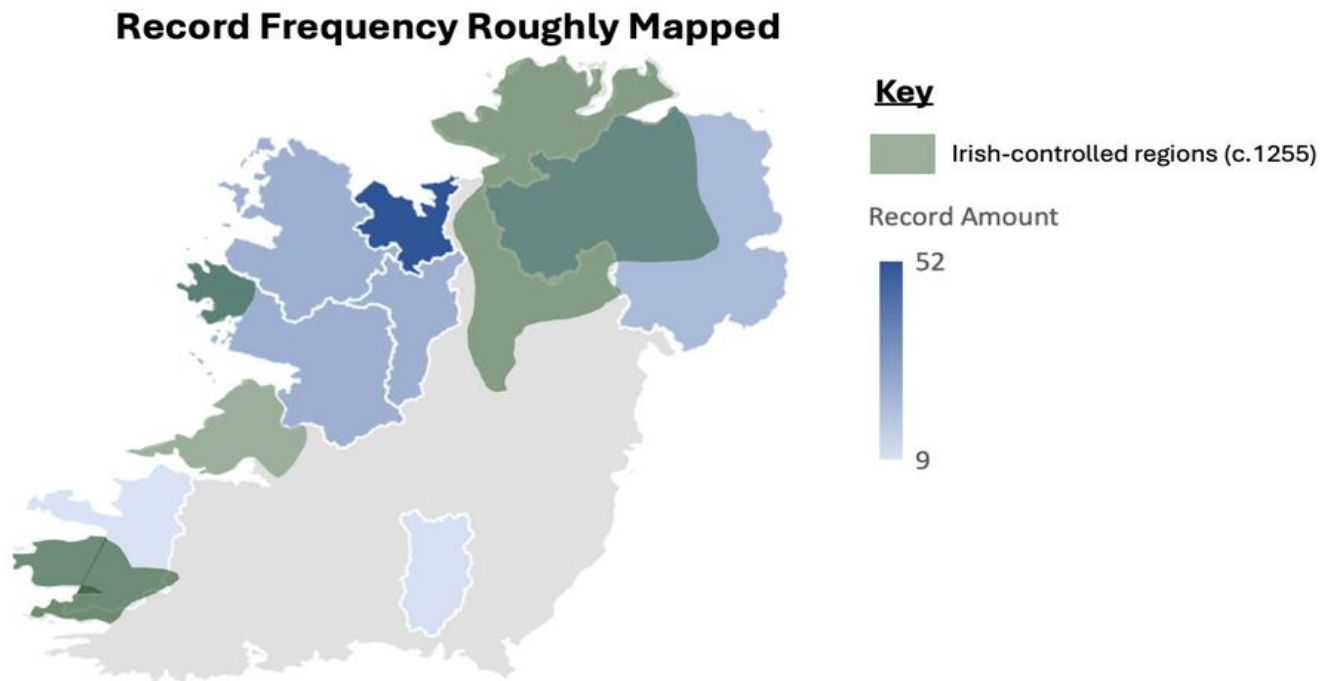


Figure 2: Frequency of entries detailing epidemic, agricultural, and natural disasters organized by regionality of the six selected annals.

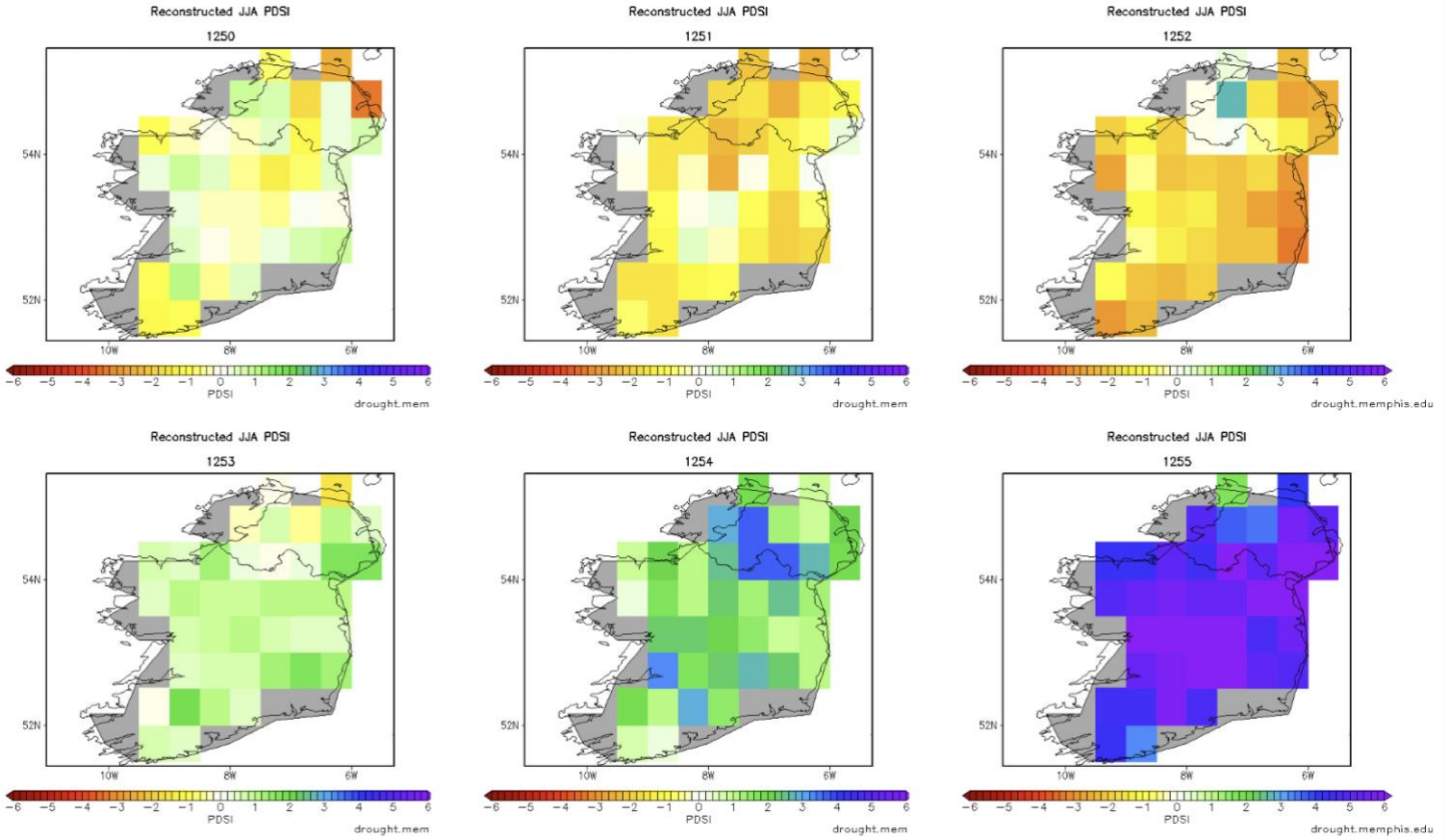


Figure 1: June, July, and August PDSI Values visualized using the Old-World Drought Atlas for 1250-1255.

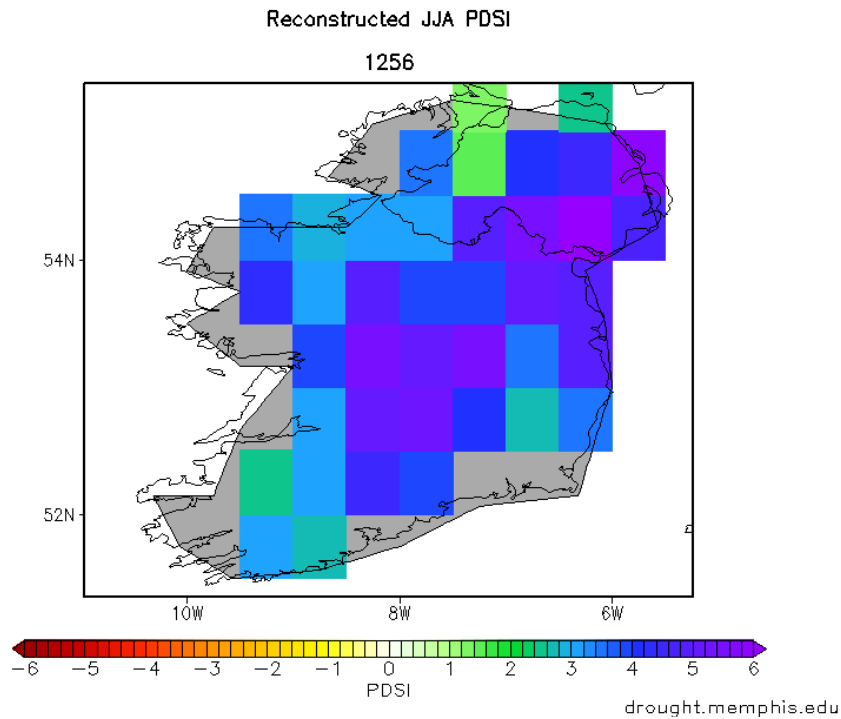


Figure 4: June, July, and August PDSI Values visualized using the Old-World Drought Atlas for 1256.

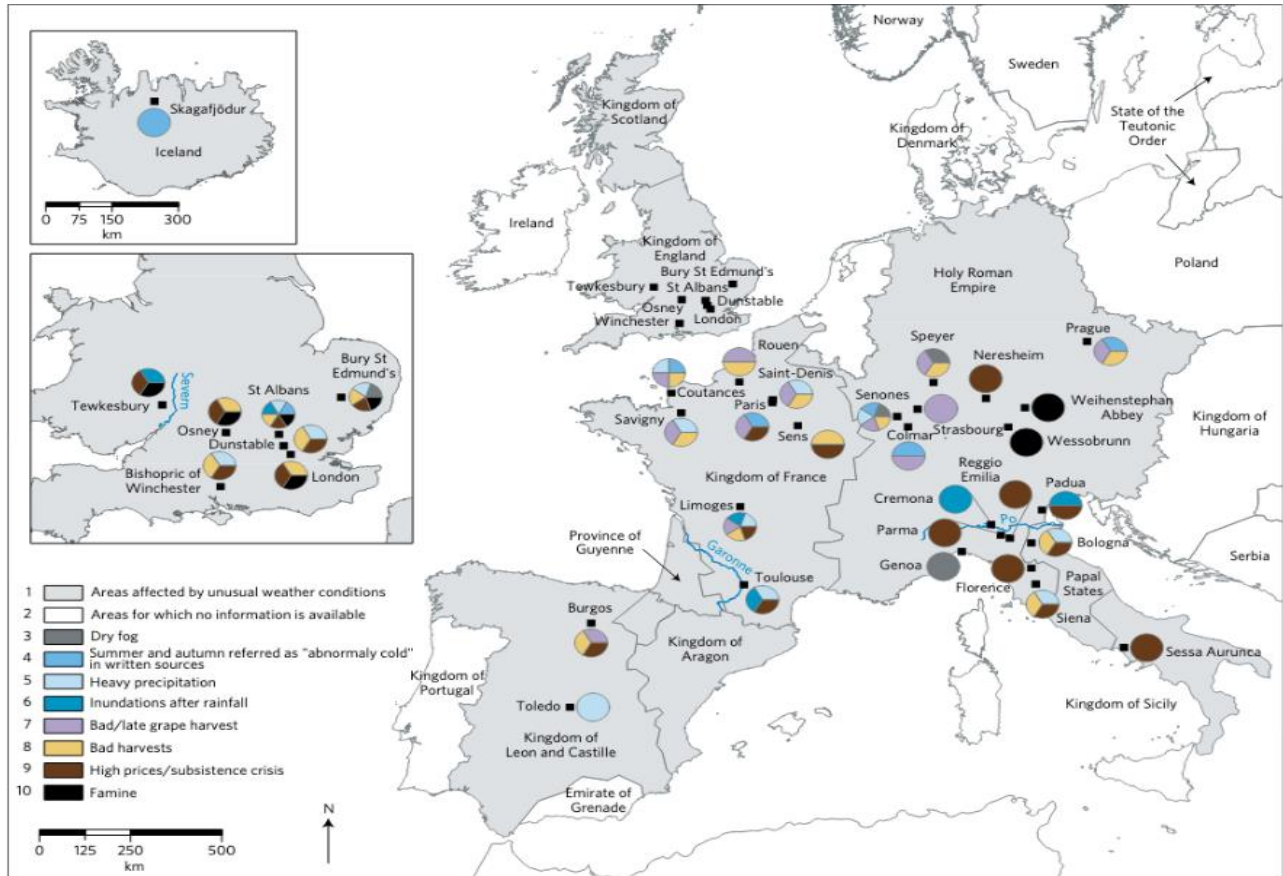


Figure 5: Spatial extent of weather and optical anomalies observed in Europe in 1258 from “Climate response to the Samalás volcanic eruption in 1257 revealed by proxy records” by Guillet et al.

### Timeline of Historical Events from 1250-1276

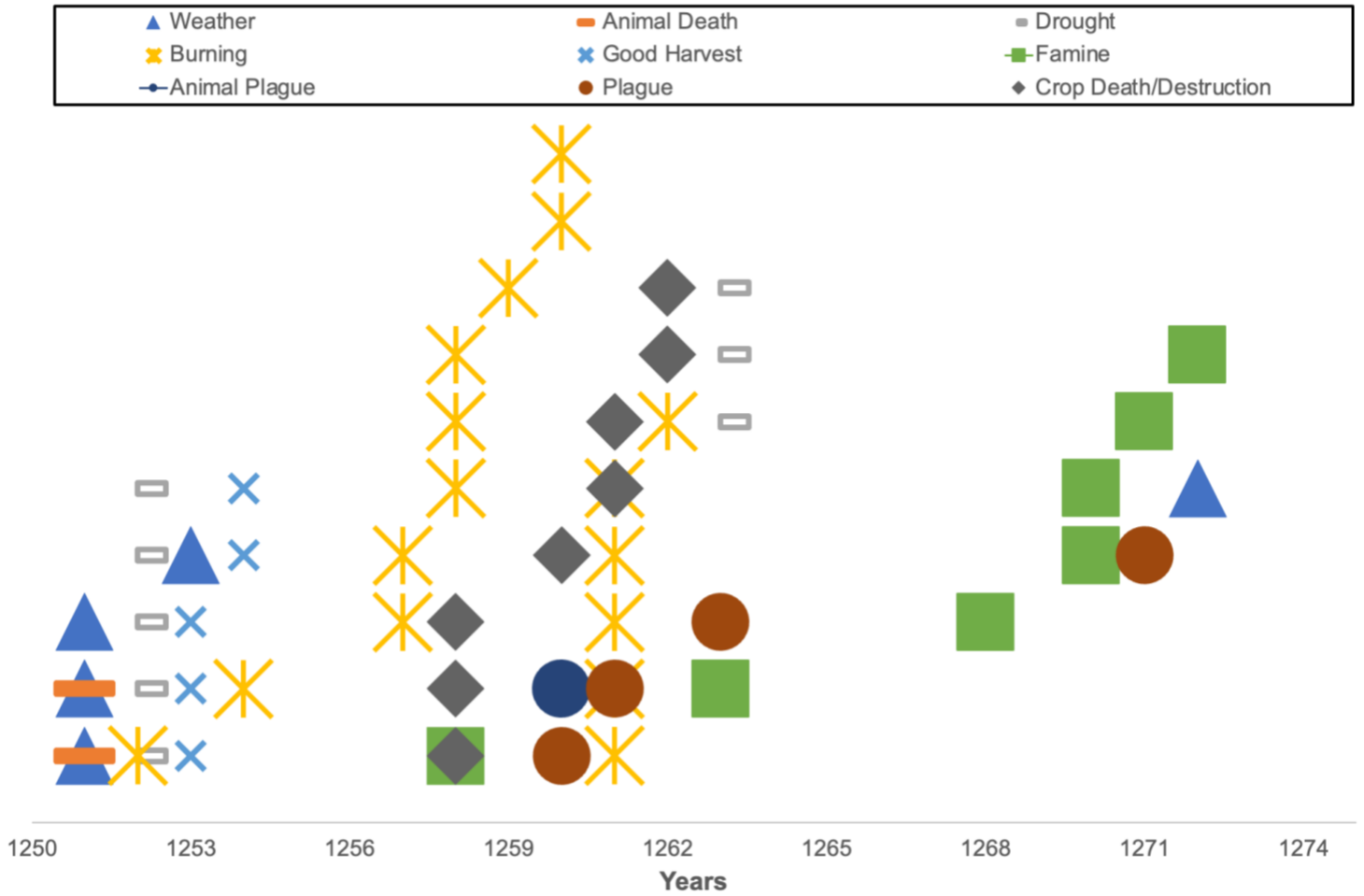


Figure 6: Timeline of historical events as reported in the six annals utilized in this project from 1250-1276.

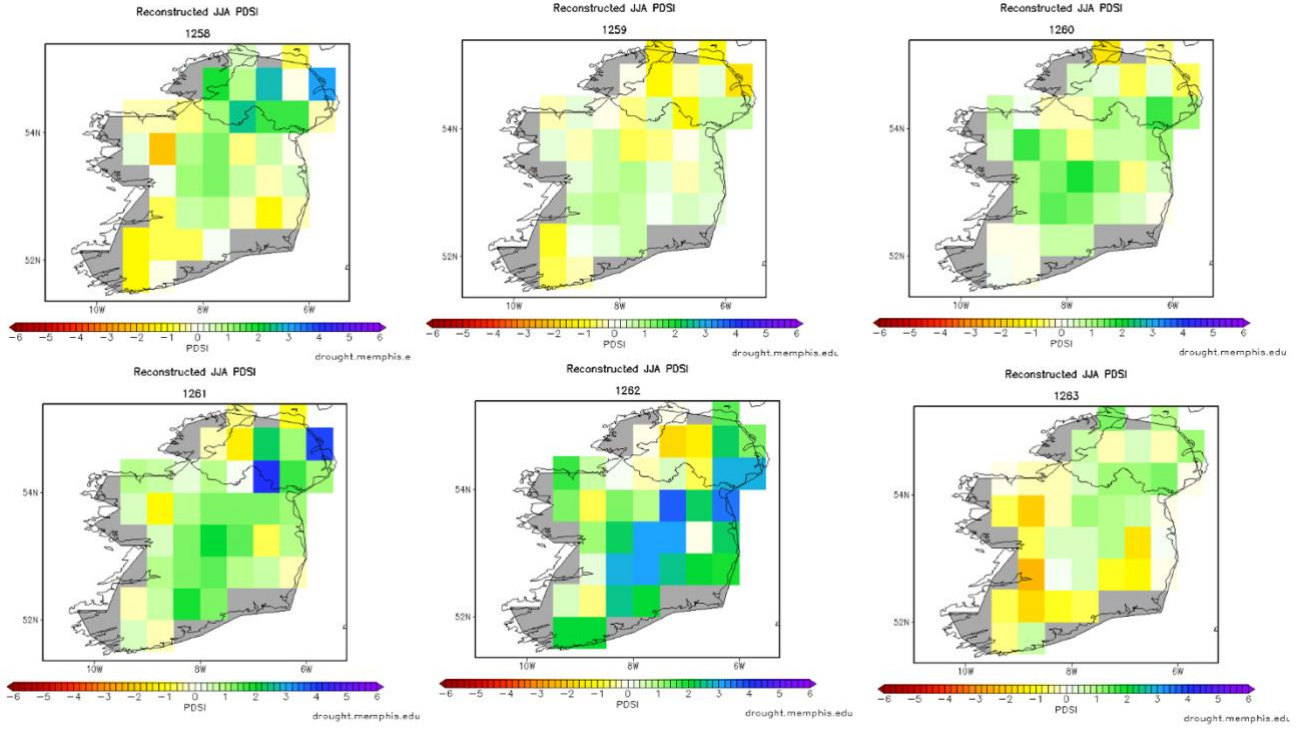


Figure 7: June, July, and August PDSI Values visualized using the Old-World Drought Atlas for 1258-1263.

### Timeline of Historical Events 1300-1348

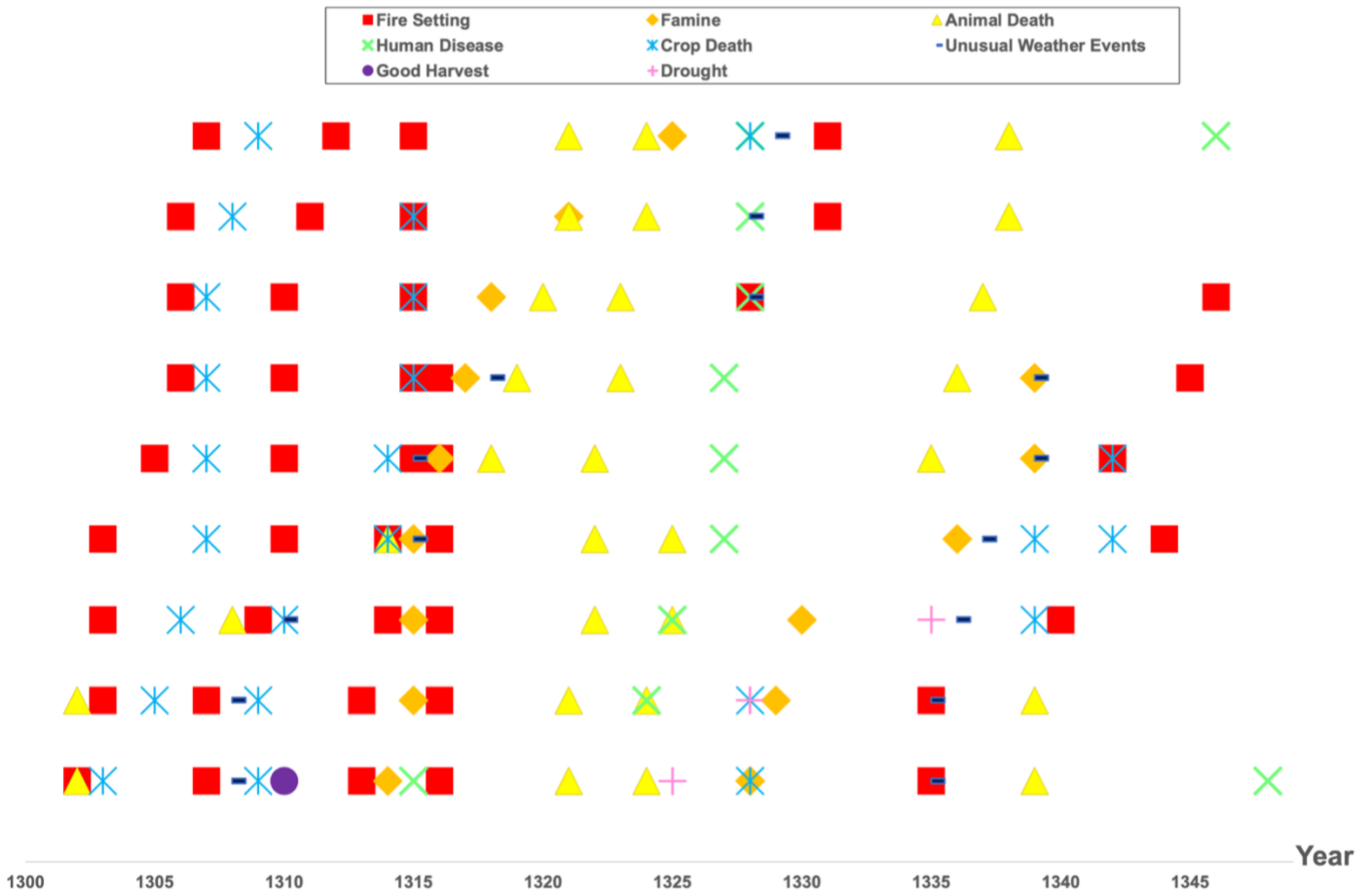


Figure 8: Timeline of historical events as reported in the six annals utilized in this project from 1300-1348.

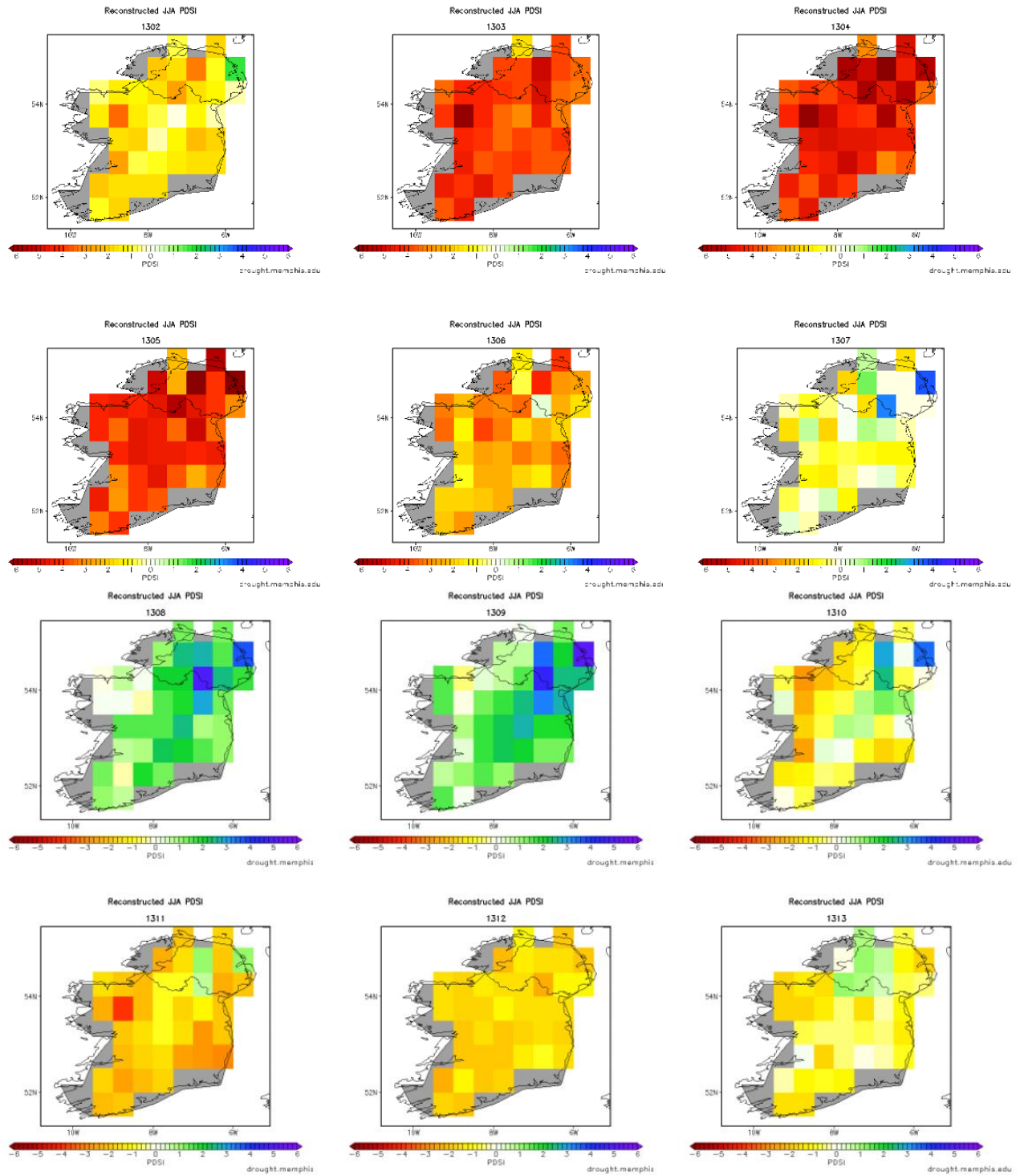


Figure 9: June, July, and August PDSI Values visualized using the Old-World Drought Atlas for 1302-1313.

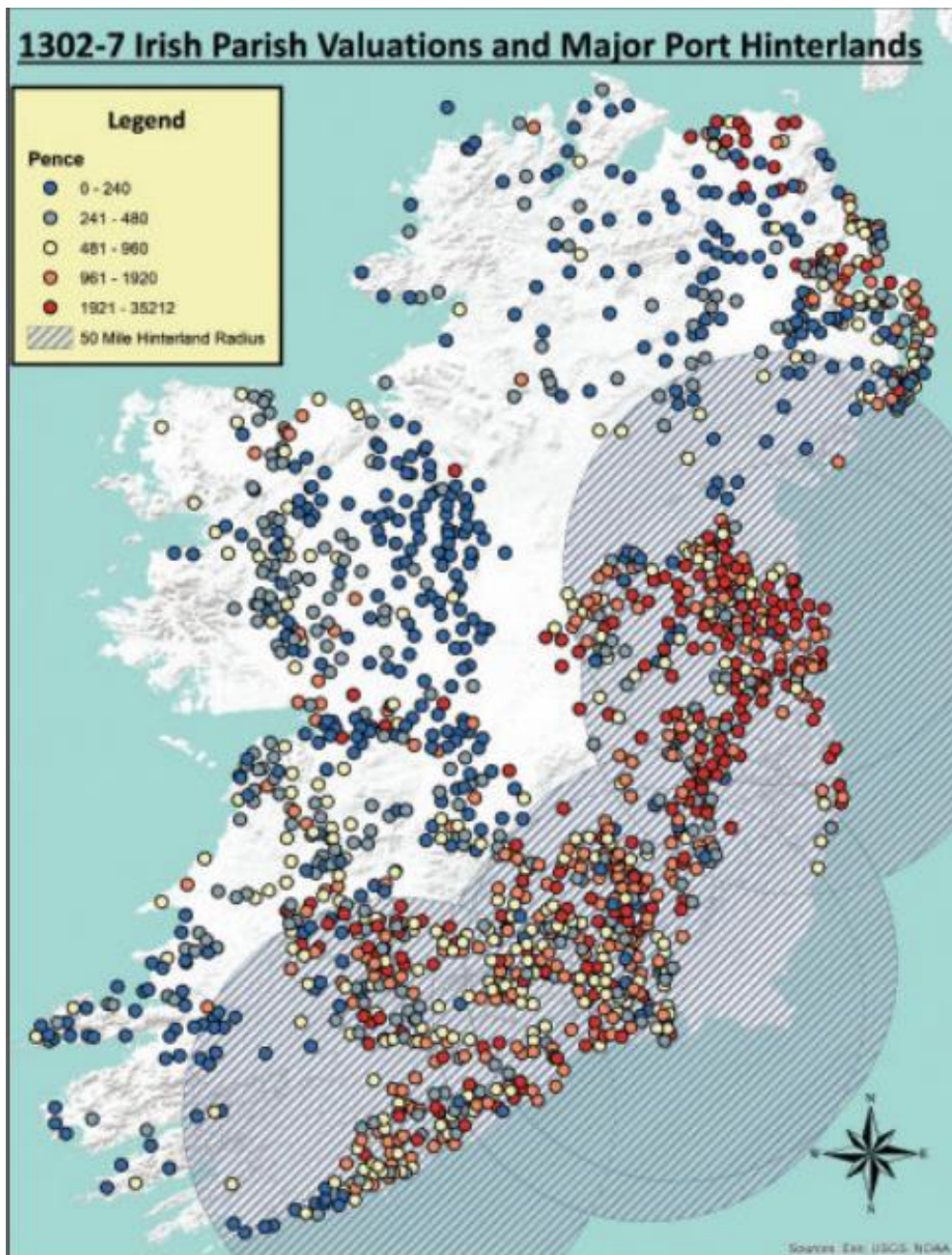


Figure 10: 1302-1307 Irish Parish Valuation and Major Port Hinterlands from "What was the distribution of wealth in Ireland c. 1300?" by Chris Chevallier.

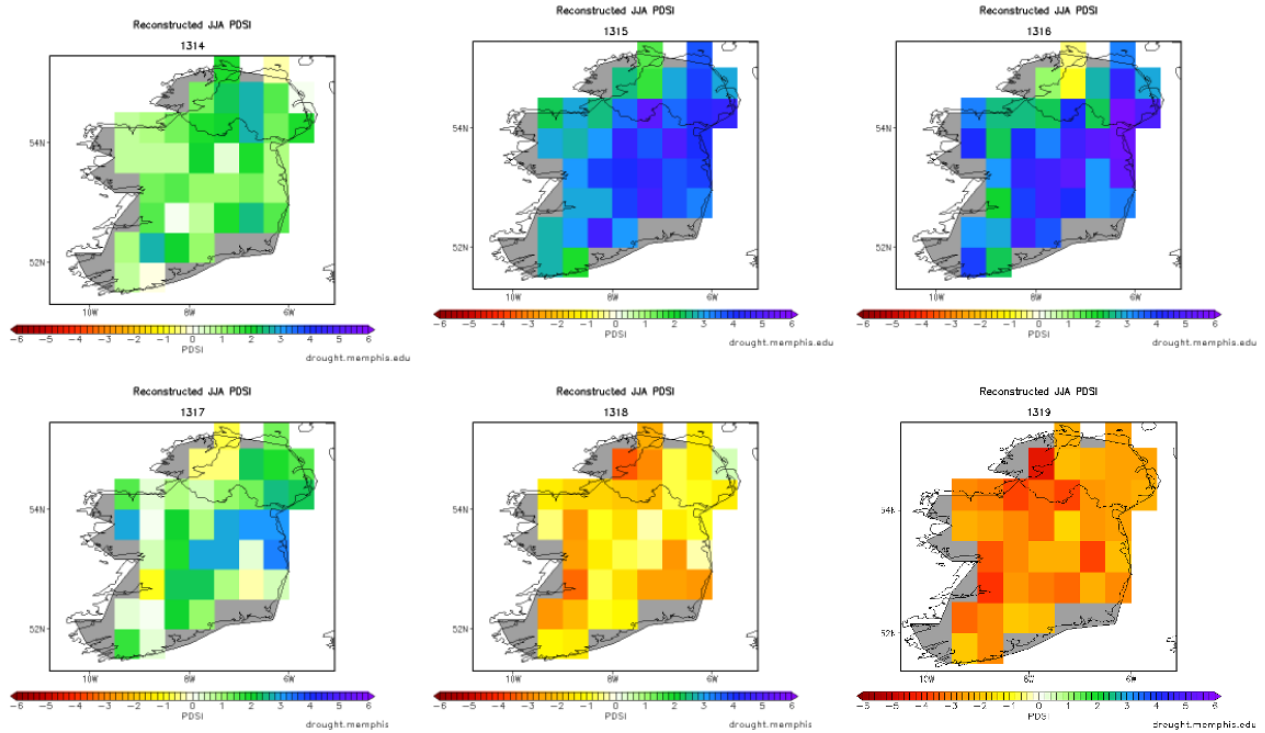


Figure 11: June, July, and August PDSI Values visualized using the Old-World Drought Atlas for 1313-1319.

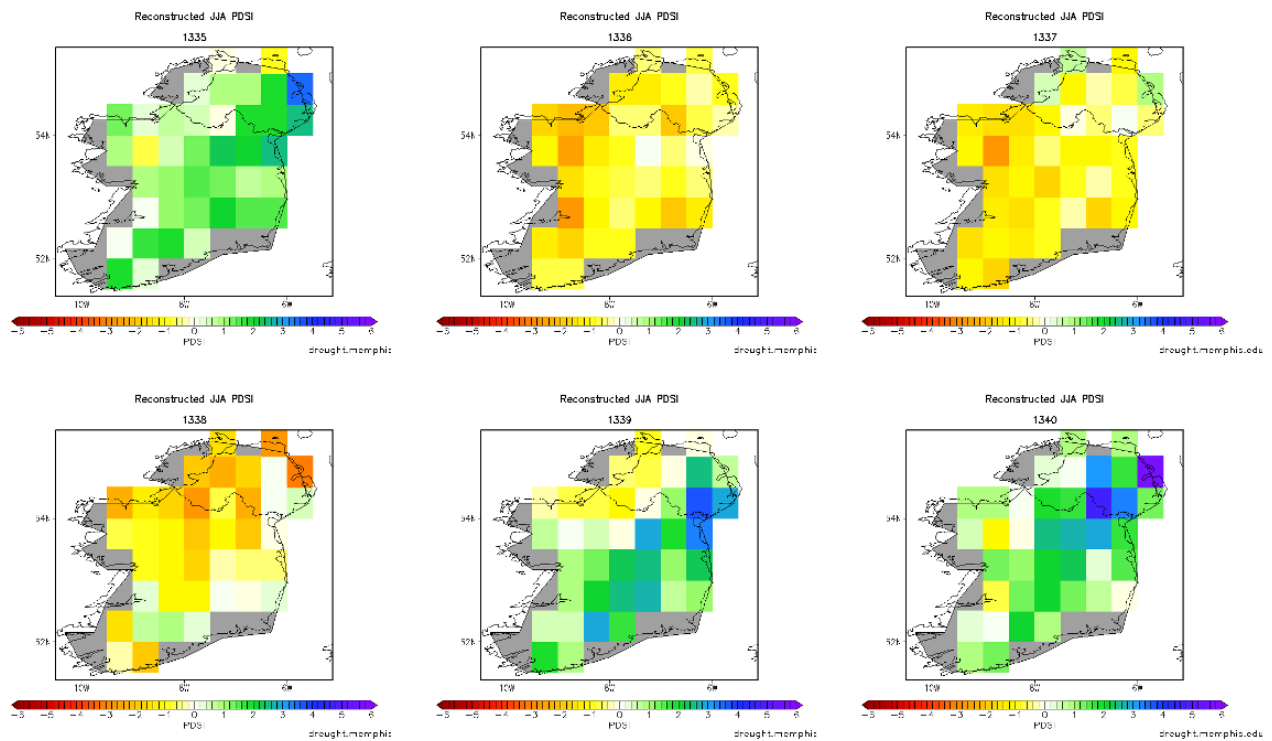


Figure 12: June, July, and August PDSI Values visualized using the Old-World Drought Atlas for 1335-1340.

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