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AN INCREDIBLE JOURNEY? UNDERSTANDING ANCIENT LANDSCAPES FROM ENGLAND TO THE MIDDLE EAST AND NORTH AFRICA

By LETTY TEN HARKEL[1] and ROBERT BEWLEY[1]

Introduction

In the 2017 issue of *Medieval Settlement Research*, celebrating the 30th anniversary of the MSRG, Chris Dyer looked back at the Group's history. As discussed by Dyer, the genesis of the MSRG can ultimately be traced back to 1952 when, inspired by continental European practices, several leading scholars in the field of English rural settlement studies founded the Deserted Medieval Village Research Group (DMVRG) in response to the large–scale destruction of village earthworks by intensive farming and infrastructure developments (Dyer 2017, 1; *MSRG Policy Statement* 4.2). As a first step, a spatial database was constructed, and much use was made of aerial photographs (Dyer 2017, 1).

The DMVRG thus took a pioneering role in the promotion of the use of remote sensing techniques for the study of archaeological sites and their preservation. Maurice Beresford's work, especially his seminal book *The Lost Villages of England* (Beresford 1954), provides a good starting point. Beresford used the new and untapped resource of RAF vertical photographs (taken by the RAF after WWII, between 1946–1948, and covering the whole of the UK) as the source for his pioneering discovery of previously un-recorded and unknown medieval sites and landscapes. In this, he was no doubt influenced by J.K. St Joseph, a pioneer in aerial archaeology (Beresford and St Joseph 1977). He also showed that the landscape he was documenting was disappearing, and fast at that.

The same collection of aerial photographs was also instrumental in the formation of the National Mapping Programme (NMP) by the Royal Commission on the Historical Monuments of England, several decades later. By then, it provided an important source that recorded lost landscapes, but that had not been systematically examined. Unlike in Beresford's day, however, NMP staff were/are able to have quicker access to the photographs, as they had been catalogued in the early 1980s. The NMP (which is still on–going) aims to identify and record *all* archaeological sites and monuments in England from aerial photographs (Bewley 1999; *National Mapping Programme*). Now under the auspices of Historic England, one of its founding members was Robert Bewley, who is also one of the authors of this paper.

Thus the development of remote sensing applications in archaeology owes much to the field of medieval archaeology. This is, however, neither the time nor the place to look back on the past in a self-congratulatory manner (Dyer 2017, 1), although the achievements of those early pioneers should certainly not be forgotten (for some good overviews, see Dyer and Everson 2012; Gardner *et al*. 2012). Indeed, Dyer's (2017) piece focused on the future also, stressing how even 'a small, modestly funded research group can have a limited but positive influence on public policy and research strategy … [and] will be able to make a major contribution to settlement studies for many years to come' (Dyer 2017, 6).

We agree with Dyer but would go further by saying that the impact of groups like the DMVRG had far more than a 'limited' influence on public policy and research strategy – indeed, it caused a ripple effect that today stretches far beyond the geographic and temporal boundaries of the DMVRG's original focus. In the 1950s, initiatives that covered all of England seemed ambitious; now, as many important collections are digitised and made freely available, the world has become much smaller.

One on-going project that builds extensively on those remote sensing methodologies that were originally developed in Britain is the Endangered Archaeology in the Middle East and North Africa (EAMENA) project, based at the three Universities of Oxford, Leicester and Durham (Bewley *et al*. 2016). Although concerned with a very different region and a more extensive time-span, EAMENA shares many aims and objectives with the MSRG, including the documentation (based extensively on remote sensing data) of archaeological sites and monuments, disturbances to heritage resulting from modern and recent land-use, and mitigation of potential threats through education, advice and awareness raising. What is more, like Beresford in the 1950s, the EAMENA team are making use of a new resource – in this case freely available satellite imagery, mainly Google Earth and Bing Maps – to document the disappearance of archaeological landscapes across the MENA (Middle East and North Africa) region. Here, we see a live example of how a methodology originating in the British Isles more than 50 years ago is now applied across 20 countries in the Middle East and North Africa, from Iran to Mauretania. This, we would argue, is more than a 'limited' influence.

The aim of this paper is to highlight the impact of remote sensing methods first developed in Britain on archaeology in the wider world. The first part is written by Robert Bewley, the current director of the EAMENA project. Bewley will explore how his background in British archaeology has influenced his work in the MENA region (and vice versa).

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The remainder of the paper is mainly written by Letty ten Harkel, who will provide a brief summary of the EAMENA project's aims and objectives, its workflow, as well as some preliminary results of the kinds of disturbances and threats affecting the 'medieval' archaeology of the MENA region (we use the term 'medieval' here within inverted commas, as it is not widely used within the MENA region; see below for more on periodization). In doing so, we explore similarities between British archaeology and current work in the Middle East and North Africa, specifically the EAMENA project (Bewley *et al*. 2016).

The journey begins

By Robert Bewley

In the Ancient History and Archaeology undergraduate course at Manchester University (1975–1978), we were lucky to have a wide variety of courses from aerial archaeology to Near Eastern archaeology. I often wondered, back then, if I would ever be able to combine these two interests as an archaeologist – undertaking aerial survey in the Middle East and beyond. Despite it taking a long time and a circuitous route, it did indeed prove to be possible; albeit with a number of research and career diversions along the way.

Politics and 'luck' (both good and bad) play a part in the development of archaeological practice, archaeological careers, as well as the serendipity of whomsoever one happens to know at any given time. Reading Dyer's (2017) account of the development of the MSRG reminded me of the overlaps in my own career. As a freshly appointed Assistant Inspector of Ancient Monuments (for Northumberland, Durham, Tyne and Wear, and Cleveland) in 1984, John Hurst himself undertook my first annual performance review.

My early forays into Middle Eastern archaeology were abruptly ended in 1980. Having been on excavations in Iran and Iraq in 1978, I was encouraged to apply for an MPhil in Palaeolithic Archaeology at the University of Cambridge, resulting in a publication of an excavation of a cave undertaken by Charles McBurney in 1969 (Bewley 1984) but not the expected PhD on the *Palaeolithic of the Zagros Mountains*. As this was the exact moment (September 1980) that Saddam Hussein invaded Iran and the Zagros mountain range spans both Iran and Iraq, I was not allowed to travel there, and had to find another topic.

This time I chose a safe topic on prehistoric settlement patterns in a small part of England (Bewley 1994). This meant a re-connection with work I had done in Manchester with Professor Barri Jones, who had a collection of aerial photographs of the Solway Plain (and also involved the diversion of a fieldwork season in Libya on the Libyan Valleys survey in 1980; Barker *et al*. 1996a). The PhD topic I chose involved the examination, analysis and interpretation of aerial photographs, followed up with fieldwork, to understand the prehistoric and later settlement of a small (understudied) region in northern Cumbria.

The timing of the research was also fortuitous: the Aerial Archaeology Research Group (AARG) had its inaugural meeting in 1980, in Cambridge. It was a stroke of luck that on my doorstep was the unique resource of the Cambridge University Collection of Aerial Photographs (CUCAP), whilst I also had access to Professor Jones's aforementioned collection of aerial photographs of the Solway Plain, as I had catalogued these in Manchester in 1979.

This was where luck played a part in my career: the discovery of a few sherds of Bronze Age pottery in a ploughed field near Ewanrigg in Cumbria resulted in a relatively small rescue excavation revealing the presence of a Bronze Age cremation cemetery that was being ploughed away (Bewley 1992). This excavation started in 1983 and was the beginning of my interest in, and then a career that involved the protection, preservation, and understanding of, the historic environment (what we now also refer to as 'heritage' or 'cultural heritage'). The excavation at Ewanrigg as a rescue project provided a connection with the local archaeological unit and also the Inspectorate of the newly formed English Heritage (now Historic England), leading to a job as an Assistant Inspector.

Then, in 1987, the opportunity arose for me to work in the Air Survey section of the Royal Commission on the Historical Monuments of England (RCHME), who founded the National Mapping Programme (NMP). The major stimulus that led to the NMP for England – and thus ultimately the EAMENA project (Bewley *et al*. 2016) – was English Heritage's Monuments Protection Programme (MPP), as mentioned by Dyer (2017, 4). The MPP was created to accelerate the protection of archaeological sites, and especially those sites that were under-represented in the record. This, as we know, underlay the work of the MSRG, but also spurred the question that challenged those of us involved in aerial archaeology more broadly: how could we develop priorities for protecting archaeological sites visible only as cropmarks and soilmarks? Just as we are now doing in the EAMENA project – documenting the most highly significant sites that are under threat – we developed a mapping and recording system for the NMP. As stated by Edis *et al*. (1989, 112; also see *Aerial Investigation and Mapping*),

> The aim of NMP is to enhance our understanding about past human settlement, by providing primary information and syntheses for all archaeological sites and landscapes (visible on aerial photographs) from the Neolithic period to the twentieth century. In practical terms the purpose of NMP is to map, document and classify, at a common scale and to a common standard, all archaeological sites and landscapes recorded in England on aerial photographs.

Just as the MSRG was developing a spatial database for its sites, so the NMP was creating both a textual and a visual (mapped) record of sites, for use at national level (for protection) but also at the local authority level, used for every day planning and development purposes. This resource, although still being enhanced and developed on a daily basis, is being used in academic research as well, for example by the English Landscapes and Identities (EngLaId) project, more on which below (*e.g*. Donnelly *et al*. 2014; Green 2012a; 2012b; 2012c; 2013). As

the EAMENA project develops, it, too, is providing a basic record for each site, as Ten Harkel explains below, visible in their landscape setting.

Other events at the time had a huge impact on the expansion of the technique, and thus ultimately on the development of the EAMENA project in its current form. In 1989, global politics opened up a new world, with the ending of the Cold War and the collapse of the Soviet Empire. Many of the archaeologists of former Soviet states in Central and Eastern Europe – especially Czechoslovakia (as was), Poland, Hungary and the former GDR, East Germany (Bewley and Raçzkowksi 2002) – beat a path to Britain's door, as they wanted to learn the technique of aerial archaeology. With a small grant from the British Academy, we soon undertook our first training course in Hungary (Bewley *et al*. 1986). Later, with EU grants though the Culture 2000 programme, we began what ultimately became a long series of training courses and projects, culminating in the ArchaeoLandscapes Europe (ArcLand) programme. This 5-year pan-European project within the Culture 2007–2013 Programme started in September 2010, and finished in 2015.

However, there were other stimuli too. The Aerial Archaeology in Jordan (AAJ) project was the reason that I, and Professors Andrew Wilson and David Kennedy, were asked to develop a proposal to document the endangered archaeology of the Middle East, and, once we had drawn in Professor David Mattingly, of North Africa too. Ever since 1997, when David Kennedy had asked me to join him in developing an aerial reconnaissance project in Jordan, it had been the one opportunity each year for me to undertake archaeological survey and research in the region I had been interested in as a student, but which I was not able to work on in my career in English Heritage or – later – when I worked for the Heritage Lottery Fund. Initially, the expectation had been that the AAJ project would be limited to a few seasons of aerial reconnaissance and then a concluding report. Twenty-two years later, however, the project is still going strong (Kennedy and Bewley 2004; 2010). In 2013, the AAJ project moved its archive and operational base from Perth in the University of Western Australia (where Kennedy was based) to the School of Archaeology in Oxford, now home to the EAMENA project too.

Apart from the new sites we discovered in Jordan each year, what struck us was the number of sites that were affected by agriculture, bulldozing of large areas for the expansion of towns and cities, or road building. Some sites were completely bulldozed away, even though they were well documented, or in at least one case even protected by law.

Then, in 2011 with the Arab Spring (politics again) and the rise of ISIS/ISIL, the destruction of high-profile sites such as temples and tombs at Palmyra in Syria, and the iconoclasm and removal of statues from Hatra in Iraq, was brought to the attention of the world. This prompted potential funders (in our case the Arcadia Fund) who were interested in protecting the cultural heritage of the MENA region to ask if a rapid survey could be undertaken to 'document' archaeological sites across the region using satellite imagery. With the creation and development of Google Earth and Bing Maps this proved an eminently practical proposition. The work of Professor Kennedy was key in this, as he was already using these resources to study the archaeology of Saudi Arabia, where, at that time, undertaking aerial reconnaissance was not possible (Kennedy and Bishop 2011). He was not alone in this: since 2011 many archaeologists in Durham, Leicester and elsewhere had also shown that the interpretation of satellite imagery was a key starting point for their archaeology surveys, especially where archaeological field work was no longer possible because of the conflicts in the region. It was the same story again as in the 1980s, when the war between Iran and Iraq broke out, only now there was a new, largely untapped resource available that meant archaeological work could continue, but in a different way.

So, in 2014, a proposal to document and assess the threats to archaeological sites across the MENA region was submitted by the Universities of Oxford and Leicester (see Bewley *et al*. 2016), and in 2015 the EAMENA project was born. In 2016, Durham University joined the project, adding expertise for Syria, Iran and Iraq.

As the EAMENA project develops, it is clear that access to information is vitally important and many of the countries we are working with are looking to use the EAMENA database for their purposes and even as the national, digital inventory for their country (comparable to the English National Record of the Historic Environment (NRHE), which may be integrated into the HERs at some point in the future (Flower and Lush 2017), or – indeed – a country-wide HER). In addition to documentation, and following the precedent set in Europe from the 1980s onwards, the EAMENA team therefore also provides training, funded by the UK's Cultural Protection Fund, to heritage professionals from eight countries in the region (Tunisia, Libya, Egypt, Jordan, Palestine, Iraq, Lebanon and Yemen). This allows us to disseminate the EAMENA methodology and embed it within local working practices (*EAMENA – The Cultural Protection Fund*).

So, why the title *An Incredible Journey*? In part because of the way politics affects our lives, such as, for myself, the Iran-Iraq war and the chance of an MPhil at Cambridge University, but mainly because of the nature of the archaeology we do. Archaeologists excavate – but not exclusively any more. Archaeology is now much more than that, and it is not just technology that has changed, but also the way we think about our discipline and methodologies. Access to the RAF verticals was an important moment in time, which the DMVRG used to achieve a huge amount. The availability of satellite imagery in the 1950s would have made it easier – or maybe not, given the frequent cloud cover in the UK!

Perhaps the most incredible thing is how an initiative started by a small number of pioneers – for example Beresford and St Joseph – had such a very important and positive impact on the development of landscape archaeology and remote sensing, not only in England, but also across Europe and the rest of the world. In other words, initiatives like the EAMENA project can trace some of their roots back to those pioneering medieval archaeologists in the 1950s. But the journey does not end here, as archaeologists from across the world

continue to work together to share ideas, methodologies and approaches. The remainder of this paper therefore sets out the EAMENA methodology and some preliminary conclusions, in the expectation that this will be considered useful to a British/Irish archaeological readership as well.

The EAMENA project: documenting archaeological landscapes from space

By Letty ten Harkel

The EAMENA project started in January 2015 in response to the increased need for heritage monitoring and protection in the Middle East and North Africa; I personally joined the team in September 2016. On-going conflicts, the targeted destruction of sites and monuments by extremist groups, and a general breakdown in the authority of various governments meant that archaeological landscapes in the region were under increased threat. As was the case in Europe following WWII, the negative impact on the region's archaeology is expected to outlast the conflicts themselves (see Green 2013a for an animation of archaeological investigations in England over time, showing clear intensifications in the post-war decades and in the 1990s following PPG16). A ripple effect has been created, whereby post-war reconstruction and population displacement are likely to cause large-scale redevelopments (*EAMENA – the Arcadia Fund*). As the first part of this paper has demonstrated, the systems that have been developed in Britain over the last decades have much to offer in this respect, but it is hoped that the EAMENA methodology also has something to offer to archaeologists working within Britain and Ireland.

The remainder of this paper therefore describes the EAMENA methodology and preliminary results of the project to a medievalist audience that is assumed to be largely unfamiliar with the archaeology of the MENA region. A number of questions will be addressed: how is the 'medieval' EAMENA record created? What are the kinds of 'medieval' sites that are recorded in the database? Examples are varied and will be drawn from across the MENA region (albeit many will come from Libya and Lebanon, where substantial amounts of data entry and enhancement have taken place to date), their locations depicted on **Fig. 1**. What kinds of disturbances and threats can we identify? Finally, how do the specific challenges facing the EAMENA team compare to those facing heritage professionals working within Europe?

EAMENA: workflow and methodology

The EAMENA workflow is concerned with two separate but interrelated issues. First, archaeological sites are identified and recorded using satellite imagery, aerial photographs, historic maps and published/existing surveys. Second, any disturbances and potential threats to the archaeology are recorded. It is this second aspect that makes the EAMENA database stand out from many other archaeological and heritage databases, and allows us to highlight the fact that similar issues affect heritage worldwide.

The EAMENA project is unique in its scale and ambition, covering a study area extending over more than 7000km east-west, taking in some 20 countries, from Iran to Mauritania. To enable the mapping and recording of archaeological sites effectively, the study area is therefore divided in grid squares (each square measuring a quarter of a degree latitude and longitude, or roughly 25 × 25km[2]) (Fig. 1).

There is a strong emphasis on the use of open source software. This has obvious advantages for the training element of the EAMENA project, as we are often working with partners whose financial resources may be limited. The EAMENA database has been created using the Arches open source heritage management platform, developed by the Getty Conservation Institute and World Monuments Fund, and recently also implemented by the City of Lincoln (*Arcade*; *Arches Project*; Sheldrick and Zerbini 2017).

As a first step, a detailed visual survey is carried out in each grid square, using Google Earth Pro, which can be downloaded for free.[3] As will be clear from the examples included in this paper, landscape types are extremely varied across the MENA region. They include vast areas of desert and mountain ranges, but also low-lying agricultural terrain, coastal wetlands and rolling hills with agricultural terracing more akin to the types of landscape one might expect in Britain and/or Ireland.

Any visual discoveries are routinely combined with existing lists of archaeological sites (for example the UNESCO World Heritage lists) and – where available – published surveys. The use of existing/known data in combination with *de novo* satellite imagery survey allows for a fuller picture to be built up, without the need to visit the areas in person. Both elements of the methodology have their own challenges: whereas sites 'pinned' in Google Earth are often hard to identify and date, sites from published surveys may be difficult or impossible to recognise or even see on the available satellite imagery.[4] Examples of the latter might include object scatters, architectural remains incorporated into modern buildings, or cave dwellings, for example those recorded in the Judaean Desert (*El–Bariyah: wilderness with monasteries*; UNESCO World Heritage Tentative List 5708). In some cases, sites identified on Google Earth may also be visited on the ground, but this depends on the accessibility of a given area, and cannot be done for all records (in July 2018, the EAMENA database already held over 200,000 records, a figure that is steadily increasing, particularly with the additional input from the various training schemes).

Many datasets can be drawn in. In some cases, it is possible to apply the same kind of interdisciplinary methodology that readers of *Medieval Settlement Research* will be deeply familiar with, combining place names, historical maps, aerial photographs and excavated and historical data, often created by the same agents

[2] 'Roughly', because the measurement in km of a degree longitude/latitude varies depending on the exact latitude.

[3] Google Earth Pro is freely downloadable from https://www.google.com/earth/download/gep/agree.html.

[4] Given the various uncertainties related to the identification, dating and location of sites, almost all fields in the EAMENA database – such as Location, Cultural Period and Site Function – have a 'Certainty' field attached, ranging from Definite (confirmed by field survey or published study) to Uncertain. As the focus of this paper is methodological, all levels of certainty have been included in the analyses here.

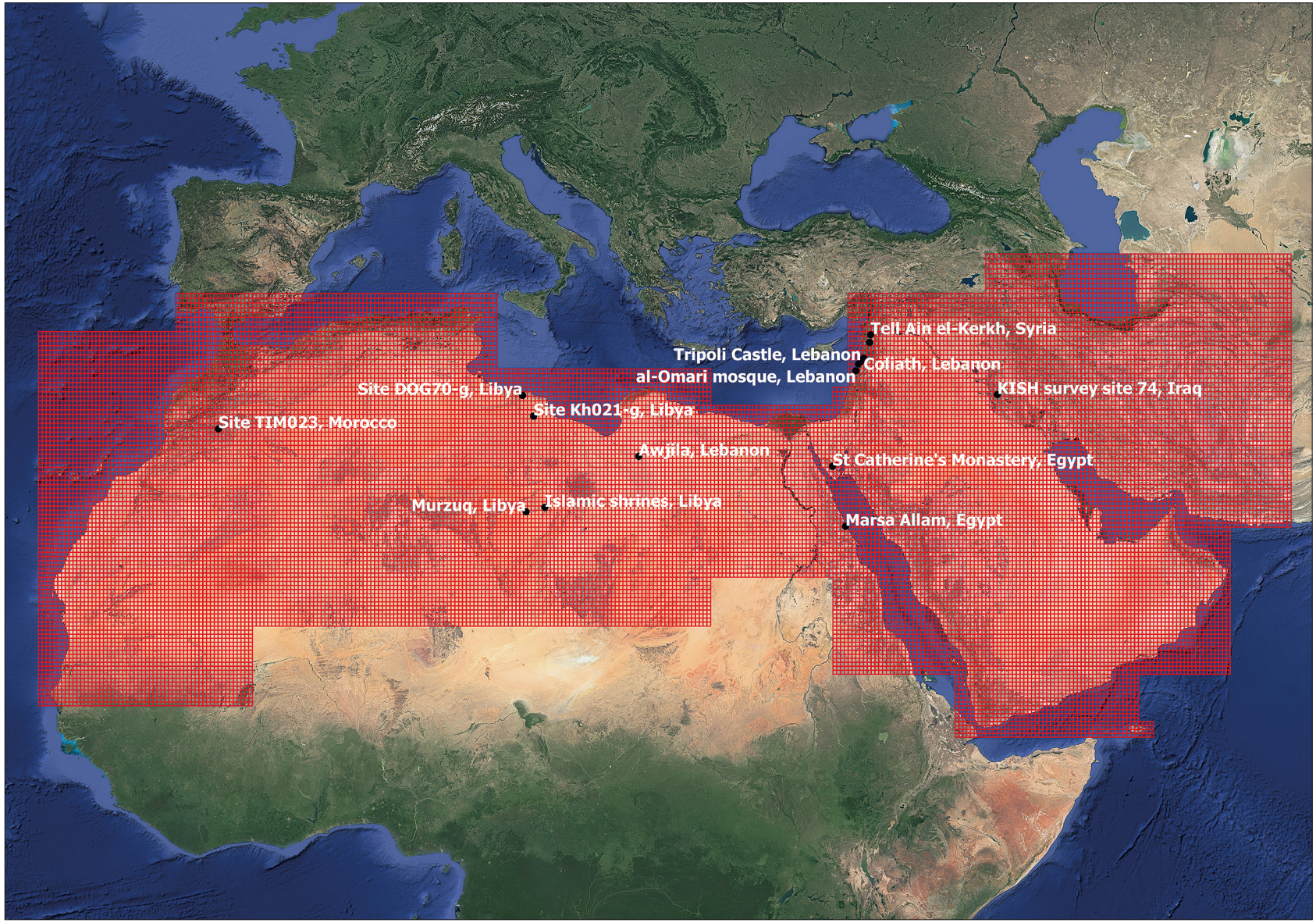

Figure 1 The EAMENA study region, with grid and examples of sites mentioned in the text. Figure prepared by Letty ten Harkel using QGIS 2.18.20. Open Source Geospatial Foundation Project. http://qgis.osgeo.org.

Figure 2 Google Earth Pro imagery of St Catherine's Monastery in Sinai, Egypt, showing the Justinian fortress, which forms the core of the protected landscape. The monastery buildings are still in use and well-maintained, but to the south east is an area of faint earthworks, possibly representing dwellings of workers employed for the construction of the ancient monastic fortress (Mount Sinai Website – Description – Surrounding Area; Ten Harkel et al. 2018). EAMENA record created by Letty ten Harkel. Map data: Google, CNES / Airbus, 20 February 2016.

as those active in Britain, bearing witness to Britain's colonial past (politics again). For example, Fig. 2 shows an image of the UNESCO World Heritage site of the Orthodox St Catherine's Monastery in Sinai, Egypt (no. 954). St Catherine's is reputedly the oldest continuously occupied monastery in the world, founded in the sixth century AD at the foot of Mount Sinai, supposedly in the Old Testament location of the Burning Bush. A preliminary study by the EAMENA team (Ten Harkel *et al*. 2018) was able to draw on modern satellite imagery; an extensive ground survey project carried out in the early 2000s based in part on a place name survey (Shams 2011); historical aerial photographs taken by none other than the RAF in the 1930s and 1950s (thanks to Bewley and Fradley 2017); the results of various archaeological excavations; and a detailed survey carried out in the 1860s by a team of the British Royal Engineers in order to prove the 'correct' location of Mount Sinai, producing an excellent Ordnance Survey map (Wilson and Palmer 1869).

Once the process of 'pinning' sites in Google Earth has been completed, the locations are entered in the database and the records are enhanced. Different information is recorded, including – where known and applicable – the site name, dating, topography, physical appearance, function/interpretation, related resources (such as publications or imagery) and, importantly, a detailed condition assessment mapping disturbances to the site over time and including any threats that might affect the site in the near future. All dropdown terms in the EAMENA database (consisting of controlled dropdown vocabulary lists much like those that Historic England uses, albeit adapted to the region) are 'soft' categories in the sense that a single record (or site) can belong to several periods, have several functions, or multiple interpretations.

Examples of sites from the EAMENA database that can be viewed by the general public are available on http://eamenadatabase.arch.ox.ac.uk/search. These include several 'medieval' sites such as the aforementioned St Catherine's Monastery in Sinai, Egypt; the early Islamic city of 'Anjar in Lebanon; the Nestorian monastery discovered in the 1990s on the island of Sir Bani Yas in the United Arab Emirates; and the famous Crusader castle of Krak des Chevaliers in Syria (note that, to gain full access to the database, it is necessary to apply for log-in credentials).

The second part of the workflow – entering and enhancing sites in the database – is the most time consuming. For the purposes of this paper, a selection was made including only records that were (nearly) fully enhanced, and which fell within the period *c*. AD 400–1500, amounting to a total of 1993 sites, or 7.33% of the total (Fig. 3).[5]

Unsurprisingly given our remote sensing methodology, 'Undated' records take up 69% of the total number of records in the EAMENA database, a far larger proportion than the 'medieval' records (or, indeed, those of any other time period). This is a well–established side effect of relying heavily on non-intrusive methods, also noted during the aforementioned EngLaId project (Donnelly *et al*. 2014; Gosden *et al*. in prep.), with which I was associated before joining the EAMENA team. EngLaId also noted that in areas where archaeological knowledge relies heavily on aerial

[5] As the EAMENA database Condition Assessment tab is usually the last one to be filled out, this was done by executing a search on the Condition Assessment tab (condition = destroyed / fair / good / poor / unknown / very bad), resulting in a total of 27199 records. From these records, sites that *included* the period that we consider 'medieval' (*c*. fourth to sixteenth centuries) were selected, amounting to 1993 = 7.33 %.

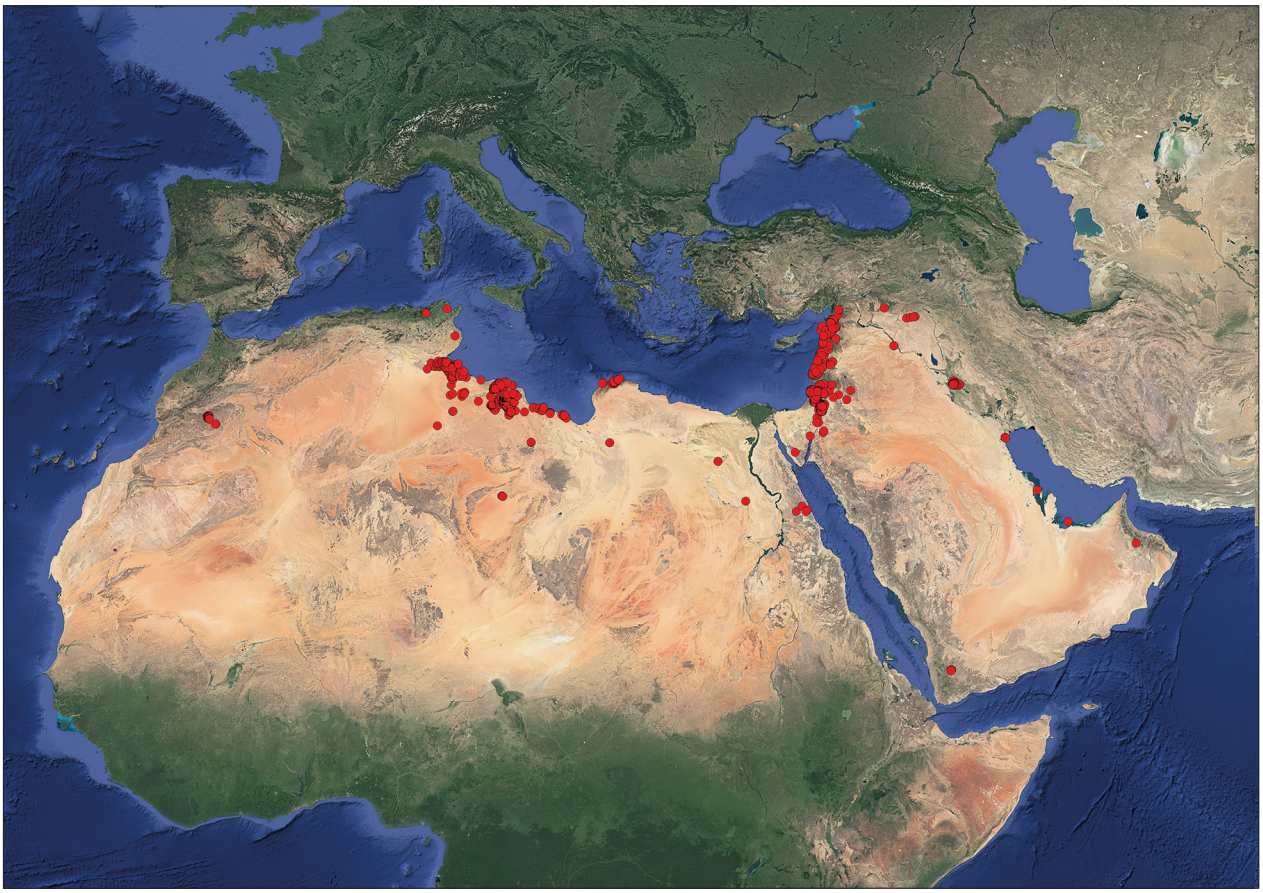

Figure 3 Distribution of sites whose chronologies fall (partially) within the period c. AD 400–1500, and whose records are mostly complete. Figure prepared by Letty ten Harkel using QGIS 2.18.20. Open Source Geospatial Foundation Project. http://qgis.osgeo.org.

reconnaissance (in this case mainly derived from the NMP's aerial photograph transcripts), undated records with unspecified functions were far more common than in built-up areas where archaeological knowledge largely depends on excavations.

Creating the EAMENA 'medieval' dataset: periodization and caveats

As current readership may not be familiar with periodization in the MENA region, the periods that were included in the creation of the 'medieval' subset are listed in Table 1. As will be apparent, periodization in the MENA region not only differs from that in Western Europe, but also displays significant internal regional variation, mainly as a result of complex and localised historical trajectories (and, of course, the much larger size of the study area). Chronological precision also varies, with some very extended time periods such as the 'Islamic' period in the Middle East, which includes the entire period from the seventh to the nineteenth centuries AD. Records that were only dated to such coarse levels of precision, or to periods that fall within the *c.* AD 400–1500 range only in part, have been excluded from the analyses here.

The EAMENA project is a work in progress and the distribution map based on the selection of completed records with chronologies that include (part of) the period *c.* AD 400–1500 is far from complete (Fig. 3). It reflects a clear geographical bias towards where the EAMENA team's research has been focused so far, with concentrations in the Levant, Tunisia, and Libya. In addition, given the aforementioned difficulty of dating sites through remote sensing, most records in this sub-set have been derived from existing (published) surveys. Of course such factors affect almost every archaeological database: in a previous issue of *Medieval Settlement Research* I commented on similar issues affecting the distribution map of English medieval villages drawn from the EngLaId database (Donnelly *et al.* 2014, 44), which has clear concentrations in areas with known research strengths in this topic.

The range and variety of surveys feeding into a dataset have clear implications for the nature of the data. The North Africa data were largely derived from Nichole Sheldrick's (2016) DPhil research into architecture and settlement patterns in rural Tripolitania between the first century BC and the seventh century AD, collating and standardising data derived both from satellite imagery and several other previously published surveys (*e.g.* Barker *et al.* 1996a; 1996b). By contrast, the Levantine datasets were compiled from a variety of different surveys including the Kūbbā Coastal Survey project (*The Kūbbā Coastal Survey*); Greenberg and Keinan's (2009) *Sourcebook* of Israeli archaeological activity in the West Bank; Denys Pringle's (1993–; 1997) gazetteers of Crusader sites; the *Digital Archaeological*

Table 1 Periods included in the sub–set of data used for this study.

Period	From	To	Records
Sasanian (Levant/Mesopotamia)	AD 300	AD 640	59
Eastern Roman (Byzantine Empire) (Levant/Mesopotamia)	AD 395	AD 610	2
Byzantine (Cyrenaica)	AD 394	AD 645	44
Byzantine (Egypt)	AD 395	AD 641	4
Byzantine (Levant/Mesopotamia)	AD 400	AD 640	791
Vandal (Tripolitania, North/Central Tunisia)	AD 430	AD 533	795
Byzantine (North Africa)	AD 533	AD 650	1
Byzantine (Tripolitania/North Tunisia/Central Tunisia)	AD 533	AD 640	809
Umayyad (Arabia/Levant/Mesopotamia/Iran)	AD 640	AD 800	115
Early Islamic (Arabia/Levant/Mesopotamia)	AD 640	AD 1070	129
Medieval (Egypt)	AD 641	AD 1517	4
Early Medieval (North Africa)	AD 650	AD 1050	12
Early Medieval/Umayyad/Aghlabid/Fatamid (North/Central Tunisia)	AD 670	AD 1050	5
Islamic 2 (Levant/Mesopotamia)	AD 800	AD 1070	1
Abbasid (Levant/Mesopotamia)	AD 800	AD 1300	65
Fatimid (Arabia/Levant/Mesopotamia)	AD 950	AD 1200	40
Late Medieval (North Africa)	AD 1050	AD 1500	8
Late Medieval (Cyrenaica)	AD 1050	AD 1500	1
Late Medieval (Tripolitania)	AD 1050	AD 1500	1
Islamic 3 (Levant/Mesopotamia)	AD 1070	AD 1150	3
Middle Islamic (Arabia/Levant/Mesopotamia)	AD 1070	AD 1300	27
Medieval (Levant/Mesopotamia)	AD 1070	AD 1300	156
Crusader (Levant/Mesopotamia)	AD 1100	AD 1300	197
Islamic 4 (Levant/Mesopotamia)	AD 1150	AD 1260	1
Ayyubid (Arabia/Levant/Mesopotamia)	AD 1200	AD 1260	244
Islamic 5 (Levant/Mesopotamia)	AD 1260	AD 1400	1
Mamluk (Arabia/Levant/Mesopotamia)	AD 1260	AD 1500	264
Islamic 6 (Levant/Mesopotamia)	AD 1400	AD 1550	1

Atlas of the Holy Land; an archaeological survey of the Kerak Plateau in Jordan (Miller 1991); and the work carried out by the Italian University of La Sapienza in the Jericho Oasis in Palestine (Nigro 2011; Sala and D'Andrea 2011), to name a few examples.

This different data entry strategy is clearly reflected in the site functions recorded for each cluster (Fig. 4). The North Africa data overwhelmingly consists of sites that were classed as Domestic, Defensive/Fortification *and* Agricultural/Pastoral (a result of the aforementioned use of 'soft' categories), whereas the variation in site types from the same period in the Levantine region was more varied. Similar 'affordances' (non–archaeological factors influencing the make–up of a given dataset) affect all archaeological and/or medievalist data, and do not preclude the possibility of deriving some preliminary conclusions, as long as we acknowledge their presence (for a discussion of these in an English context, see Cooper and Green 2017, section 3; Donnelly *et al*. 2014; Green *et al*. 2017, 253–256).

Site types: the 'medieval' period

Fig. 5 compares the eight most commonly recorded site functions for the 'medieval' period to those for all periods. Many of the site types are similar to the early medieval archaeology that readers of this journal will be more familiar with, and whose protection spurred on the formation of the Deserted Medieval Village Research Group (DMVRG) and the Moated Sites Research Group in the middle decades of the twentieth century.

By far the most common type of 'medieval' site function is the 'Domestic' category, which depends to

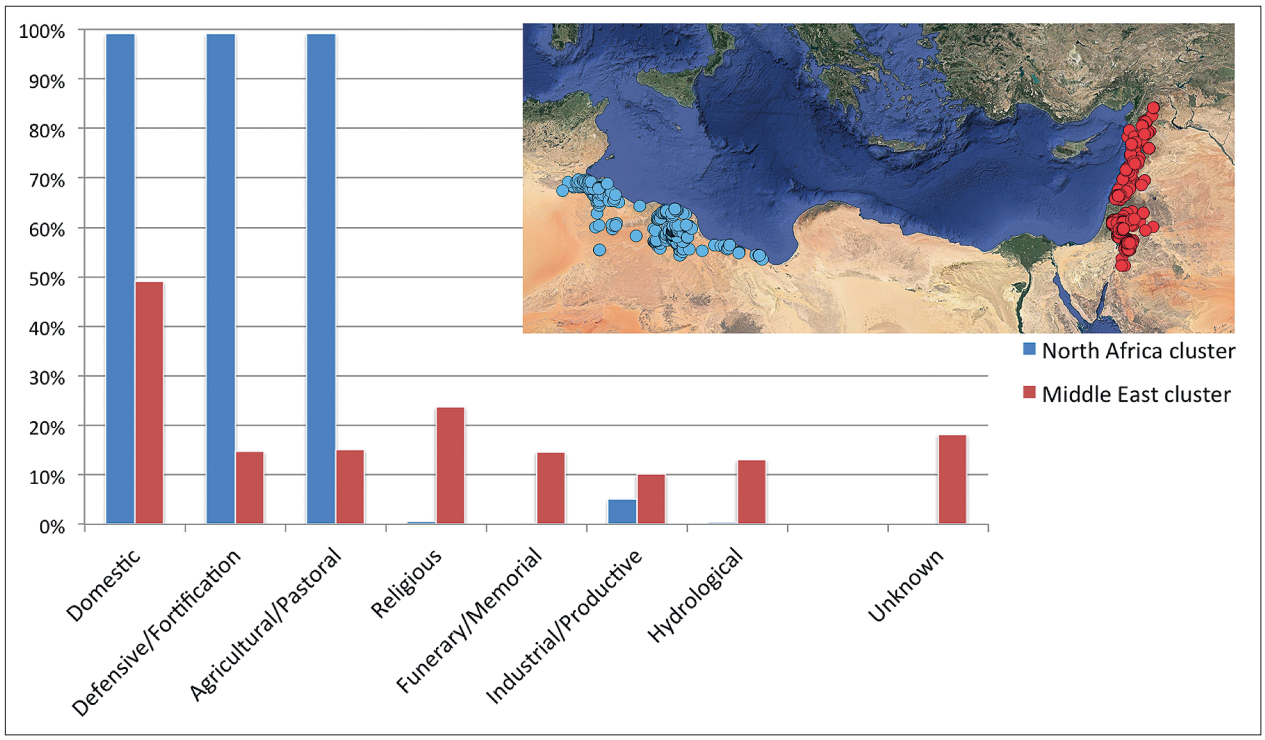

Figure 4 Map of the Levantine and North African clusters, and graph depicting the eight most common site functions. Figure prepared by Letty ten Harkel using QGIS 2.18.20. Open Source Geospatial Foundation Project. http://qgis.osgeo.org.

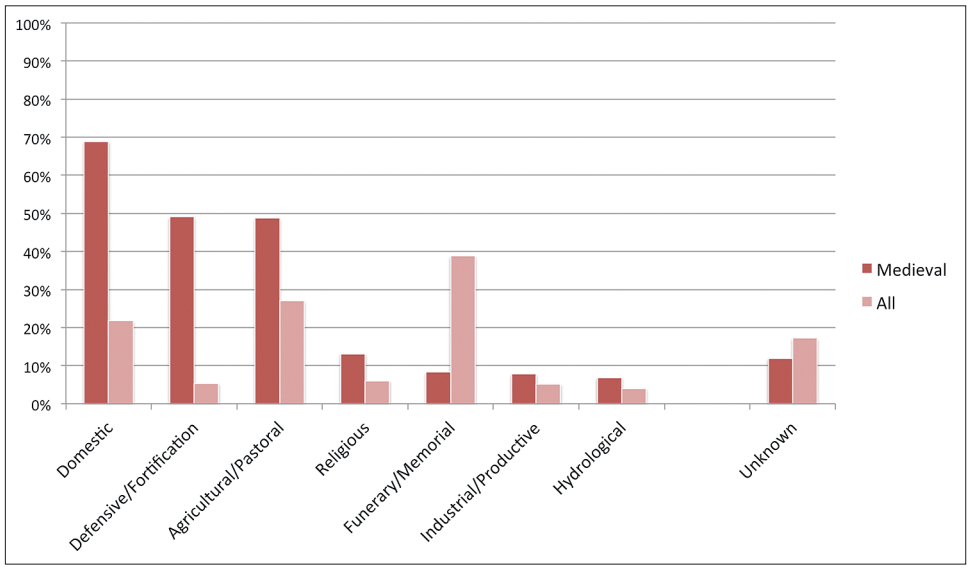

Figure 5 Graph depicting the eight most common site functions for the 'medieval' period, compared to those for all periods.

a degree on Sheldrick's (2016) data, although Fig. 4 shows clearly that the Middle Eastern cluster has also contributed to this. This category covers all settlement types from dispersed farm buildings to urban centres, and including both deserted ruins (Fig. 6) and currently occupied settlements with a continuous or intermittent occupation history (Fig. 7). These latter sites pose challenges in terms of dating and identification that readers of *Medieval Settlement Research* will be familiar with, and which – in an eastern English context – are being tackled by Carenza Lewis's CORS project (*e.g.* Lewis, this volume).

The 'Domestic' category is followed closely by the 'Defensive/Fortification' category, which includes full-blown castles (Fig. 8) and the smaller, fortified farms from Sheldrick's doctoral research (Fig. 9). Again, these are soft categories, so that many castle sites will be recorded as *both* 'Domestic' *and* 'Defensive/Fortification'. It is worth noting that, especially in the case of the larger castle sites, whose fabric was meant to be durable and which were often located in strategic locations within the landscape, many of these have had extremely long-lived occupation histories, some continuing until the present day. As in England, this has

Figure 6 Example of deserted 'medieval' settlement earthworks (and some walls): site Kh021-g in Libya. EAMENA record created by Nichole Sheldrick. Map data: Google, DigitalGlobe, 19 January 2018.

Figure 7 Example of a 'medieval' settlement site that is still (or again) occupied: Awjila in Libya. The ruins are scattered between the modern houses. EAMENA record created by Julia Nikolaus. Map data: Google, DigitalGlobe, 7 February 2016.

Figure 8 Example of a Crusader castle that is currently still in use (as a museum): Chateau Raymond de St Gilles in Tripoli (aka Tripoli Castle), Lebanon. EAMENA record created by Letty ten Harkel. Map data: Google, DigitalGlobe, 26 June 2017.

Figure 9 Example of a fortified North African farm: site DOG70-g in Libya. EAMENA record created by Nichole Sheldrick. Map data: Google, DigitalGlobe, 19 January 2018.

implications for their preservation as well, an issue that will be touched upon below.

Also occurring with high frequency are various types of field systems and animal enclosures, grouped under the heading 'Agricultural/Pastoral'. Of course fields and agricultural structures are often impossible to date by remote sensing alone, a complicating factor being their often-continuous use (especially in areas where there is a higher pressure on the available agricultural land). This is an issue that also affects certain areas of England, where prehistoric and sometimes medieval relict field systems only exist above certain altitudes – for example on Dartmoor or in the Cheviots – whilst lowland fields have been erased due to more recent agricultural activity (for a recent discussion on the chronology of medieval fields in England, see Williamson 2016).

Some of these field systems, such as the KCS 113 site in Lebanon, surveyed as part of the Kūbbā Coastal Survey Project, represent fields or orchards whose dating has been (tentatively) confirmed by pottery finds (Fig. 10). A better understanding of the dating of possible medieval field systems (and ultimately their protection) is nevertheless an issue that deserves further attention in the MENA region. This is an area of research where British archaeologists have always taken a leading role, including a recent emphasis on exploring the potential for scientific dating of field systems (Johnston and May 2016; Johnston *et al*. in prep.).

The next four most common categories in the database are 'Religious' (mainly churches, chapels, mosques and monastic institutions), 'Funerary/Memorial' (cemeteries, shrines, *etc*.), 'Industrial/Productive' (a broad category including all manufacturing–related evidence such as kilns, ovens, workshops, wine and oil presses, *etc*.), and 'Hydrological' (anything to do with water management, including dams but also cisterns or basins). The

Figure 10 Example of an agricultural field that has yielded pottery from the 'medieval' period found during the Kubba coastal survey project: site KCS 113 in Lebanon. EAMENA record created by Jennie Bradbury. Map data: Google, DigitalGlobe, 26 June 2017.

'Religious' category again displays significant evidence for continuity, not merely of occupation but also of function, although in some cases there is evidence for a change in religious use from Christian to Islamic, as is the case with the Crusader cathedral of St John the Baptist, which is now the al-Omari Mosque, in Beirut (Fig. 11).

Comparing these 'medieval' patterns to the overall pattern (Fig. 5), it is obvious that there are differences, although the same eight categories feature in the top.[6] One of the most striking aspects is the higher frequency of the 'Funerary/Memorial' category overall, which reflects the highly visible (and therefore easily picked up by remote sensing techniques) nature of funerary practices (often involving the erection of cairns, which appear in large numbers in the EAMENA database) in many parts of the MENA region in Classical and prehistoric times.

Another difference is the much lower percentage of fortifications over the *longue durée* compared to the 'medieval' period. In part, this may be a bias caused by Sheldrick's settlement data, and the inclusion of the Crusader dataset in the Levant. However, Sheldrick, among others, has noted an increase in fortified settlement types *within* North Africa from the third century AD too, which suggests a real underlying pattern. Explanations for this North African phenomenon are beyond the scope of this paper, but range from increased social unrest in the post-Classical period to the emergence of more complex social hierarchies, with Sheldrick (2016, 252–256; also see Barker *et al*. 1996a, 319–342; Mattingly *et al*. 2013) convincingly arguing that both probably played a role to some degree.

Religious buildings are less well-represented in the overall data count as well, which – again – may simply reflect the inclusion of Denys Pringle's gazetteers of Crusader archaeology in the 'medieval' dataset. Having said that, as I have argued elsewhere for England, with the advent of Christianity, religious landscapes became more heavily fragmented, with relatively high numbers of (often small) churches (and in the MENA region also mosques) serving local communities, constituting

[6] The only addition is the category 'Status/Display/Monumental', which exists on a joint eighth place with 'Hydrological', but has not been included in this graph for reasons of simplicity.

Figure 11 Example of continuous use of a religious building: the Crusader cathedral of St John the Baptist, now the al-Omari Mosque, in Beirut, Lebanon. The Crusader-period church fabric survives in the bottom right corner of the outlined area. The minaret of the current mosque is visible at the top. EAMENA record created by Letty ten Harkel. Map data: Google, DigitalGlobe, 26 June 2017.

a break with the preceding Classical and prehistoric periods (Ten Harkel *et al*. 2017). Although it would be unwise to draw direct comparisons between England and the MENA region, Christianity did substantially replace preceding Classical belief systems in the early centuries AD across both regions.

Assessing the present state of medieval landscapes

The EAMENA project was conceived in response to recent socio-political developments in the region, including the wilful destruction of archaeological sites and remains by extremist groups. It soon became apparent, however, that direct conflict was only one of the threats affecting the archaeological heritage (a conclusion that the earlier APAAME work, discussed by Bewley, had already indicated, but which EAMENA could now prove statistically).

This section will first address the condition of archaeological sites, to assess whether the (relatively) recent remains from the period *c*. AD 400–1500, which are often seen as part of historical trajectories connected to the present day, are affected to a different degree than sites predating this period. Afterwards the paper will drill down more deeply to assess the kinds of disturbances that have been identified, their relative impact on the archaeological record, and any differences that can be observed between sites with different functions. This will then be placed in the context of British strategies for heritage protection.

The condition assessment tab is one of the main strengths of the EAMENA database, as it allows for a system whereby research and heritage management bodies can usefully inform and learn from each other. This kind of approach can therefore build bridges and enable research with significant relevance (impact) outside the academic sphere.

This is also an area where the EAMENA methodology is taking a pioneering role: although Historic England has been carrying out a regular audit of England's cultural heritage since 2002 (see *Heritage Counts*), with

Figure 12 Images of medieval Islamic shrines in Libya before and after their deliberate destruction by terrorist activity. EAMENA record created by Ahmed Shrif. Map data: Google, CNES / Airbus.

regional reports summarising the state of the historic environment in the different regions within England, the EAMENA project is, to our knowledge, unique in creating an Open Access database where threats are assessed in detail on a site-by-site basis, also including newly discovered sites that have not been recorded before and remain unprotected. The main tool for doing this is Google Earth Pro's time slider function, which allows for satellite imagery of different periods to be compared and contrasted. Fig. 12 shows how the time slider function allows us to identify the deliberate destruction by terrorists of a row of 'medieval' Islamic shrines in Libya.

Fig. 13 depicts the relative condition of all sites compared to the 'medieval' period. A first conclusion is that it is not all bad news: in both cases, sites that have a 'Good' condition outnumber all others. It also seems to suggest that a lower percentage of 'medieval' sites has been completely destroyed. This may be a result of their relatively recent date and conceptual inclusion in historical trajectories that started with the spread of Christianity or Islam and continue into the present day (a good example being the aforementioned al-Omari mosque in Beirut), but this has to be offset against the higher percentage of 'medieval' sites whose condition is unknown. This latter category includes sites that are known from published surveys or non-archaeological sources (for example place names or textual references), but which could not be located on the satellite imagery.

If we want to know which are the most common factors affecting the archaeological record, patterns emerge that are very recognisable from a British/Irish perspective as well. Fig. 14 lists the most frequently occurring disturbance types for the 'medieval' period, compared to the overall data. In both instances, it is clear that agricultural activity represents a major issue.

The Google Earth time slider and the use of visual resources of varying dates creates a condition assessment with time depth, demonstrating that some of the damage inflicted by agricultural activity already occurred in the middle decades of the twentieth century – at the same time as these problems were acknowledged in Britain (also see Gerrard, this issue). This was the case in Iraq's lowlands, where many features were ploughed out or eradicated by the digging of irrigation channels during the middle decades of the twentieth century (Fig. 15). Other examples are on-going: either on a small scale, inflicting limited damage (Fig. 16), or more extensively, with more destructive effects (Fig. 17). The scale of activity clearly has an impact, with the larger scale of destruction comparable to the ploughing damage inflicted on many medieval village earthworks in Britain, or – in the case of tells in particular – to the flattening of early medieval *terps* (artificial dwelling mounds) in the northern Dutch coastal area, which occurred on a substantial scale in the late nineteenth century. Like the *terps*, tell sites (artificial mounds formed from deeply stratified settlement activity, often including mud-brick) also contain much organic matter and their makeup can provide suitable fertilizing material for present-day agriculture (for the Dutch material, *e.g. Vereniging voor Terpenonderzoek*).

In second place overall are natural factors, mostly including natural vegetation and water/wind action (Fig. 18), made worse by on-going processes of climate

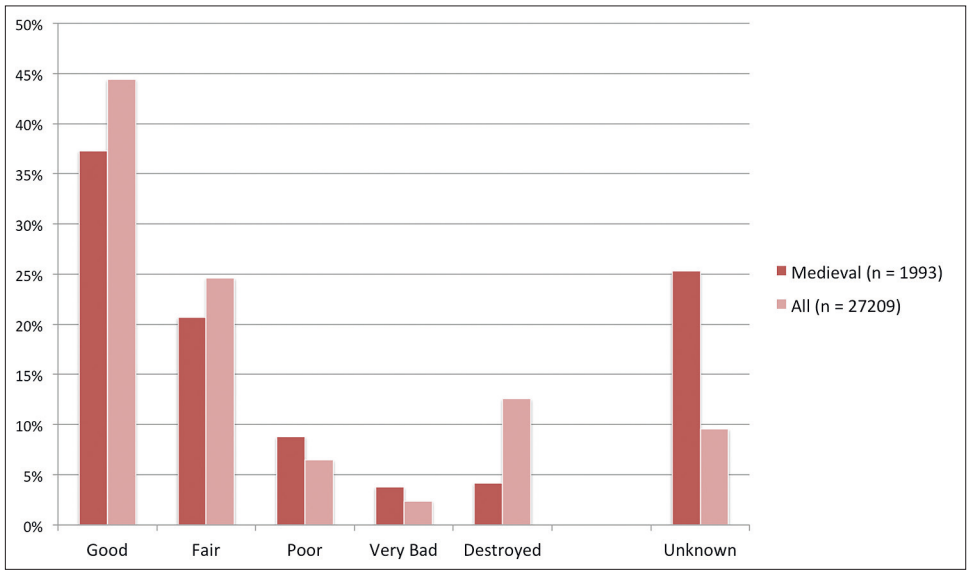

Figure 13 Graph depicting the relative condition of all sites compared to the 'medieval' period.

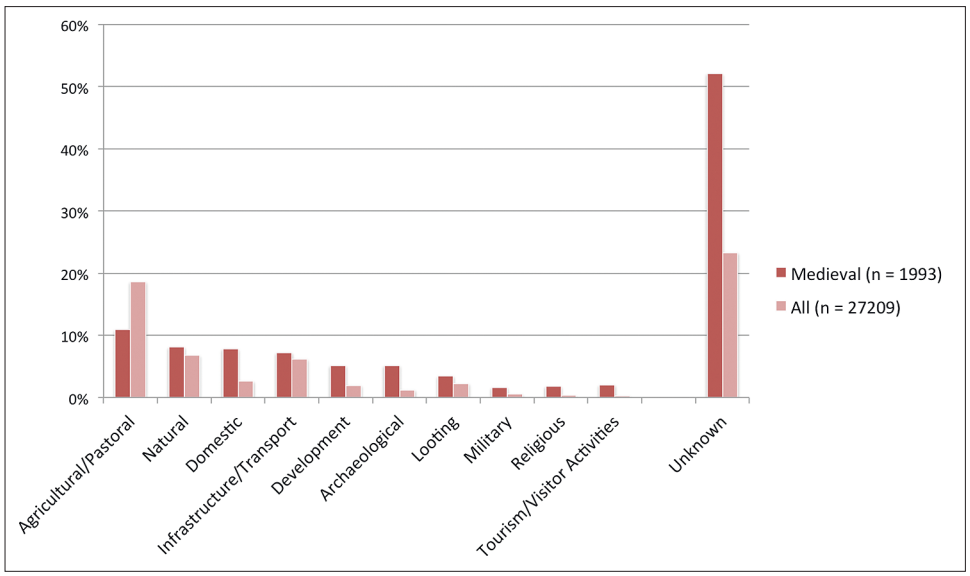

Figure 14 Graph listing the most frequently occurring disturbance types for the 'medieval' period, compared to the overall data.

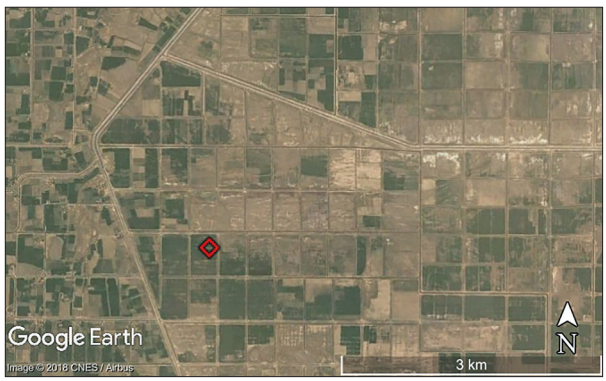

Figure 15 Example of an intensively used agricultural landscape with regular irrigation channels in Iraq. In the location of the red diamond was once a Sasanian tell site (KISH survey site 74), but this is now completely destroyed by agricultural activity. EAMENA record created by Rebecca Banks. Map data: Google, CNES / Airbus, undated.

change and desertification. This is a growing cause of concern for heritage preservation globally, an issue that is also being acknowledged by Historic England (*2008 – Climate Change*).

Another major issue that has resonance with heritage management worldwide is the impact of development, from the relatively small (domestic) scale, to more extensive infrastructure projects such as Awjila in Libya (Fig. 7) and roadworks (Fig. 19).

Factors directly related to military activity affect only 2% of 'medieval' records (and 1% of all records), less than half as frequent as the impact of archaeological excavation, and on a same level as religious (re-)use of buildings and the impact of tourism (which includes formal alterations such as handrails and building alterations, but also the incidental or deliberate damage caused by tourists such as vandalism and/or graffiti). It is important, however, not to downplay the impact of conflict: as stated in the introduction to this paper, social disruption caused by warfare often has many secondary impacts, such as unregulated construction or landscaping for agricultural reasons.

Figure 16 Example of small-scale agricultural disturbance with limited impact of a Crusader castle: Coliath in Lebanon. Ploughing furrows are visible inside the castle walls, indicative of domestic-scale agriculture. EAMENA record created by Letty ten Harkel. Map data: Google, DigitalGlobe, 7 November 2014.

Figure 17 The multi-period (Neolithic, Roman and Byzantine) tell site of Ain el-Kerkh in Syria. In the outlined area, faint cropmarks are visible where there used to be a tell site. EAMENA record created by Torbjørn Preus Schou. Map data: Google, CNES / Airbus, 31 December 2004.

Another side effect of conflict is the issue of looting, identified in 3% of medieval archaeological sites (and 2% across all periods) (Fig. 20). This is affecting 'known' sites specifically, which causes a conflict of interest

Figure 18 Examples of the impact of a wadi (seasonal watercourse) on a desert landscape in Egypt. In the location of the red diamond was the medieval mining settlement site of Marsa Allam, clearly affected by seasonal flooding. EAMENA record created by Letty ten Harkel. Map data: Google, DigitalGlobe, 19 May 2011.

Figure 19 Example of damage inflicted by road works: Islamic settlement site TIM023 in Morocco, from The Middle Draa project, is outlined in red. EAMENA record created by Louise Rayne. Map data: Google, CNES / Airbus, 10 February 2016.

between detailed site documentation and protection, and is the reason why public access to the EAMENA database is controlled (see for example Brodie *et al.* 2001 for a discussion of the issue). Albeit not a result of conflict, illegal treasure hunting affects Britain and Ireland as well. Although the establishment of the Portable Antiquities Scheme in the 1990s has made significant progress in improving relations between archaeologists and metal detectorists, problems caused by so-called 'night hawking' persist, as was recently seen at the UNESCO World Heritage site of Hadrian's Wall (part of the *Frontiers of the Roman Empire* listing no. 430; *e.g.* Barrie 2018; Halliday 2018).

Fig. 21 gives an indication of the level of destruction caused by each type of activity. It depicts the different types of disturbances for all 'medieval' sites alongside all 'medieval' sites that have been completely destroyed or are in very bad condition. It is clear that various infrastructure and agricultural activities do not only

Figure 20 Example of damage inflicted by looting: the multi–period city of Apamea, Syria, before looting and some fifteen years later. The 'pitted' surface visible on the right-hand image as a pale stain across most of the northern half of the site, with additional pockets to the south, is a dense area of looting pits. EAMENA record created by Emma Cunliffe and Jennie Bradbury. Map data: Google, DigitalGlobe, 21 December 2003; CNES / Airbus and DigitalGlobe, 5 September 2017.

Table 2 The five most common disturbances of the five most common site functions in the Middle East cluster.

Site Function	Most common disturbance	Second most common disturbance	Third most common disturbance	Fourth most common disturbance	Fifth most common disturbance
Domestic (n = 479)	Domestic/ Development (28%)	Agricultural/ Pastoral (15%)	Archaeological (10%)	Natural (9%)	Infrastructure/ Transport (5%)
Defensive/ Fortification (n = 145)	Natural (22%); Domestic/ Development (22%)	Archaeological (17%)	Infrastructure/ Transport (14%)	Agricultural/ Pastoral (13%)	Military (9%)
Agricultural/Pastoral (n = 148)	Domestic/ Development (16%)	Agricultural/ Pastoral (14%)	Infrastructure/ Transport (11%)	Looting (7%)	Natural (6%)
Religious (n = 232)	Domestic/ Development (26%)	Natural (14%); Religious (14%)	Agricultural/ Pastoral (13%)	Infrastructure/ Transport (12%); Archaeological (12%)	Military (6%)
Funerary/Memorial (n = 143)	Domestic/ Development (22%)	Infrastructure/ Transport (18%)	Agricultural/ Pastoral (13%)	Looting (10%); Archaeological (10%)	Natural (6%)

occur frequently, but also have by far the most damaging effects. Incidentally, these are the same factors that inspired the foundation of the DMVRG in the 1950s.

We can also assess if there is a correlation between certain site functions and certain types of disturbances. Table 2 lists the five most common disturbances of the five most common site functions in the Middle East cluster (the North Africa cluster was excluded from this analysis as the majority of sites belonged to the same site function(s); see above). If the table is compared to Fig. 14, many of the patterns seem fairly predictable, with disturbances from domestic and development activity (grouped together in this instance) firmly at the top, and natural disturbances, agricultural activity, infrastructure developments and archaeological excavations all featuring within the top five.

Some interesting patterns emerge, however. Religious sites, for example, have a tendency to be affected by (ongoing or renewed) religious activity, indicating the long-lasting spatial continuity of religious activity. It is also interesting to note that military activity is more likely to affect defensive and fortified sites, clear examples

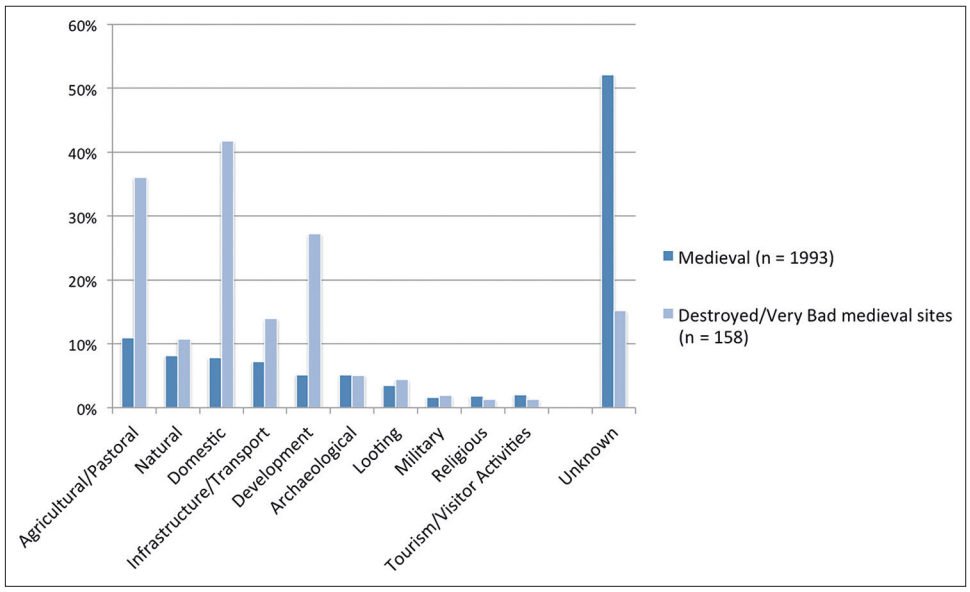

Figure 21 Graph depicting the different types of disturbances for all 'medieval' sites alongside all 'medieval' sites that have been completely destroyed or are in very bad condition.

being the Crusader castles of Krak des Chevaliers in Syria and Beaufort Castle in Lebanon (Cunliffe 2012; Zaatari 2015), which played military roles in the recent conflicts in Syria and the 1980s Lebanese–Israeli war respectively. Unsurprisingly given the religious-ideological aspect of many of the present-day conflicts, religious sites are also relatively frequently affected by military activity. Finally, looting occurs most frequently on cemetery sites (its relatively frequent association with agricultural sites is a by-product of the database's 'soft' categories, whereby a site can be classified as both agricultural/pastoral and funerary/memorial if both types of activity have been identified in the same spatial location). It is important to recognise these patterns in order to develop targeted and context-specific heritage management strategies.

Protecting the future of medieval landscapes

The Google Earth time slider can also be used as a predictive tool to identify threats to archaeological landscapes, for example through agricultural expansion, on-going natural erosion or various infrastructure developments. An example is provided by the early medieval to early modern fortified settlement site at Murzuq in Libya, where a steady process of encroachment by development and agricultural expansion can be observed, which is likely to continue into the future (Fig. 22). In 2006, the archaeological remains (outlined in red) existed at the edge of the settlement, but by 2012 an area to the south of the area was developed, and agricultural activity took place to the west, including a newly laid out centre pivot irrigation field and several rectangular fields. Between the developed area and the site, an enclosure abutting the site remains was also constructed. By 2016, the site itself has been built upon and the amount of agricultural activity was expanding, a process that was further intensified by 2018. There is no indication that the activity disturbing the site will stop, and based on this information it is therefore possible to prioritise sites like this for protection and/or rescue documentation (also see Rayne *et al*. 2017).

Using this methodology alongside the information from published sources, the level of threat to individual sites can be assessed with high levels of confidence. Fig. 23 lists the most frequently occurring threat types for the 'medieval' period, compared to the overall data. The same categories occur as with the disturbances, albeit in a different order. As in Britain and Ireland, the most important threats to heritage include agriculture and infrastructure developments including housing developments and road schemes, which are also vital elements of post-war reconstruction and essential for local communities. It is therefore important to work towards sustainable and integrated heritage management approaches: as is the case in England, any decision making process about the protection or safeguarding of cultural heritage should take into account a set of values that are shared not only by heritage professionals but also by local communities, and whereby 'development … meets the needs of the present without compromising the ability of future generations to meet their own needs' (*Heritage Conservation Defined*; Historic England 2008).

As European archaeologists working in a distant region that formed part of a colonial and complicated past, where our values cannot be assumed to be the same as those of local communities, the challenges in achieving this are significant. For this reason, the training element of the EAMENA project is invaluable, as this allows us to bridge the gap between our own values and those of local heritage specialists. In Europe, it was during the post-war reconstruction era of the 1950s that many of the values that guide good heritage management practice today were first developed. With the help of documentation projects like EAMENA, it is hoped that a similar process will take place in the MENA region.

Concluding remarks

This paper has tried to demonstrate how archaeological methods developed in 1950s Britain by pioneering members of the DMVRG and others have had a major impact on archaeological recording and heritage management worldwide. Through a combination

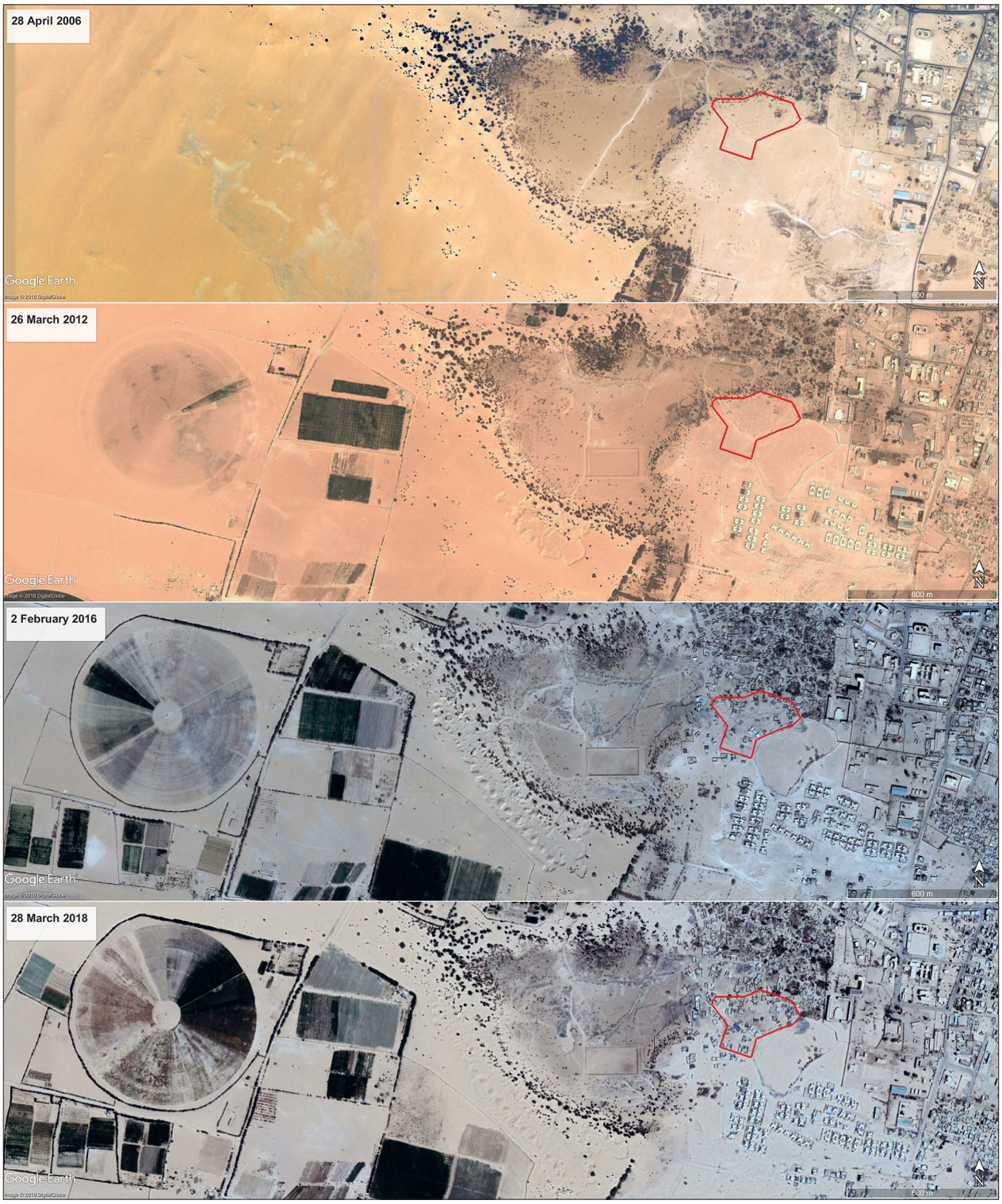

Figure 22 Monitoring of recent changes in land use using the Google Earth time slider, which can flag up sites that are in need of urgent protection or documentation: the early medieval to early modern fortified settlement site at Murzuq (MZQ001) in Libya, from 2006 to 2018. EAMENA record created by Julia Nikolaus. Map data: Google, CNES / Airbus (2016) and DigitalGlobe (2006, 2012 and 2018).

of good and bad luck, contemporary socio-political developments and various other coincidences, an incredible journey has been made from the pioneering efforts of individuals like Beresford and St Joseph to the multi-million global investments in the use of remote sensing techniques that characterise cutting-edge projects like EAMENA. Yet the journey is not over: the use of remote sensing as an archaeological technique is still underfunded and under-used; it is also not taught in enough detail in undergraduate courses in the UK, let alone the rest of the world.

The databases mentioned in this paper are not only significant for their contribution to protecting the past but also in providing a greater understanding of the

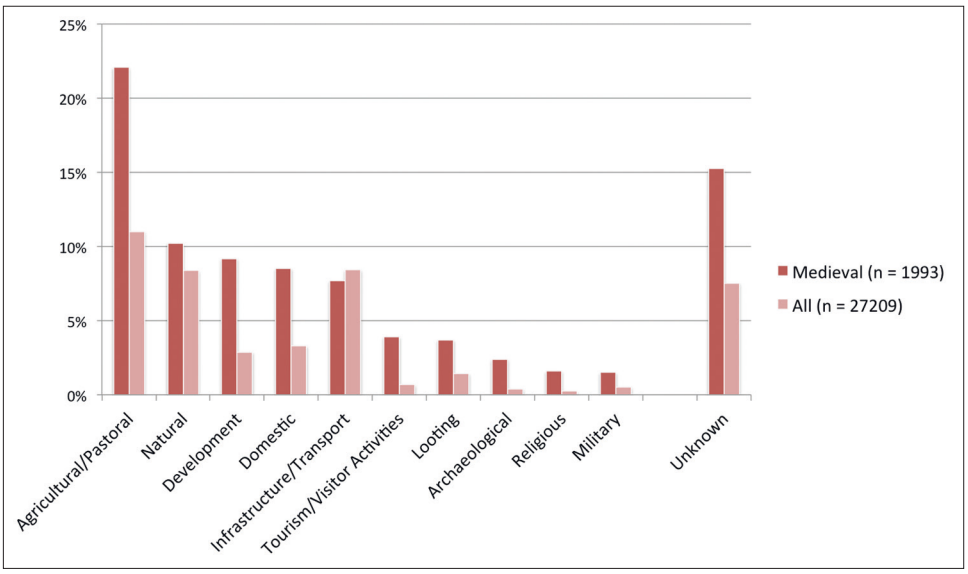

Figure 23 Graph listing the most frequently occurring threat types for the 'medieval' period, compared to the overall data.

nature, location, chronology and types of archaeological sites that exist in different parts of the world, and they are thus an important resource for current and future researchers.

There are many challenges ahead as the pace of damage and destruction accelerates because of rapidly rising human populations. Developing rapid documentation techniques is a top priority, as ours is the last generation to be in a position to record these quickly disappearing ancient landscapes. Lack of access to information can no longer be an excuse for those responsible for preserving heritage. The vision for the EAMENA project is to provide as much information as possible to as many people as possible to improve the preservation and understanding of the cultural heritage of the Middle East and North Africa. We hope that the methodologies presented in this paper may be a source of inspiration for archaeologists working in Britain and Ireland as well.

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***If you are interested in finding out more about this project and in opportunities for volunteering and contributing to this important work, please see* http://eamena.arch.ox.ac.uk.**

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