The many different speleothem types are classified not only by their internal construction, but also according to their morphology. Morphology describes the typical physical shape of a speleothem. Stalagmites, flowstone and draperies are the same type of aggregate and often form together in the same gravitational water environment. Because they have a different geometry of supply of the feeding solution, these texturally similar speleothems have distinctly different morphologies.

⌘

The Lateglacial in Somerset: new information from Gully Cave, Ebbor Gorge.

Danielle Schreve
Centre for Quaternary Research, Department of Geography, Royal Holloway, University of London, Egham, Surrey, TW20 0EX, UK.
e-mail: Danielle.Schreve@rhul.ac.uk

Since 2006, new excavations at Gully Cave in Ebbor Gorge have revealed an important series of fossiliferous deposits that provide high-resolution information on the palaeoecology and biostratigraphy of the Lateglacial interstadial in the UK. The sediments consist of a thin flowstone and tufaceous deposits, underlain by a red breccia that is the source of an extraordinarily rich and diverse vertebrate assemblage (large and small mammals, abundant birds, rare herpetofauna and fish), together with a more limited molluscan assemblage. The paper presents a palaeoecological reconstruction of the immediate area, together with some comments on the taphonomic origins of the remains, the inferred age of the assemblage and its implications for our wider understanding of terminal Pleistocene climate change and human occupation in Britain.

⌘

The pit and the pedestal: tales of the unexpected.

Michael J Simms
Department of Geology, National Museums Northern Ireland, Cultra, Co. Down, BT18 0EU.
e-mail: michael.simms@magni.org.com

Conventional wisdom maintains that erratic boulders, left stranded on bare limestone surfaces by retreating ice sheets, protect the limestone beneath them from dissolution by rainfall. Over time the surrounding limestone is lowered by dissolution to leave these erratics perched on pedestals of undissolved limestone. The height of such pedestals supposedly can provide a rough measure of surface lowering since the erratic was stranded, from which a regional post-glacial surface lowering rate for limestone outcrops can be calculated. This is where theory and reality diverge...

Even across quite limited areas of limestone pavement pedestal heights may vary considerably, from tens of cm high to nothing, or even less than nothing. In some cases an erratic may even rest in a pit whose floor lies significantly below the surrounding surface. Observations at sites across western Ireland indicate that pedestal height, or lack of it, is controlled by several factors including erratic lithology and shape, exposure to prevailing weather, and proximity to lakes, walls or quarries. All of these factors need to be considered before any meaningful data on surface lowering rates can be derived from pedestal heights beneath erratics.

⌘

Tortoises and hares: dissolution, erosion, isostasy and long-term landscape evolution. [Poster]

Michael J Simms
Department of Geology, National Museums Northern Ireland, Cultra, Co. Down, BT18 0EU.
e-mail: michael.simms@magni.org.com

An artificial division has long existed between the study of landscapes formed by dissolution (karst), and those formed through erosion. Erosion dominates on silicates and is high energy and episodic, occurring only when a threshold velocity is exceeded. Inhibited by vegetation cover and favoured by strongly seasonal runoff, it shows a strikingly non-linear denudation/runoff relationship. Dissolution, dominant on limestone, is low energy and effected even by static water. Enhanced by vegetation cover and non-seasonal runoff, dissolutional denudation is directly proportional to runoff. These contrasting factors produce uneven rates of surface lowering across lithologically heterogeneous landscapes, with several consequences. In highly seasonal or semi-arid climates 'flashy' runoff and sparse vegetation favour erosion over dissolution. Harder limestones may form uplands within more rapidly weathered and eroded silicate outcrops. In humid temperate climates, and tectonically stable areas, prolonged exposure of limestone produces low-relief corrosion plains where silicate inliers and outliers persist as uplands. Continuous denudational unloading through limestone dissolution causes isostatic uplift that may be significant in generating differential relief across a mixed lithology region. Progressive unroofing of folded large-scale limestone-siliciclastic sequences leads to topographic inversion. In humid climates limestone forms topographic lows flanked by siliciclastic uplands. Valleys, initiated on anticlinal crests where limestone is unroofed first, migrate to a position in the synclinal troughs as the limestone on the fold crests and flanks is stripped away. Applications of this 'Tortoise and Hare' model can explain aspects of the topography across substantial areas of Britain and Ireland.

References:

Simms, M J. 2004. Tortoises and Hares: dissolution, erosion and isostasy in landscape evolution. *Earth Surface Processes and Landforms*, Vol.29, 477–494.

Simms, M J. 2004. *Tortoises, hares and the evolution of the Irish landscape*. 37–40 *in* Parkes, M (Ed.), *Natural and Cultural Landscapes: The Geological Foundation*, Proceedings of a Conference, September 2002, Royal Irish Academy.

⌘

Lake-shore karren: a neglected area of karst research. [Poster]

Michael J Simms
Department of Geology, National Museums Northern Ireland, Cultra, Co. Down, BT18 0EU.
e-mail: michael.simms@magni.org.com

Much has been written about small-scale karst features (karren) in terrestrial and coastal marine settings, but remarkably little has been published on the morphology and mechanisms of formation of lake-shore karren. Ireland, with its vast, generally low relief, outcrop of Carboniferous limestones and its wet climate has a multitude of lakes in which boulders or more extensive areas of limestone are exposed around their shores. These support sometimes spectacular assemblages of distinctive karren that are rarely, if ever, found in such abundance elsewhere. Despite some superficial similarities, these various karren types are quite distinct, both in morphology and mechanisms of formation, from marine littoral karren. They owe their distinctive form to the interaction of a range of largely abiotic factors, including mixing corrosion, condensation corrosion, the long-term water chemistry of each lake, and the magnitude of seasonal lake-level fluctuations. Detailed analysis of various lacustrine karren types reveals that different lakes commonly support distinct morphometric populations and that even within individual lakes there may be a vertical zonation of morphometric populations. Much remains to be done to fully understand how these various lacustrine karren types are formed, but they offer considerable potential as proxy indicators for long-term patterns of lake-level fluctuation and lake-water chemistry through the Holocene.

References:

Simms, M J. 2003. The origin of enigmatic, tubular, lake-shore karren: A mechanism for the rapid dissolution of limestone in carbonate-saturated waters. *Physical Geography*, Vol.23, 1–20.

Simms, M J. 2005. *The Great Western Lakes*. 71–78 *in* Coxon, P (Ed.), *The Quaternary of central western Ireland: Field Guide*. [London: Quaternary Research Association.]