



15th Water-Rock Interaction International Symposium, WRI-15

Mike Edmunds: fifty years of water, rock and interaction

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Abstract

For almost 50 years Mike Edmunds pursued an accomplished and influential career in hydrogeochemistry. His research interests covered the gamut of groundwater quality issues ranging from the effects of acid rain on upland streams to the origin of deep basin brines, and spanned the globe. Almost from the start of his career he was involved with the IAGC's Water-Rock Interaction (WRI) Working Group, becoming a founding father of the triennial WRI symposia which commenced in 1974 and continue to this day. Mike was a geologist turned chemist but also, crucially, a 'people person'. This combination of qualities created a tireless advocate for the subject of water-rock interaction in all its variety.

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Peer-review under responsibility of the organizing committee of WRI-15

Keywords: Water-Rock Interaction; symposia; W M Edmunds

1. The early days

Wyndham Michael Edmunds, invariably known as 'Mike', was born in 1941 and entered Liverpool University in the late 1950s, initially to study modern languages. Fortunately for us he soon became interested in earth sciences and converted to the geology BSc course. Following graduation, he remained at Liverpool to undertake a PhD which involved electron microprobe studies of garnet genesis in polymetamorphic rocks. Mike always acknowledged having been inspired at Liverpool particularly by Robert Shackleton, Wally Pitcher and Mike Atherton, while the Geology Department's enthusiasm for the Dalradian rocks of Donegal and Connemara led to Mike's lifelong affection for the west of Ireland.

At the end of his funding in 1966 (the PhD would not actually be awarded until 1968), Mike needed to earn a living so applied to the Institute of Geological Sciences (IGS, now British Geological Survey, BGS), which he joined in late-1966, and where like many new entrants to that organisation he was put to work on a completely unfamiliar topic, in this case the fledgling subject of groundwater geochemistry (as it was in the UK of the late

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1960s). Having cut his teeth on a study of the thermal and mineral waters of Britain, and armed with copies of Garrels & Christ and John Hem's magnum opus on the geochemistry of natural waters, he went on to make one of the pioneering studies¹ of the redox-related hydrogeochemical changes that occur along the flowpaths of aquifers passing into confinement (Fig. 1). This study, of the Lincolnshire Limestone in eastern England, has since provided a blueprint for many similar investigations worldwide, not least because it considered the implications for aquifer development, well corrosion and the fate of pollutants – concerns that have scarcely diminished for most aquifers over the subsequent decades.

However, even at this early point in his career, Mike had gained experience overseas in the form a study of groundwater resources in the Libyan desert. This was the start of two of the abiding interests of his working life: arid-zone recharge, and palaeo-groundwaters/climate.

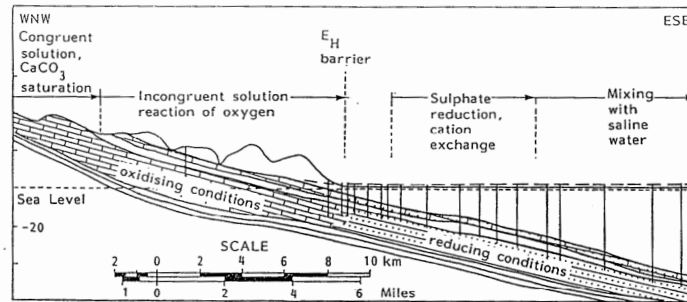


Fig. 1. Where it all began: from Mike's early work on downgradient redox changes in the Lincolnshire Limestone¹.

2. The birth of WRI symposia

The pioneering paper referred to above¹ actually arose from Mike's presentation at the International Symposium on Hydrogeochemistry and Biogeochemistry held in Tokyo in September 1970. At this meeting, co-sponsored by the then International Association for Geochemistry and Cosmochemistry (IAGC), the late Prof Mikhail G Valyashko organised a small group of interested geochemists and proposed setting up various working groups, including WRI to 'study water-rock interaction under various temperature and pressure conditions, compile key programs, develop methods, and determine transportation forms of components'. During the 24th International Geological Congress in Montreal, Brian Hitchon and the late Donald E White convened an informal meeting of WRI (known as WRI-0) on 23 August 1972, where 16 interested parties met to discuss the future of WRI, including Mike. A proposal was made to hold WRI-1 in Prague, based on a suggestion by Tomas Pačes. This launched a series of triennial WRI symposia, which have become the main function of the WRI Working Group.

WRI-1 was held in 1974. Mike of course was there, and presented a paper on Chalk porewaters² which was among the first to look at this aspect of the hydrogeochemistry of southern Britain's most important aquifer. But during this time (the early 1970s) Mike realised that to get the most out of the newish field of trace elements in groundwater would require a better analytical background than could be achieved in the obsolescent laboratories at the IGS's London HQ. Fortunately this realisation coincided with the relocation of the IGS to sites outside London, and thus in 1977 he was able to establish at Wallingford (near Oxford) laboratories with the state-of-the-art facilities necessary to be at the forefront of analytical hydrogeochemistry. For example, BGS Wallingford had some of the first ICP-AES and ICP-MS instruments in the UK, together with a laboratory dedicated to isotope hydrology.

3. Secretary General

With these laboratory facilities behind him, Mike could devote his energies towards a broad range of groundwater-related activities. In the UK of the late 1970s into the 1980s, he found himself working simultaneously on topics at opposite extremes of the hydrogeochemist's operational envelope, on the one hand determining the geochemistry of basin brines several kilometres deep as part of the investigations into the geothermal potential of the UK, while on the other working with surface water hydrologists and ecologists from other institutes of the Natural Environment Research Council (IGS's parent body) to understand the impacts of acid rain, particularly in

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