

Pre-conference excursion: Connemara

Date: Sunday, June 27, 2010. Leader: Dr. Martin Feely, NUI, Galway.
Departure time: 10:00 am Venue: **Quadrangle, NUI Galway**

Connemara is regarded as one of the most spectacular scenic regions in Europe and one of the best outdoor geological landscape laboratories available to the earth scientist. Its landscape, although built of ancient rocks, reflects the recent (~15,000 years ago) shattering, scouring and sculpting capabilities of glacier ice and its melt waters during the last deglaciation. The mountains of Connemara contain petrified images of buckled crust and volcanic activity many hundreds of millions of years old. The geological history spans a time interval of approximately 750 million years. The oldest rocks (750-600 million years old) form the Connemara Metamorphic Massif together with a suite of younger metagabbros, gneisses and granite (470-463 Million years old). The massif is bounded to the north by the Lower Palaeozoic Rocks of Ordovician (490-440 million years ago) and Silurian (440-415 million years ago) age while, in the south lie the 420-380 million year old Galway Granites and Lower Ordovician South Connemara Group (meta-volcanics and –sediments). The Connemara terrain is bordered to the east and southeast by the younger limestones (~325 million years old) of the Lower Carboniferous. The fieldtrip will explore the geological and cultural history of the Connemara region through the use of key roadside exposures and some spectacular scenic routes.





Pre-conference excursion: Burren and Cliffs of Moher

Date: Saturday June 26 or Monday June 28, 2010. Leader: Mr. Tiernan Henry, NUI, Galway.
Departure time: 10:00 am **Venue: Quadrangle, NUI Galway**

The Burren area of Galway and Clare is a unique landscape not only in Ireland but in Europe. Comprised of Carboniferous deposits, principally limestones, it has a unique hydrology and hydrogeology that is not only a function of the geology but that has modified and altered the geology. The landscape of the Burren reflects the bedrock and is home to numerous and distinct plant species. The eastern portion of the area is dominated by older, more resistant sandstones (of Devonian age) and the western portion by younger sandstones and shales of the upper Carboniferous (beautifully exposed at the Cliffs of Moher). In these latter areas extensive surface drainage patterns have developed; the sandstones and shales are very resistant to weathering and exhibit low hydraulic conductivities, and are thus classed as poor or locally important aquifers. Water in limestone areas is largely found in the subsurface flowing freely in conduits and weathered zones and the aquifers here are classed as regionally important. There are numerous water related features, from turloughs (seasonal lakes fed by and draining to groundwater) to swallow holes and sink holes to large cave systems (the Ailwee Caves), across the area and the cultural history of the region is bound up with the water and is reflected in place names that refer to specific water made features. Water quality and chemistry is reflective not only of the surface but of the subterranean environment. Aside from its scientific importance the area provides stunning vistas and views across Galway Bay and to the Aran Islands with excellent pubs and restaurants throughout!



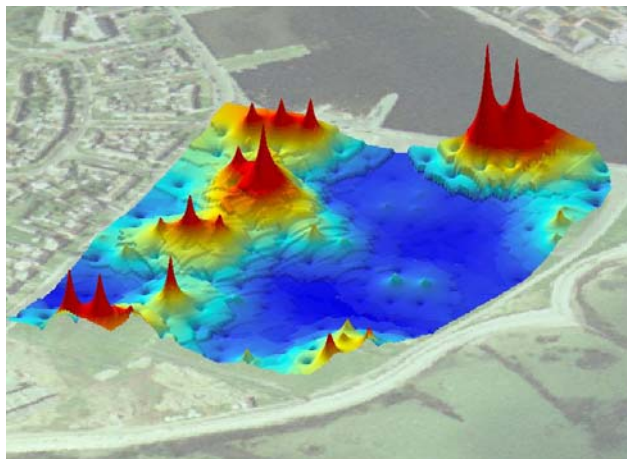
Conference fieldtrip: South Park and Silvermines

Date: Friday, July 2, 2010. Site No. 1: **South Park:** Leader Dr. Chaosheng Zhang, NUI Galway
Meeting time: 9:30 am **Venue: NW Corner of South Park**

South Park is located in Galway City Centre. It has an area of about 10 hectares and had been used as a sports ground until it was discovered as a contaminated site in the end of 2006. The site was formerly swampy marshland between the residential area and the seafront and was reclaimed in 1931 to form the park. Prior to this date, the area had been used as an unregulated landfill site for various wastes. Residents in the vicinity to South Park had attempted to highlight the polluted soils to local government, but due to lack of understanding of the nature of this pollution, no action had been taken.

A study carried out by Dr. Chaosheng Zhang and his group at NUI Galway in 2006 revealed that surface soils of South Park contained high concentrations of Pb, Cu, Zn and As, and these concentrations exceeded the Dutch soil guideline values. The pollution sources were both municipal and industrial wastes. Access to this site is now restricted, and the site is currently under remediation.

More details of the information can be found from the paper: Carr, R., Zhang, C.S., Moles, N., and Harder, M., 2008. Identification and mapping of heavy metal pollution in soils of a sports ground in Galway City, Ireland, using a portable XRF analyser and GIS. *Environmental Geochemistry and Health* 30(1):45-52.



Site No. 2: Silvermines: Leader Dr. Patrick O'Connor, Geological Survey of Ireland
Departure from South Park immediately after Site No. 1 trip (10:30 am)

Mining at Silvermines dates back over a thousand years with the most intensive activity occurring in the period 1963 – 1993 when an underground metal mine was operated by Mogul of Ireland and an open-cast barite mine was operated by Magcobar (Ireland) Ltd. The mining district extends for 5 km east-west along the Silvermines Fault. Lead, silver, zinc, copper and barite were recovered from 8 distinct stratabound or stratiform ore deposits hosted in the Lower Carboniferous limestone formations which dip northwards from the Fault. Some 17.7 Mt of sulphide ores grading 6.4% Zn and 2.5% Pb were extracted together with some 5.5 Mt barite; significant unmined lower grade sulphide ores remain underground to this day.

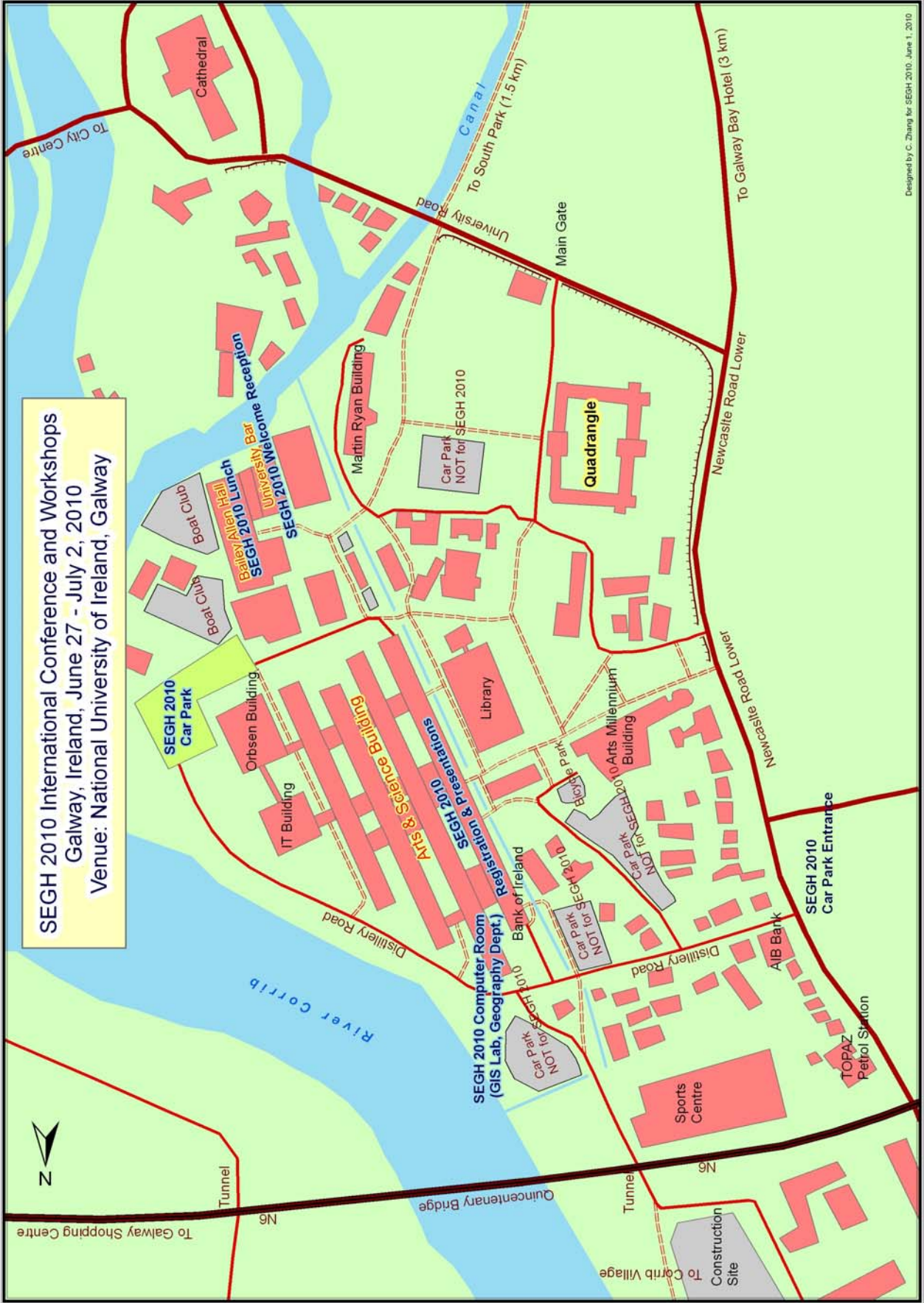
Following closure of the underground mine in 1982 there was a serious dust-blow from the surface of the Gortmore Tailings Facility (covering 147 acres) in the dry summer of 1984. The local community began a long campaign to have the mine site remediated and following cattle deaths from lead poisoning in 1999 and subsequent investigations of the extent of contamination in the period 1999-2004 led by the health authorities and EPA, the Minister announced an allocation of €10.6m to carry out site rehabilitation work.

By end 2009, the Gortmore Tailings Facility had been fully rehabilitated thus removing the threat of further toxic dust-blows. In addition, conservation work on 19th century Cornish engine houses at Ballygown and Shallee had been completed to a high standard, thereby protecting the mining heritage of the area and creating a new tourist attraction for the local community. Further rehabilitation of the Garryard tailings lagoon is scheduled to proceed in 2010.

The fieldtrip will visit a number of sites in the Silvermines area to illustrate the geological setting of the mining district, the mining heritage conservation works and the environmental rehabilitation that has taken place to date.



SEGH 2010 International Conference and Workshops
 Galway, Ireland, June 27 - July 2, 2010
 Venue: National University of Ireland, Galway



SEGH 2010 Hotel Location and Venue Map Galway City

