{*potential* Undergraduate Dissertations topics for [physical] Geography students in the department of *Natural & Social Sciences* University of Gloucestershire 2012-2013.

N. B. These topics are personal recommendations / suggestions by Dr. Hunt. They have neither been endorsed nor approved by any permanent member of teaching staff Nor any exam Field board!

Dr. John B. Hunt *FHEA.FRGS.*
University of Gloucestershire, UK. 2012
email jhunt@glos.ac.uk
john@geoclimatica.com
facebook :
http://www.facebook.com/john.b.hunt?ref=tn_tnmn

The themes proposed as[8] potential dissertation here are presented as broad concepts. In order for them to be progressed into working project descriptions they need to be researched in detail with reference to a well presented bibliography and reference list. I am most willing to guide individual students / work teams on the appropriate location or detail/ methodology in these studies and on appropriate starting points in the literature. It will also be neccessary that the project is outlined in the appropriate format in the student's own words, according to the academic and Health & Safety requirements set down by the Departmental Dissertation Tutor and Subject Field Chair. Students will also need to approach an appropriate member of departmental staff to act as a formal advisor. Whilst this is crucially necessary I remain very wiling to offer guidance in all contexts for the studies proposed herein:

The dissertation themes here are mostly in the field of Physical Geography and many are located in the Brecon Beacon's National Park. Broadly they are glaciological or cave oriented with climate change leanings:-

1. Biogeographic zonation and micro-climatic patterns with dolines [conical karst hollows]

dolines are closed conical/ funnel like depressions formed usually by collapse of cave passages underlying the land-surface or by gradual dissolution underlying limestone bedrock. Often underlying caves vent air through these hollows thereby altering rthe local micro-climate. Because they are usually circular hollows they have highly varied aspects and are sheltered from winds. Their varying slopes and these cave links afford significant control on local habitat which may or may not

exert a strong control on the micro ecosystem that controls plant species diversity habitat variability. Dolines in the S Wales coalfield of the Brecon Beacons lend themselves to an investigation of species variability along multiple transects across and through multiple and individual doline doline fields. An interesting paper investigating these can be read concerning a giant doline in Hungary:-

http://www.abc.botanic.hr/index.php/abc/article/view/433
http://www.abc.botanic.hr/index.php/abc/article/view/433/87

2. Bathymetry [lake-bed mapping of glacigenic corrie lake basins in the Brecon Beacons]

Numerous upland glacial valleys, corries/ cwms in the Brecon Beacons contain small lakes that have most –likely been formed by glacial process [moraine dams and glacial over-deepening. None of these lakes have ever been cored to recover a post-glacial sedimentary record of climate change. This is a considerable scientific omission from palaeoclimatic studies in Wales and Southern Britain One of the reasons for this omission is the fact that the lake basins themselves have never been ' mapped to chart their depth or the nature of their lake beds [mud or rocky etc]. In this dissertation the lakes would be mapped for water depth or bed-sediments using a [grab sampler or freeze corer or waxed plumb – weight line. The mapping would be most effectively achieved from a small inflatable platform. [mini dinghy, inflated tractor tyres or by floating in a buoyant dry suit.. [this is an adventurous physically demanding project needing team work and collaboration. Appropriate lakes to study are : [Llyn Cwm Llwch in the Pen y Fan are { and Llyn y fan Fawr Llyn y Fan Fach in the Black mountain area of the western national park [Swansea Valley]

3. Sedimentology and clast characteristics of gacial ridges in the Brecon Beacons]

Brecon Beacon's upland lakes [as discussed in project 2 above] are often associated with linear ridges of glacigenic debris [lateral or terminal moraines or pro-talus ramparts]

The characteristics of the clasts [size, shape angularity striated etc] is disgnostic of whether the clasts have been sub-glacially ot supra-glacially transported ' soil pits' dug in these landforms to extract clasts [cobbles/ boulders etc.] would enable the processes responsible for the formation of these ridges to be deduced :- Useful references are :

http://onlinelibrary.wiley.com/doi/10.1002/gj.3350280106/abstract
also in FCH Library :
Shakesby, R.A. (2002) Glacial **landforms of the Brecon Beacons** Geographical Association, 48pp.

4. Mega-rapid climate change recorded in laminated cave muds, Brecon Beacons, Ogof Agen Allwedd

One of the longest cave systems in the UK is accessed by the technically -quite- easy-caving experience within Ogof Agen Allwedd Near Crickhowll/ Abergavenny. The floor of main cave passage here [ca. 10 m wide and 500 metres long] is covered with an extensive deposit of finely laminated muds [sediments that are thought to have been laid down during the Younger Dryas stadial {Loch Lomond glacial readvance] 10-11, 000 years BP. These muds are clearly layered and the particle

size of these muds was analyzed in the late 1970s to show climatic variability; since this study Laser grain size technology[in DNSS env. labs] has developed resulting in significant potential for these muds to be further investigate to understand more completely their depositional process and climate change records. This study would need to be done with the assistance of members of caving clubs such as the localy base Chelsea Spelaeological Society { Crickhowell which I can arrange] or through Gloucester Spelaeological Society. [http://www.british-caving.org.uk/~gss/] two facets are [1.]palaeoenvironmental reconstruction & [2.]sedimentary process within caves

5. Comparative assessments of the disability- accessibility of British National Parks to the handicapped visitor

Personal experience I have gained through my own disability and before that through taking my disabled Late- Mother to National Parks of Britain on her mobility scooter have all showed a great difference in the degree to which the publicly funded National Parks do or do not cater for the disabled visitor {the Lake District National Park is better than Most including the Brecon Beacons] An investigative policy and social survey audit of demands and facilities would reveal which and how or why the Parks vary in their openness to the handicapped visitor. Such a survey if holistic would look also at the role of other bodies and agencies such as The National Trust .

6.Post-glacial upland fluvial valley erosion, terrace formation and sediment supply to the Dan yr Ogof cave System in the Western Brecon Beacons. ["sink yr giedd" valley].

Here a large plateau of upland moor is composed of glacial diamict on top of ORS sand stone & limestone; a post-glacial stream has cut into the till forming a distinctive valley- system; - With a good survey [this dissertation] the volume of till eroded can be determined and this amount compared to the cave downstream into which the sediment must have passed. There are also peat and organic deposits with interesting pollen and palaeenvironmental palaeoclimatic data spanning the Holocene which would make a good climate reconstruction project [so there are two ideas here; [1.] a palaeo environmental reconstruction from the Holocene Peat & oxbow lake deposits; [2.] a fluvial terrace formation channel-incision mapping project.

7. Comparison of the reliability of on-line weather forecast data:

comparative matching of predicted data against actual data gathered by site specific weather stations[which weather forecasts are the most reliable ? is this consistent ?

8. Comparative dendro-climatology on poor drainage and well-drained slopes in the Brecon Beacons Upland National Park.

By taking tree ring cores from specific tree species in different environmrents in a similar region the role of water-supply [drainage] can be inferred { eg. comparing tree ring record on fast-draining steep limestone slopes with the record in the same trees on flatter less permeable shallower terrain . the abundant limestone gorges &scree slopes in the Brecon Beacons are present ideal comparator " dry sites"