

**PROJECT TITLE: Correlating contaminant concentrations in Acid Mine Drainage with climatic variations**

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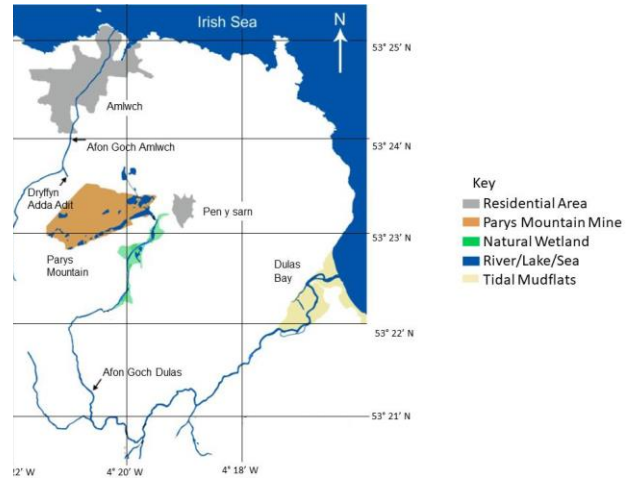
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**Project keywords: Acid Mine Drainage, Climate Change, Weather**

**Proposed start date: early June 2024**

**Project description:**

Acid Mine Drainage (the outflow of acidic water from metal mines and coal mines) contributes to many of the world's most heavily polluted water courses and can lead to a range of environmental and health issues. Weather events, such as droughts and storms, can greatly alter pollutant loads within water courses and thus the effects of Acid Mine Drainage (AMD). However, limited work has explored how weather events and climate change impact AMD.



*Parys Mountain Mine area on Anglesey (Tulloch, 2023).*

The student will use both data they collect during fieldwork in Anglesey, and prior data, to explore the role of weather events and climatic variations on pollutant loads within water courses surrounding Parys Mountain. The student will spend at least one week in Anglesey collecting data. The results may lead to publication, offering the student the chance to experience publishing their work in the scientific literature!



*The great open cast at Parys Mountain viewed from the south and southwest respectively (@Roy Starkey 2012, www.britishmineralogy.com)*

**Candidate requirements:**

- Understanding of what Acid Mine Drainage is and the impacts on the surrounding environment
- Enthusiasm and desire to conduct fieldwork
- Ability to analyse information and pick out trends
- Use of Python or other programming language
- Ability to work independently

**Background reading:**

- 1) Marsay, N., 2018. Is the Remediation at Parys Mountain Successfully Reducing Acid Mine Drainage? Journal of Environmental Protection, 9, 540-553. <https://doi.org/10.4236/jep.2018.95034>
- 2) Bullock, L. A., Parnell, J., Perez, M., Feldmann, J., and Armstrong, J. G., 2017. Selenium and Other Trace Element Mobility in Waste Products and Weathered Sediments at Parys Mountain Copper Mine, Anglesey, UK. Minerals, 7, 229; <https://doi.org/10.3390/min7110229>

**Approximate Work Schedule in weeks (desk based/lab/report writing)**

- Week 1: Background reading
- Week 2: Opportunity to join pre-arranged trip to Anglesey to conduct fieldwork
- Week 3-5: Analyse collected and pre-existing data
- Week 6: Conduct fieldwork in Anglesey
- Week 7: Analyse new data
- Week 8: Prepare final outputs