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Calculating excess partial pressure from acidic conditions

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Dissolved carbon dioxide concentrations in runoff from upland peat have implications for the total carbon budgets for upland peat. Dissolved CO2 concentration from upland peat is a trade off between carbon dioxide concentration in soil pore water and water temperature. Dissolved carbon dioxide is measured using a combination of techniques including titration, to find total acidity, and mass spectrometry, to find the total concentrations of elements in solution. These results are used in conjunction with Ringbom's equations to find excess partial pressure of carbon dioxide dissolved in water. This approach gives two answers, one based on a charge balance and the other on a mass balance approach. This study has shown how the concentrations of excess carbon dioxide change with time and temperature, and what the overall dissolved carbon dioxide budget for the site is.