Influence of a CO2 long term exposure on the mobilisation and speciation of metals in soils

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FIGURES

FIGURE 1. Experimental layout of the ASGARD facility with 12 experimental gassed plots and six control ungassed plots (modified from Smith et al. (2005)).

FIGURE 2. Variation of pressure with CO₂ incubation time for the oven-dried, 20% θ₀m and 30% θ₀m ground soils samples.

FIGURE 3. XRD patterns for the oven-dried unground soil with no incubation (a), oven-dried unground and ground soil with no incubation (b), oven-dried ground soil with and without incubation and 20% θ₀m and 30% θ₀m incubated soils (c).

FIGURE 4. Variation of pH during CO₂ incubation in the oven-dried, 20% θ₀m and 30% θ₀m ground soils. The initial solution is the pore water of the oven-dried, 20% θ₀m, and 30% θ₀m non-incubated ground soils.

FIGURE 5. Diagrams of stability of Al-complexes in the pore water of soils as function of CO₂ flow rate. The initial solution is the pore water of the oven-dried, 20% θ₀m, and 30% θ₀m non-incubated ground soils.

FIGURE 6. Diagrams of stability of Cr-complexes in the pore water of soils as function of CO₂ flow rate. The initial solution is the pore water of the oven-dried, 20% θ₀m, and 30% θ₀m non-incubated ground soils.
Atmospheric gas detection safety sensor

Gas, water and electricity in 70 cm deep trench

Buried gas pipe

Atmospheric gas detection safety sensor
FIGURE 5

The graph shows the molality of different species as a function of mmoles of CO₂.

- **Cr³⁺**: The molality of Cr³⁺ plateaus at a value close to 1.0, indicating a high concentration as mmoles of CO₂ increase.
- **Cr(OH)₂⁺**: This species shows a sharp increase at lower mmoles of CO₂, followed by a plateau.
- **Cr(OH)²⁺**: Similar to Cr(OH)₂⁺, Cr(OH)²⁺ also has a sharp increase at lower mmoles of CO₂, but it remains lower in molality compared to Cr(OH)₂⁺.

The x-axis represents mmoles of CO₂, while the y-axis shows the molality of each species relative to the total molality of Cr.
FIGURE 6

Molality $\frac{[Al]}{[\Sigma Al]}$

Molality $\frac{[Al]}{[\Sigma Al]}$

$	ext{mmoles CO}_2$

$	ext{mmoles CO}_2$