Groundwater arsenic distribution in Burkina Faso

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Elevated arsenic from natural sources has been known to occur in groundwater of northern Burkina Faso for a number of years. Arsenic contamination poses a serious health threat to the local population which is totally dependent on groundwater for its daily needs. Arsenic is thought to originate from the oxidation of arsenic-containing sulphide minerals, mainly found in rocks of the Birimian Formation.

As these rock types also occur in other regions of Burkina Faso, it was suspected that elevated groundwater arsenic could be more widespread than currently known. Sampling campaigns in the south-west, south and north of the country proved this hypothesis, with about 10% of samples surpassing the WHO guideline value of 10 μg/L. In addition, country-wide geological and mining-related datasets were collected, as well as existing groundwater arsenic measurements, to gain a better understanding of the spatial patterns of arsenic distribution and possible links to certain geological or mining-related parameters. Preliminary data evaluation with logistic regression modelling show that boreholes drilled into basalt, schist and orthogneiss of the Birimian Formation have a higher probability of having elevated arsenic than for adjacent granitoids. Such information is very valuable for decision makers and practitioners, as it highlights regions where well-testing for elevated arsenic should be routinely undertaken.