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Seasonal variation of Arsenic concentrations in natural water of the Source Area of the Yellow River on the Qinghai-Tibet Plateau, China

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Seasonal variation in the arsenic (As) concentrations of natural water has been studied in the source area of the Yellow River (SAYR) in China. Samples were collected in the lake, river and spring in April and July, 2014. In April the average values of As concentrations in SAYR from high to low are: lake (29.1μg/L, n=17, range 8.6-66.4μg/L) > river (25.0μg/L, n=31, range 6.0-77.1μg/L) > spring (15.7μg/L, n=5, range 12.7-21.6μg/L). In July the same order of the average values of As concentrations in SAYR was found: lake (15.1μg/L, n=17, range 7.3-60.6μg/L) > river (7.3μg/L, n=31, range 3.6-16.3μg/L) > spring (7.5μg/L, n=5, range 6-8.2μg/L). The arsenic concentration in the lake kept the same in both season, but the arsenic in the river and spring decreased remarkably in summer compared with that in winter. It was mainly due to the dilution effect of the precipitation. Because the export arsenic from SAYR in summer (15.4t) are higher than that in winter (14.7t), when the temperature increased, permafrost thawing might contribute to the arsenic flux in the SAYR area. The seasonal variation of arsenic is obvious and further investigation is needed.