SUMMARY

Atmospheric deposition has been monitored at several sites in Krkonoše National Park and in the Protected area Jizerské hory Mts. in the period 1994 - 2005. Bulk precipitation, throughfall and stemflow were monitored mainly in spruce forests, and for comparison at one beech site. Analyzed elements included: F^-, Cl^-, SO_4^{2-}, NO^{3-}, NH_4^+, Na^+, K^+, Ca^{2+}, Mg^{2+}, Fe, Mn, Al, Zn, As, Be, Cd, Pb, Cu, Cr, Ni. Deposition, average concentrations and mutual correlations were calculated. Especially NH_4^+, NO_3^-, SO_4^{2-} and H^+ were in the centre of interest.

Precipitation acidity decreased significantly from the start of the monitoring until the year 1999; in following years pH remains approximately constant. Especially in throughfall, decrease of sulphur fluxes has been recorded, as a positive effect of desulfurization of power plants. Sulphate was the most significant deposited ion at the beginning of the monitoring period. Deposition of NO_3^- oscillated without any definite trend. Throughfall deposition of NH_4^+ dropped on several spruce sites and it increased a little below beech.

In the growing season, summed throughfall and stemflow fluxes of elements in the beech forest are comparable with throughfall fluxes in spruce stands (whereas stemflow in spruce stands is rather negligible). Concentration of SO_4^{2-} and K^+ in stemflow are higher than those in throughfall, the reversal is true for Cl, which is probably absorbed in the bark. In winter, however, stemflow was not collected.

There are significant correlations between some elements, mainly cations Ca^{2+}, Mg^{2+}, Na^+, and anions SO_4^{2-} and NO_3^-. Cd is significantly correlated with Mn and Zn.

An analyses of net throughfall flux (NTF) has shown that K^+, Ca^{2+}, Mg^{2+} and Mn were leached, whereas NO_3^-, NH_4^+ and Na were absorbed in the tree canopies. Passive flow through the tree crowns is only possible for SO_4^{2-}. Cd and Zn were strongly absorbed, especially in bark, whereas absorption of Pb occurrs mainly in the foliage. Stemflow was strongly enriched in iron. As for other trace elements, no conclusions about their behaviour can be made, which is also caused with their low concentrations were often below detection limit.