

### **3.052 Estimation of sulfur and nitrogen input/output budget on the small river catchment by long-term observations at Russian EANET Primorskaya station.**

Early Career Scientist

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Abstract:

The ecosystems in Russian Far East is suspected to be under the changing transboundary air pollution and, hence, related effect of atmospheric compound loads is one of indispensable topics of environmental studies.

The present study is conducted for Komarovka river catchment at the Russian Far East where one of the EANET sites, Primorskaya, was established in 2002. For the first approach we used a simplified input-output budget calculation for pollutants. The budget calculation assumed: the input consists of total (dry and wet) deposition while the output is presented solely by the discharge with the river water. The budget was calculated for sulphur and nitrogen compounds for years 2005-2015 using monitoring data.

Firstly we calculated separately the chemical compound fluxes by wet deposition, dry deposition and river runoff. The trend analysis was also performed for annual concentrations and their fluxes. Notably declining trends with evident significance were disclosed in time series of dry deposition fluxes. Significant trend was found neither for the fluxes by wet deposition nor for those by river runoff.

We found that wet deposition is higher than dry one for most of the years at Primorskaya except for 1-2 years only. This proves more contribution of precipitation fall-out to the total deposition which depends on climatic patterns of this region.

Budget estimation demonstrates that the output of sulphur compounds (SO<sub>x</sub>) were higher than the input for most of the years at river catchment. In opposite, for nitrogen compounds (NH<sub>x</sub> and NO<sub>x</sub>) the input exceeded the output.

Similar research is seldom in Russia due to the need of the whole range of monitoring

data. We do comparison of our results with data obtained from other published catchment studies. The uncertainties of applied approach for balance evaluation are simultaneously discussed