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## Results of the 3rd ATM-Challenge 2019

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Estimating the radionuclide background based on a multi-input-multi-model ensemble modelling approach at IMS stations having frequent detections was the main goal of the 3rd ATM-Challenge.

The Challenge included four selected IMS stations. Participants were invited to calculate contributions to the signal captured in daily samples at CAX17 (St. John's), DEX33 (Schauinsland/Freiburg), SEX63 (Stockholm) and USX75 (Charlottesville) for up to 6 months. Up to 30 submissions per station from 16 different institutions were finally received.

Xe-133 stack emission data with daily temporal resolution for the time period June to November 2014 provided by IRE (Belgium) and CNL (Canada) radiopharmaceutical plants were used. In addition, publicly available emission estimates for nuclear power plants and research reactors as well as annual emissions from other several well-known facilities were also made available to participants.

The presentation will summarize the comprehensive results from this study. First, the added value of training an optimized ensemble per station will be discussed. Second, the beneficial impact of including contributions from minor emitters and thus rough emission estimates thereof will be demonstrated. The added value of simulating samples highly influenced by main emitters, i.e. radiopharmaceutical plants, based on actual daily emission data will be exemplified.

### Promotional text

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