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Executive Body for the Convention on Long-range Transboundary Air Pollution

Steering Body to the Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe

Working Group on Effects

Fifth joint session
Geneva, 9–13 September 2019
Item 14 of the provisional agenda
Progress in activities in 2019 and further development of effects-oriented activities

Modelling and mapping

Report by the Coordination Centre for Effects and the Task Force on Modelling and Mapping

Summary

The present report is being submitted for consideration by the Steering Body to the Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe and the Working Group on Effects at their fifth joint session in accordance with the request of the Executive Body for the Convention on Long-range Transboundary Air Pollution in the 2018–2019 workplan for the implementation of the Convention (ECE/EB.AIR/140/Add.1, updated in ECE/EB.AIR/142).

The present report includes a review of the implementation of the workplan activities undertaken by the International Cooperative Programme on Modelling and Mapping of Critical Levels and Loads and Air Pollution Effects, Risks and Trends (ICP Modelling and Mapping) and a summary of the discussion and conclusions reached at the thirty-fifth meeting of the International Cooperative Progamme on Modelling and Mapping Task Force (Madrid, 2–4 April 2019). The meeting was organized by the new Coordination Centre for Effects (Germany) in close collaboration with the new ICP Modelling and Mapping Chair Ms. Alice James Casas (France).

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I. Introduction

1. The International Cooperative Programme on Modelling and Mapping of Critical Levels and Loads and Air Pollution Effects, Risks and Trends (ICP Modelling and Mapping) is a scientific programme of the Working Group on Effects under the United Nations Economic Commission for Europe (ECE) Convention on Long-range Transboundary Air Pollution. France is the lead country of the ICP Modelling and Mapping Task Force. Germany is the lead country of the ICP Modelling and Mapping programme centre — the Coordination Centre for Effects.[1] The Task Force is hosted by the French National Institute for Industrial Environment and Risks. The Coordination Centre for Effects has been hosted by the German Environment Agency since 2018, following the decision by the Government of the Netherlands to stop funding the Coordination Centre for Effects, which had previously been led by the Netherlands.

2. Representatives of more than 30 Parties to the Convention participate in the activities of ICP Modelling and Mapping. ICP Modelling and Mapping national focal centres help to compile and maintain the database of critical loads for acidification and eutrophication and carry out research regarding novel thresholds for impacts on plant species diversity. ICP Modelling and Mapping results are also used by the Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe (EMEP) Task Force on Integrated Assessment Modelling, in collaboration with the Meteorological Synthesizing Centre-West, the Meteorological Synthesizing Centre-East and the Centre for Integrated Assessment Modelling. ICP Modelling and Mapping collaborates with all the international cooperative programmes under the Convention and with the Joint Task Force on the Health Aspects of Air Pollution.[2]

II. Progress in the modelling and mapping activities

3. The thirty-fifth meeting of the ICP Modelling and Mapping Task Force was hosted by the Centre for Energy, Environmental and Technological Research (Madrid, 2–4 April 2019). Mr. Fernando Martín Llorente, head of the Atmospheric Pollution Modelling and Ecotoxicology Unit, Department of the Environment, welcomed all participants to the meeting. Mr. Jesús Miguel Santamaría and Mr. José Sáenz-Albanés delivered a keynote lecture on supporting modelling and mapping activities through LifeWatch European Research Infrastructure Consortium infrastructure.

4. Thirty-nine delegates from the following 17 countries participated in the meeting: Austria, Canada, Czechia, Denmark, France, Finland, Germany, Iceland, Italy, Netherlands, Norway, Poland, Spain, Sweden, Switzerland, United Kingdom of Great Britain and Northern Ireland and United States of America. Representatives of the following Convention intergovernmental bodies, expert groups and scientific centres were present: the Bureau of the Working Group on Effects, the Coordination Centre for Effects, the International Cooperative Programme on Effects of Air Pollution on Natural Vegetation and Crops (ICP Vegetation), the International Cooperative Programme on Assessment and Monitoring of the Effects of Air Pollution on Rivers and Lakes (ICP Waters), the Joint Expert Group on Dynamic Modelling and the Centre for Integrated Assessment Modelling.

5. ICP Modelling and Mapping Task Force decisions were reviewed by the participants during the meeting. Presentations were made available on the Coordination Centre for Effects website.

6. The objectives of the meeting included:

[1] See www.umweltbundesamt.de/en/cce.

[2] The Joint Task Force on the Health Aspects of Air Pollution is a joint body of the World Health Organization European Centre for Environment and Health and the Executive Body for the Convention.

(a) Presentation of the current status of the Task Force and the new Coordination Centre for Effects and their common vision of future Task Force – Coordination Centre for Effects – national focal centre collaboration under ICP Modelling and Mapping;

(b) Sharing new knowledge on critical loads established through (field) experiments and modelling by the national focal centres and other expert groups;

(c) Presentation of the results of the extended call for data: the implementation in the European critical loads database and the response of national focal centres to the call for data 2015–2017 (extended till 2019);

(d) Revision of the ICP Modelling and Mapping mandate, including considerations regarding the possible inclusion of Joint Expert Group on Dynamic Modelling work under the umbrella of the ICP Modelling and Mapping Task Force;

(e) Discussion on items for the workplan 2020–2021.

III. Relevant items of the 2018–2019 workplan

A. Adapt existing information technology infrastructure and software at the German Environment Agency to guarantee an operational Coordination Centre for Effects

7. In order to guarantee a fully operational Coordination Centre for Effects, the existing information technology infrastructure and software at the German Environment Agency was adapted; for example, through the provision of necessary storage capacity and web space, in order to ensure that data handling and communication tasks could be performed. The 2017 European critical loads database for use in integrated assessment modelling was transferred from the National Institute for Public Health and Environment of the Netherlands to the German Environment Agency in December 2018. The European background database on critical loads[3] was reviewed focusing on required updates of input data and the sufficiency of the documentation of the database. To perform critical load calculations, as well as their exceedance, the required R (programming language) infrastructure was established and R scripts were implemented.

B. Develop framework and skills to improve the information exchange between the Coordination Centre for Effects and national focal centres

8. The call for data was an important instrument with regard to continued collaboration between the Coordination Centre for Effects and national focal centres. Therefore, the 2015–2017 call for data was extended till February 2019. The results of the call were reviewed at the thirty-fifth meeting of the Task Force on Modelling and Mapping (Madrid, 2–4 April 2019). In total, 14 Parties had responded to the 2015–2017 call and updated their acidification and eutrophication critical loads, including 7 Parties (France, Germany, Ireland, Italy, the Netherlands, Switzerland and the United Kingdom of Great Britain and Northern Ireland) that had submitted critical loads data for biodiversity. By February 2019, 3 Parties (Belgium (Wallonia), Poland and the United Kingdom of Great Britain and Northern Ireland) had submitted an update of their critical load data. The number of sites used in response to the call had varied greatly: between 5 (Italy) and 1.2 million (Germany). The critical loads for acidification and eutrophication had been updated in the European critical load database.

[3] The European background database on critical loads has been used in the past for countries that had not submitted national critical load data to the Coordination Centre for Effects.

C. Begin collaboration between ICP Modelling and Mapping and other bodies of the Convention

9. The thirty-fifth ICP Modelling and Mapping Task Force meeting (Madrid, 2–4 April 2019) was organized and held in close collaboration with the Coordination Centre for Effects. To build up a cooperation network within the Convention, several meetings were organized; for example, bilateral meetings with the Centre for Integrated Assessment Modelling /the International Institute for Applied Systems Analysis and the International Cooperative Programme on Assessment and Monitoring of Air Pollution Effects on Forests. Coordination Centre for Effects and ICP Modelling and Mapping representatives attended the EMEP Steering Body and Working Group on Effects Extended Bureaux Meeting (Laxenburg, Austria, 19 – 21 March 2019) and the joint Task Force meeting of ICP Waters and the International Cooperative Programme on Integrated Monitoring of Air Pollution Effects on Ecosystems (ICP Integrated Monitoring) in 2018 (Warsaw, 7 – 9 May 2018) and the beginning of 2019 (Helsinki, 4 – 6 June 2019).

IV. Recommendations and other outcomes of the thirty-fifth meeting of the Task Force

10. A new call for national contributions on critical loads (revised data and scientific contributions in the context of the review of empirical critical loads) should be sent to national focal centres in 2019 according to the draft workplan 2020–2021 (forthcoming). The ICP Modelling and Mapping Task Force recommended that the Working Group on Effects should be asked to approve the call at its fifth joint session with the EMEP Steering Body (Geneva, 9–13 September 2019). National focal centres should respond to the call in advance of the Task Force's thirty-seventh meeting (2021) and the seventh joint session of the EMEP Steering Body and the Working Group on Effects (September 2021).

11 The need for a review and, if required, revision of empirical critical loads was agreed on by the participants of the Task Force meeting. Since the publication of the most recent update,[4] a substantial amount of new data and scientific papers had become available. Following discussions, it was decided that the update should be based on a literature review of existing data (the creation of new data by experimental work would not be foreseen for that activity).

12. The review of the European background database revealed outdated input data and an insufficient documentation of the database. It was recommended that the database should be updated.

13. The updated critical load database for eutrophication and acidification (2019 status) should be adopted by the Working Group on Effects so that those data could be submitted to the EMEP Centre for Integrated Assessment Modelling for inclusion in the Greenhouse Gas Air Pollution Interactions and Synergies model, for use in integrated assessment modelling for the support of air pollution, nature and climate policies, especially in the context of the review of the amended Protocol to Abate Acidification, Eutrophication and Ground-level Ozone (Gothenburg Protocol; see paragraph 49 of the Convention Long-term Strategy).[5]

14. The further development and consolidation of acidification and eutrophication critical loads should be continued.

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[4] Rolands Bobbink and Jean-Paul Hettelingh, eds., *Review and Revision of Empirical Critical Loads and Dose-response Relationships, Proceedings of an Expert Workshop, Noordwijkerhout, 23–25 June 2010* (National Institute for Public Health and the Environment of the Netherlands, 2011).

[5] ECE/EB.AIR/142/Add.2.