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Item 6 (a) of the provisional agenda
Progress in activities in 2014 and future work: measurements and modelling (acidification, eutrophication, photo-oxidants, heavy metals, particulate matter and persistent organic pollutants)

Measurements and modelling

Report of the fifteenth meeting of the Task Force on Measurements and Modelling

Summary

The present document contains the annual report of the Task Force on Measurements and Modelling to the Steering Body to the Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe (EMEP), in accordance with the mandate set out in the 2014–2015 workplan for the implementation of the Convention on Long-range Transboundary Air Pollution (ECE/EB.AIR/122/Add.2, item 1.1.9). The report presents the results of the activities of the Task Force for the period September 2013–June 2014, and of its fifteenth meeting, held from 8 to 10 April 2014 in Bologna, Italy, and in particular the status of implementation of the work activities of the Task Force as set out in the Convention's workplan (ibid., items 1.1.4, 1.1.8, 1.1.9 and 1.3.11).

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Contents

I. Introduction

1. The present report presents the results of the fifteenth meeting of the Task Force on Measurements and Modelling, held from 8 to 10 April 2014 in Bologna, Italy, and some activities that have been undertaken since September 2013. It describes progress in the implementation of the Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe (EMEP) monitoring strategy (ECE/EB.AIR/2009/16/Rev.1) (including Intensive Observation Periods), in ongoing modelling activities (including the EURODELTA3 model inter-comparison project)[1] and in the heavy metals pilot study.

2. Seventy experts from the following Parties to the Convention on Long-range Transboundary Air Pollution attended the Task Force meeting: Belarus, Belgium, Croatia, Czech Republic, Denmark, Finland, France, Germany, Hungary, Italy, Netherlands, Norway, Poland, Russian Federation, Slovakia, Spain, Sweden, Switzerland and United Kingdom of Great Britain and Northern Ireland. Also present were representatives from three of the EMEP centres — the Chemical Coordinating Centre (CCC), the Meteorological Synthesizing Centre-East (MSC-E) and the Meteorological Synthesizing Centre-West (MSC-W) — as well as from the European Environment Agency (EEA), the European Commission Joint Research Centre (JRC) and the World Meteorological Organization (WMO).

3. Ms. L. Rouïl (France) and Ms. O. Tarasova (WMO) chaired the meeting.

4. Ms. Sonja Vidič, Chair of the EMEP Steering Body, updated the Task Force on the decisions taken by the Executive Body to the Convention at its thirty-second session in December 2013, focusing on emission inventories, which should now be provided by the Parties in the new EMEP grid with higher spatial resolution. With the adoption by the Executive Body of the amendments to the three most recent protocols to the Convention in the period 2009–2012, the focus had moved to the scientific work done under EMEP and the Working Group on Effects. A detailed 2014–2015 workplan for the implementation of the Convention (ECE/EB.AIR/122/Add.2) had been adopted in December 2013. The Task Force should support the realization of that workplan and the respective national contributions should be more visible. Indeed, more efforts to improve the visibility and dissemination of EMEP results had to be made with respect to publications, websites, booklets, apps and new media. Finally, she introduced an outline of the assessment report to be finalized in 2016, and the new layout for the reports by the task forces, other groups, centres and subsidiary bodies under the Convention.

5. The Chair of the Task Force then presented the 2014–2015 workplan, focusing on tasks relevant for the Task Force and the national experts involved in its work.

II. Implementation of the monitoring strategy

A. Progress in the implementation of the monitoring strategy

6. A representative of CCC gave a presentation on new developments in the EMEP database hosted in the EBAS databases system.[2] More information on data characteristics

[1] See http://www.psi.ch/lac/eurodelta3.

[2] See http://ebas.nilu.no/.

and their quality would be available, and the history of data changes should now be better documented. Different levels of data would be accepted (raw data, data with original time resolution but corrected, timely aggregated). The new system would be available by 1 May 2014. A training workshop on data submission would be organized in Oslo on 8 and 9 October 2014.

7. The CCC representative also updated the Task Force on quality assurance practices within EMEP and their history — an impressive amount of work that had taken over more than 20 years, and which had resulted in a robust and reliable framework for measuring chemical compounds in the atmosphere. In 2013, 84 national laboratories had participated in the inter-comparison work organized by CCC. In that way, the laboratories demonstrated good practices and received the respective certificates. A decreasing trend had been observed in the number of analyses of inorganic compounds in precipitation performed since 2006, and, for persistent organic pollutants (POPs), it was noted that a significant number of laboratories had not yet met the quality objectives. That lack of progress was owing to a number of causes, including lack of coordination; high costs; less interest from organizations; and the level of education of laboratory staff. The same was not the case in other observation networks, like the Global Atmosphere Watch system. There was a need to revitalize the EMEP quality assurance system and analytical performance.

8. It was agreed during the meeting that the issue should be brought to the attention of the EMEP Steering Body, and that a Task Force workshop could be organized to discuss current practice and the improvement of practices related to the implementation of the EMEP monitoring strategy by the Parties. It would also provide an opportunity to strengthen links with the Global Atmosphere Watch (GAW)[3] network. It was mentioned that the huge amount of work on the evaluation of methods for chemistry compounds measurement was really EMEP-specific in that framework, and should be more visible.

9. Once again, the Task Force discussed the key issue of the selection of monitoring priorities by the Parties in view of budget constraints. Some Parties could also be constrained by their obligations under other protocols or other international programmes.

10. An expert from JRC gave a presentation on the results of the second inter-comparison exercise for total carbon, elemental carbon and organic carbon measurements within the EMEP/Aerosols, Clouds, and Trace gases Research InfraStructure Network (ACTRIS)[4] laboratories. That work demonstrated the need for quick corrective actions in some laboratories and highlighted the fact that no significant improvement in results has been obtained since the first exercise in 2012.

11. An expert from Switzerland gave a presentation on a volatile organic compounds (VOCs) inter-comparison experiment conducted in Europe under ACTRIS. Several national experts from the EMEP network had participated in that initiative, which had helped to define good practices for VOC measurement. Such results demonstrated the good synergies established between the EMEP network and other research monitoring programmes.

B. Intensive Observation Periods

12. A representative of CCC presented the status of the Intensive Observation Periods (IOPs) activities within the implementation of the EMEP monitoring strategy. Scientific papers had been published or prepared on the results of the two last IOPs (in 2008–2009 and 2012–2013). First discussions about the next steps started during the Task Force

[3] See http://www.wmo.int/pages/prog/arep/gaw/gaw_home_en.html.

[4] See http://www.actr01is.net/.

meeting. The next EMEP IOP could reasonably be planned for 2016. Coordination with future European Union (EU) projects was recommended, although such projects had not yet been fully defined. Some recommendations were expressed by the Task Force experts regarding the priorities of the future EMEP monitoring campaigns, as follows:

(a) There was still a need for investigations of particulate matter (PM) compounds;

(b) There was interest in coupling EMEP IOPs with campaigns planned in urban environments, where population exposure was higher (urban increments). That could help in qualifying the actual influence of the PM regional background;

(c) Given the foregoing, it could be interesting to investigate air pollution episodes likely to be caught during IOPs; if interest was confirmed, near real time capacity of measurement should be considered;

(d) There was a need for the extension of the monitored domain towards the Eastern part of Europe;

(e) Longer measurement periods could be relevant;

(f) There was a need for measurements of biogenic VOCs.

13. An expert from Switzerland gave a presentation on the results provided by the Aerosol Mass Spectrometer (AMS) and Aerosol Chemical Speciation Monitor (ACSM) networks implemented within the ACTRIS project and collected from 2011 to September 2013. More than 30 stations had been run simultaneously to provide continuous half-hourly measurements of particulate matter with a size less than or equal to 10 microns in diameter (PM_{10}), sulphate, nitrate, ammonium, chloride and organics. Those data were used in source apportionment models (e.g., Positive Matrix Factorization approach) to assess relative contributions of road and non-road traffic, biomass burning, secondary process, etc., in fine particulate matter ($PM_{2.5}$) composition.

14. During the discussion, experts acknowledged that the EMEP IOPs allowed gathering a large number of data, with stringent quality assurance/quality control rules for comparability that improved significantly scientific understanding of PM pollution. Links with the modelling community should be made stronger in the next steps.

III. The heavy metal case study

15. A representative of MSC-E presented the rationale and the progress in the heavy metal test-case studies launched in 2010 for an in-depth investigation of the inconsistencies between heavy metal emissions, measurements and modelling in several European countries. The study continued in the Netherlands, and had recently started in two other countries (Belarus and Poland). The results achieved for the Netherlands were presented, focusing on the observed concentrations of lead. Strong model overestimation was observed in the initial runs performed by MSC-E and national experts. Heavy-metals resuspension modelling had been investigated, furthermore, including the so-called “soil enrichment” factor, as the contribution of large point sources. Inverse modelling approaches to correct emissions had been tested as well. Model results had finally improved significantly, and a country-specific report had been published.

16. A representative of the United Kingdom gave a presentation on atmospheric mercury observed at EMEP sites (Auchencorth Moss and Harwell). Analysis of the influence of local industrial sources (peat extraction activities) and of long-range transport had been investigated in detail.

17. The Task Force acknowledged good progress in the heavy metals activities and welcomed new national case studies in Belarus and Poland. Initial results of those studies should be discussed during the next Task Force meeting in 2015.

IV. Modelling issues

A. Progress in EMEP models

18. Representatives of both MSC-W and MSC-E gave presentations on products and development of the EMEP models in support of the implementation of the Convention's protocols.

19. A representative of MSC-W reported on tests to assess the impact of improved vertical and horizontal model resolutions. The spatial resolution was now 0.1° x 0.1°, and the first surface layer thickness had been decreased to 50 metres (previously 90 metres). Emission vertical profiles had been adjusted as well. The index of agreement with EMEP observations slightly increased with the model resolution, but the results were not so significant for nitrogen dioxide, and underestimation of sulphur dioxide levels remained. The improvement was more significant for the European air quality database (AirBase)[5] stations that included urban and suburban typologies, although there was a large dependence on the selected emission vertical profile (especially for sulphur dioxide). The sensitivity of model results to emissions with the improved resolution was highlighted.

20. A representative of MSC-E presented the recent developments of the Global EMEP Multi-media modelling system (GLEMOS) with respect to heavy metals and POPs. The new high resolution EMEP grid had been implemented in GLEMOS as well. A lot of work on emissions had been performed to deal with the new grid resolution. Global model results for heavy metals and POPs were presented to assess the contributions of the EMEP countries. For mercury, an experiment comparing global (1° x 1°) and regional (0.2° x 0.2°) modelling results with observations had been carried out, demonstrating the added value in improving model resolution, as confirmed by the heavy metal country-specific pilot studies. A multi-media model approach was currently under development for mercury. In the future, work on the evaluation of "secondary sources" (resuspension) was foreseen. Assessment of heavy metals and POPs impacts on human health and ecosystems would be performed as well.

21. It was confirmed that GLEMOS code would be accessible to the public, and code design and documentation were under preparation.

B. EURODELTA project and national model experiments

22. A representative of France presented the results of the regional model inter-comparison EURODELTA3[6] project. Seven modelling teams in Europe had participated in the first phase, which had focused on the evaluation of models' parameterizations, assessing their performances against data from the EMEP field campaigns. The added value of EURODELA3 was that model results were obtained with rigorously similar input data (meteorology, emissions and boundary conditions). Therefore,

[5] See http://www.eea.europa.eu/data-and-maps/data/airbase-the-european-air-quality-database-7.

[6] See http://www.psi.ch/lac/eurodelta3.

the model results could be compared to evaluate their internal parameterizations, considering a set of relevant indicators measured during the EMEP IOPs.

23. In 2014, a report on those results would be published, as requested in the 2014–2015 workplan for EMEP. A coefficient of variation of model responses had been calculated to help assess the spread and robustness of the modelling approaches. It was lower than 20 per cent for most of the variables. Analysis of PM modelled chemical composition had been considered to assess strengths and weaknesses of each participating model. Suggestions for further improvement of the European chemistry-transport models responses were discussed, and the rather good behaviour of the EMEP model, for all the variables considered, was welcomed.

24. A representative of Spain presented deposition results from the EURODELTA3 exercise. Larger dispersion of model results for wet and dry deposition than for air concentrations had been observed, and performance had been lower. Unfortunately, large parts of the EMEP domain were not covered by deposition measurements, which limited the analysis. For dry deposition, no observations were available, therefore it was not possible to draw lessons from model results. It was suggested that a link with the Working Group on Effects and especially with the International Cooperative Programme on Effects of Air Pollution on Natural Vegetation and Crops could be tightened to obtain more deposition data.

25. The Task Force acknowledged the huge amount of work that had been undertaken to obtain that extensive assessment of current models performances in Europe. The substantial involvement of the national experts who ran the models and participated to the inter-comparison analysis was stressed and welcomed.

26. An expert from the Netherlands gave a presentation on how to interpret trends in secondary inorganic compounds using chemistry transport model results, using a study that had been performed with the regional chemical transport LOTOS-EUROS model.[7] The ability of such models to reproduce non-linear chemical responses over 20 years (1990–2010) had been assessed. For several compounds (nitrogen dioxide and sulphur dioxide) the model significantly underestimated concentrations at the beginning of the 1990s. Generally, trends were correctly captured except for nitrogen dioxide. Finally, results from a source apportionment experiment to track the impact of emissions of three different countries were presented.

27. A representative of Italy presented results obtained from the Population EXposure to Polycyclic Aromatic Hydrocarbons (PAHs, EXPAH)[8] project, focused on the assessment of urban exposure to PAHs in Rome. The project was gave an opportunity to develop a high resolution emission inventory over the Lazio region.

V. Trend analysis

A. General overview

28. A specific session was dedicated to trends analysis studies in EMEP and other programmes, including GAW. Trend assessments were based on observational data and on model simulations results. A number of issues in performing trend analysis were identified during the session. That was the first step towards a common approach to deriving trends in

[7] See http://www.lotos-euros.nl/.

[8] See http://www.ispesl.it/expah/prj.asp.

air quality in Europe based on joint contributions from the observational and modelling communities. Results from that work would be a contribution to the 2016 assessment report.

29. The Task Force experts agreed on the relevance and the need for the initiative, and would be invited to participate in a Task Force technical workshop to be organized in Paris in October 2014 to review in detail the methods and available materials and to begin the trend analysis work. The results would be reviewed during the next Task Force annual meeting in spring 2015 (date and place to be determined).

30. A representative of Germany reported on good practices in trend analysis. He recalled that it was essential to have long time series with full time resolution in order to detect trends and to develop expertise, not only with statistical design experiments, but also in visual pattern identification, which remained a robust approach to detect trends.

31. Representatives from CCC and MSC-W presented a synthesis report on trends in ozone, aerosols and deposition, and aerosol optical depth (AOD) calculated on data submitted to the database hosting observation data of atmospheric chemical composition and physical properties (EBAS):[9]

(a) *Ozone*: Ozone observations showed a consistent picture over Europe, many stations reporting a positive ozone trend before 2000 and a flattening trend afterwards. Results of trends analysis for ozone differed regionally, depending on the choice of reference period, statistics (minimum, maximum, percentile) and the statistical method used for trends calculation (linear trends, polynomial trends, multi-parameter regression, etc.). Modelling trends were presented and compared to observations at EMEP stations. The model had reproduced correctly the observations with downward summer trends for the 2000–2011 period. However, the situation was more problematic for the period from 1990 to 2000, mainly because of the lack of data and questionable boundary conditions for models (how to deal with trends in boundary conditions). It was noted that Mace Head[10] correction applied at the boundary of the EMEP model could be inappropriate for some locations (for instance, mountainous sites had specific behaviour);

(b) *Aerosols*: Trends in observed PM_{10} and $PM_{2.5}$ were presented over the 2000–2011 period, with a decrease, but with a flat pattern over the past three years that was not clearly explained. The EMEP model reproduced the same behaviour. “Stack plots” over short periods that covered the overall one, were presented to refine understanding. Impact of emission reductions in sulphur and nitrogen compounds was confirmed by the trends. The study demonstrated that the selection of sites for the trends had a huge impact on the conclusions;

(c) *AOD*: some results from the Task Force on Hemispheric Transport of Air Pollution experiments were presented.

Overall, it was observed that trend analysis could serve as a tool to deliver observational evidence of the achievements of the Protocol to Abate Acidification, Eutrophication and Ground-level Ozone (Gothenburg Protocol). Consistency between models and measurements also gave an additional confidence in the reported emissions.

32. A representative from MSC-E discussed trends in heavy metals and POPs depositions. Observed and modelled data at EMEP stations had been investigated. Model simulation covered the period 1990–2010, while observations covered two periods: 1990–1992 and 2008–2010 (for cadmium). Methodological aspects were detailed and

[9] See http://ebas.nilu.no/.

[10] See http://agage.eas.gatech.edu/Stations/macehead.htm.

various situations in terms of trends were presented. Factors affecting long-terms trends were analysed, including anthropogenic emissions, meteorology and secondary emission sources (for instance, resuspension). The effect of various factors on deposition could vary significantly from site to site. The large influence of transboundary transport on trends in deposition had been demonstrated, with various impacts on EMEP countries.

33. A representative from EEA presented the Agency's activities in the field of air quality, and especially the AirBase database of observations collected in EU member States according to the respective European legislation. In all, 8,626 stations were included in the trends analysis by EEA. The annual air quality reports published each year by EEA provided trends and time series for various air quality indicators. To answer a number of policy relevant questions, EEA had held a workshop on trends in 2012 that had covered several aspects of interest for the Task Force: quality checks with spatial and temporal coverage; temporal aggregation and indicators; accounting for meteorological variability; and the impact of heterogeneity in the spatial distribution of stations.

34. The ACTRIS project leader presented aerosol properties decadal trends that had been obtained from various scientific worldwide networks (GAW, Interagency Monitoring of PRotected Visual Environments (IMPROVE) and ACTRIS). A number of scientific papers had already been published. Three different analytical methods had been tested that allowed assessment of the sensitivity of the trends to the applied method. The PM number concentrations decrease in the United States was much more pronounced than in Europe. However, no general agreement between trends in concentration numbers and in scattering and absorption coefficients had been observed. That point should be carefully considered in trends analysis.

35. The European Aerosol Research Lidar Network to Establish an Aerosol Climatology (EARLINET) project leader presented trends from LIDAR aerosol measurements. She introduced the variables and indicators measured by the network. Climatological studies based on EARLINET observations had started. Data could be used for trends analysis if annual or seasonal averages were considered.

B. National contributions

36. An expert from Italy presented the results of long-term measurements at the Monte Martano background station that showed PM pollution at that site, which was regularly influenced by dust events.

37. An expert from Germany presented gaseous compounds time series observed at the Hohenpeissenberg station. Monthly anomalies were clearly detectable over the past 20 years (1999–2009). There had been a decreasing trend in the presence of ozone at elevated stations since 2000, and a clear change in the ozone seasonal cycle with spring peaks becoming more pronounced. Decreasing trends for carbon monoxide and sulphur dioxide were also shown, while no trend appeared for nitrogen oxides.

38. An expert from the United Kingdom outlined trends in VOCs in the United Kingdom, where 12 sites were in operation. A total of 26 chemical compounds had been analysed, with a downward trend detected in many of the components. An analysis had also been conducted to trace hydrocarbons that helped in tracking activities (road transport, leakage of natural gas, etc.). A comparison with emission inventories was also presented.

39. An expert from Switzerland gave a presentation on meteorological adjustment in ozone trends.

40. An expert from France presented trends in inorganic compounds deposition in France over the past two decades. A significant and homogenous decrease in sulphur

concentration and deposition had been observed, but only a limited decrease had been observed for nitrate (and an increase in spring). That work had been used to build up a predictive statistical model to assess emission reduction strategies.

41. An expert from Belgium provided details on ethane observations at four sites in the Alps. With a two-month life time, that pollutant was considered as a good tracer of anthropogenic activities. Tropospheric partial column data had been compared with in situ measurements.

42. An expert from Belarus talked about formaldehyde measurements in support of the development of a new limit value for policy use. Formaldehyde was measured at 52 sites in 16 cities. Varying trends had been detected in various cities. A sectoral-oriented approach (industry, road traffic) to interpret the results had been developed.

43. An expert from Italy presented an exhaustive analysis of trends of the pollutants measured at the Montelibretti EMEP station. The site had become more and more influenced by anthropogenic sources. It was important to take into consideration the change in the station environment when performing trend analysis. In the present case, keeping that site could be an issue for the country monitoring strategy.

44. An expert from the Czech Republic gave an overview of observations available at the Kosetice observatory related to both air pollutant concentrations and effects on ecosystems. The station had been in operation for 25 years and was included in many European and international initiatives (the Integrated Carbon Observation System (ICOS),[11] the Integrated non-CO_2 Greenhouse gas Observing System (InGOS),[12] etc.). The Mann-Kendall statistical test had been used to derive trends in a robust way. There was a decreasing trend for sulphur compounds, while no trend could be found for nitrogen dioxide (although nitrogen emissions had decreased). A slight decrease in the ozone mean had also been observed, but no trend had been found for PM_{10}. The significant reduction of VOCs emissions in Europe was reflected in the measured concentrations.

45. An expert from Poland presented trends based on the Mann-Kendall tool. Decreasing trends for sulphur compounds were clearly highlighted. Comparisons with model results had been performed, but for nitrogen compounds discrepancies between measured and modelled results had been observed (i.e., the model was too “optimistic”).

46. An expert from Italy gave an overview of trends results from the air quality monitoring network in Italy, using data from observations and model simulations to analyse the changes. The model calculations had been performed for years 2003, 2005 and 2010. PM_{10} concentrations had been found to have been underestimated by the model. That demonstrated the sensitivity of modelled trends to changes in emissions when they were recalculated.

47. An expert from Denmark gave an overview of sulphur and nitrogen trends results based on observations at background stations and results from the Danish Eulerian hemispheric model. For ammonia, downward trends were consistent with changes in emissions. Deposition had decreased with an increase in precipitation. Sulphur compounds had significantly decreased, especially between 1985 and 1998, in line with decreasing Danish emissions. A 25 per cent decrease in total nitrate had been observed since 1990. Strong links with trends in meteorological data were highlighted.

48. An expert from Germany presented a 20-year trend analysis of PM measurements at the Melpitz EMEP station. Seasonality and the influence of wind patterns had been studied.

[11] See http://www.icos-infrastructure.eu/.

[12] See http://www.ingos-infrastructure.eu/.

Comparing chemical compounds results with wind patterns helped in interpreting the impact of various sources.

49. An expert from Sweden gave an overview of trends in wet deposition in Sweden. Results for 346 sites had been analysed for the period between 1955 and 2011.

50. A representative of Finland, presented trends (1994–2011) in POP concentrations measured at two EMEP sites in Finland and Sweden. Linear regressions of monthly concentrations time series had been calculated, showing significantly decreasing trends for several POPs.

51. An expert from Italy presented some observations of atmospheric chemical composition at the GAW Monte Cimone station. Decreasing concentrations of ozone and VOCs had been observed since 1996.

C. Conclusions

52. The Chair of the Task Force defined the future steps in the work on trends analysis. A follow-up workshop on trend analysis and development of the harmonized approach was planned to be held on 14 and 15 October 2014 in Paris.

53. The objectives of the trends work were summarized as follows:

(a) *Sharing experience and skills for interpretation of the trends*: National expertise was essential to understand why some discrepancies existed between emission reductions and trends and the differences between modelled and observed trends;

(b) *Creating a common framework to derive trends (from modelling and measurements)*:

(i) Sharing best practices;

(ii) Setting assumptions and choices (domain, number of stations, quality of historical sets, inputs of models, etc.);

(iii) Setting the framework for modelling by EURODELTA3 (to avoid duplication of work);

(c) *Applying that common framework at both the European (EMEP centres) and at the national level (Parties)*: Parties would carry out extensive analyses with more stations (including urban) that would effectively complement the European-wide analysis. High-resolved modelling results could be an added value as well;

(d) *Including all atmospheric compounds of interest for the Convention in trends analysis*.

54. Trends analysis performed by the Task Force members would be proposed as a contribution to the 2016 Assessment Report. Moreover, if possible, results would be published in a scientific journal (for instance, as a special issue of *Atmospheric Chemistry and Physics*)[13] and included in the Task Force report.

[13] See http://www.atmos-chem-phys.net/volumes_and_issues.html.

VI. Future work

55. Following discussion on the activities to be reflected in the 2014–2015 workplan for the EMEP Steering Body, the Task Force agreed to propose the following workplan items for the remaining part of 2014 and for 2015:

(a) To build up the appropriate framework and support for the implementation of the updated EMEP monitoring strategy, by undertaking the following actions:

(i) Assessing monitoring networks implemented in the Parties thanks to the implementation index proposed by CCC for level 1 sites (task for: CCC/Parties);

(ii) Providing recommendations for the development of similar approaches suited to the level 2 network (CCC);

(iii) Developing cooperation with the atmospheric composition research community and the existing operational monitoring networks, especially for short-lived climate forcers monitoring (e.g., GAW) and ACTRIS infrastructure;

(b) To strengthen monitoring activities and implementation of the EMEP monitoring strategy by:

(i) Organizing a workshop on good practices in analytical measurement techniques (CCC/Task Force)

(ii) Planning the next IOP for 2016 and preparing its coordination with other projects (CCC);

(c) To provide guidance on and assistance for the implementation of new case studies on heavy metal pollution assessment, aimed at bringing together the know-how for policy support from the emission, measurement and modelling communities, and to assess and analyse the results and overall success of the exercise (MSC-E/Task Force);

(d) To publish and promote the results of the first phase of the EURODELTA3 modelling exercise (model evaluation) and to organize and coordinate its follow-up focused on model ability to reproduce past trends in air pollutant concentrations (Task Force/Parties/MSC-W);

(e) To organize and coordinate a systematic trend analysis of air pollutants indicators over the past 20 years, based on monitoring observation data, modelling results and national expertise (Task Force/Parties/MSC-W/MSC-E/CCC);

(f) To improve cooperation with the Task Force on Hemispheric Transport of Air Pollution, contributing as far as possible to the interpretation of the results obtained in the modelling exercise over the European domain and eventually providing regional model runs (Task Force, Parties);

(g) To improve cooperation with the Working Group on Effects, through exchange of results and data dedicated to transboundary air pollution impact assessment. Common work should be organized for the Assessment Report (Task Force);

(h) To report on progress at the thirty-ninth session of the EMEP Steering Body (Task Force/MSC-W/CCC/Parties);

(i) To consider options and opportunities for enhancing the visibility and promotion of the work of the Task Force, e.g., by means of newsletters or conferences (Task Force/Parties/Centres);

(j) To hold its sixteenth meeting in Poland, in April 2015, and to report on its outcomes to the EMEP Steering Body at its thirty-ninth session in 2015 (Task Force).