

UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE
CONVENTION ON LONG-RANGE TRANSBOUNDARY AIR POLLUTION

International Co-operative Programme on
Assessment and Monitoring of Air Pollution Effects on Forests (ICP
Forests)

MANUAL

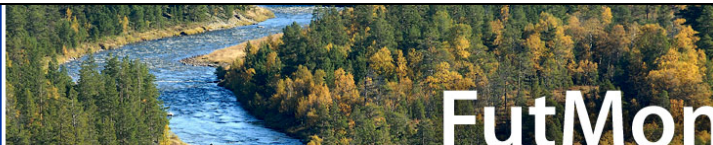
on
methods and criteria for harmonized sampling, assessment,
monitoring and analysis of the effects of air pollution on forests

Part III
**Quality Assurance within the
ICP Forests monitoring programme**

updated: 05/2010

Focus on: Part III, Quality Assurance

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Quality Assurance

“It is difficult to imagine a more bizarre academic dispute. Where exactly are 42 weather monitoring stations in remote parts of rural China?”

F. Pierce, The Guardian, Monday 1 February 2010

Climate of fear

“Scientists must not be so naive as to assume that the data speak for themselves. “

Nature **464**, 141 (11 March 2010) | doi:10.1038/464141a;
Published online 10 March 2010



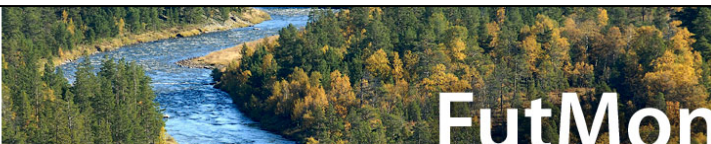
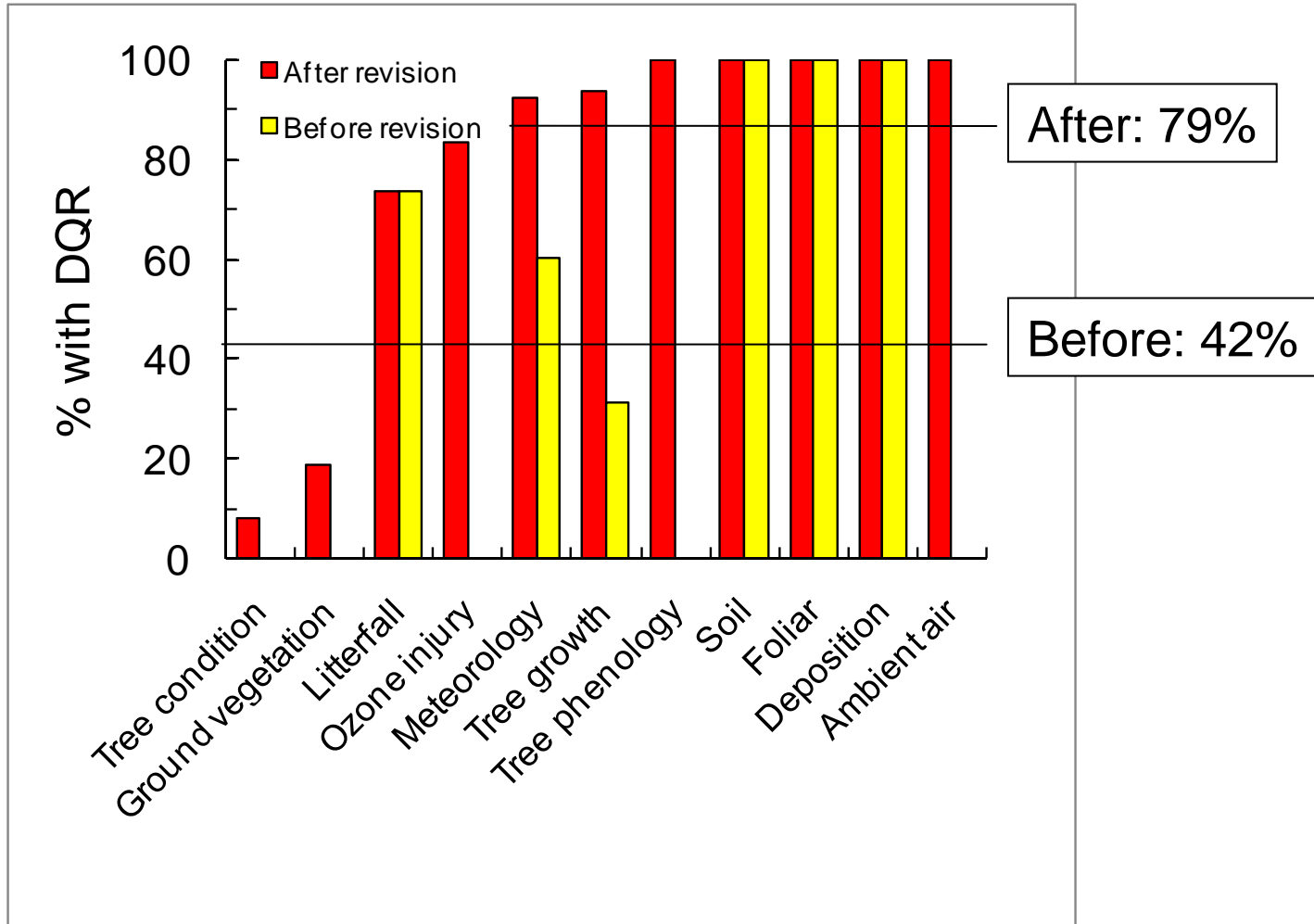
Indicators of data quality

Four indicators can be considered. They are specific for each investigation and measurements

1. Measurement Quality Objectives (MQOs): expected level of precision/accuracy for individual observations;
2. Data Quality Limits (DQLs): the minimum acceptable frequency of observation within the MQOs;
3. Plausibility Limits (PLs): the range of acceptable values for observations. They have to be updated continuously;
4. Data Completeness Limits (DCLs): the minimum acceptable frequency of data within PLs.



Indicators of data quality



Training courses

Training courses are occasions at which experts (i) are familiarized with the methods requested to be applied; (ii) receive instructions for the implementation of new methods; (iii) receive training for enhancing accuracy and precision, and for handling of situations where accurate measurements are difficult to obtain; and (iv) receive further information and training as a consequence of unsatisfactory performance after an intercomparison test. Training courses have to be developed for each investigation.



Intercomparison rounds

Intercomparison rounds are the occasions where the performance of individual observers/labs is compared against a defined standard. The standard is in most cases defined as closeness of agreement between the arithmetic mean of a large number of test results and the true or accepted reference value (**'trueness'**). Since in most cases, the 'true' value is not known, the intercomparison compares the results of individual entities (laboratories, observers) with the general mean across all entities.

- Field sampling
- Field assessment
- Lab ring tests



Counter-actions

Different counter-actions should be foreseen according to the severity of the problem encountered and the investigations being concerned. In general, problems are encountered at the intercomparison rounds and during the data submission phase.

- Warnings > re-measurements
- Further training and assistance
- Requalification
- Flagging of data
- Exclusion from data processing at international level

