

Für Mensch & Umwelt

Umwelt 
Bundesamt

36th ICP M&M TASK FORCE MEETING

Status of Steady-State Modelling:

**Discuss single parameters of the
equations**

Coordination Centre for Effects (CCE)

German Environment Agency

Section II 4.3 - Air Pollution Control and Terrestrial Ecosystems

Discuss single parameters of the equations

GENERAL OBJECTIVE

- Def. of CL: “a quantitative estimate of an exposure to one or more pollutants below which significant harmful effects on specified sensitive elements of the environment do not occur according to present knowledge” (Nilsson and Grennfelt 1988)
- Are we there yet?

SPECIFIC TARGETS FOR THE FUTURE

- Extend the Steady-State-Approach to other Ecosystems
- Include effects of climate change if possible
- Include studies from other eco regions

CURRENT STATUS OF CCE

- Technically ready, learning from the creation of the CL Background DB
- Collecting information from the NFC via CfD

Critical Load according to the SMB method

Eutrophication:

$$CL_{nut}(N) = N_i + N_u + N_{le(acc)} + N_{de}$$

Acidification:

$$CL_{max}(S) = BC_{dep} - Cl_{dep} + BC_w - Bc_u - ANC_{le(crit)}$$

$$CL_{max}(N) = N_i + N_u + \frac{CL_{max}(S)}{1 - f_{de}}$$

Grouping the single parameters:

Parameters describing ecosystem characteristics:

$$N_i; N_{de}; N_u; BC_u; BC_w; BC_{dep}; Cl_{dep}$$

Parameters mostly altered by the chosen Critical Limit:

$$N_{le(acc)}; ANCl_{le(crit)}$$

Potential research questions:

Parameters describing ecosystem characteristics:

- Are we covering all relevant processes for the selected receptor
- Does our models/equations fit to the reality
- Which measurement data/ networks can support or oppose or estimations
- How can we be more transparent in relating our estimations to classical input data (e.g. soil classification data)

Parameters mostly altered by the chosen Critical Limit:

- How can we prove our receptor is really sensitive to the chosen Critical Limit
- Which experiments can support or oppose our choice of Critical Limit
- Can we link the choice of Critical Limit to a certain site factor configuration
- How to systematically filter unrealistic results (high N leaching rates)
- Can we extent the proposed Critical Limits from the Manual or be more specific

Questions for group discussion:

- Which parameters need urgent revision or clarification in the Mapping Manual
- Which parameters are potentially open for effects of Climate Change but not directly linked yet
- Which receptors are not well described/ covered by SMB equations
- Which fixing/neutralizing processes are not well understood