Call for Data 2015-17: Instructions

Version 12 Oct 2016

Coordination Centre for Effects (CCE)

1. Introduction

At the 1st Joint Session of the Steering Body to the EMEP and the Working Group on Effects (Geneva, 14-18 September 2015) the Coordination Centre for Effects was requested to issue a Call for Data in the autumn of 2015 with a deadline in 2017. As announced at the ICP M&M meetings in Dessau (19-22 April 2016), the **deadline is set at 30 January 2017**.

This document contains the instructions on how to reply to this Call for Data 2015-17. The call asks for (updates of) critical loads of acidification (SMB model), eutrophication (CLnutN from SMB or CLempN), and critical loads of N and S for protecting plant species diversity.

Please note:

1. Even if nothing has changed in the derivation of (some of) your critical loads, and they are still valid, you have to re-submit them. There will be no mixing and merging of older and the new data base.
2. Use only the latest database template for submitting your critical loads.

2. Documentation and other general information

To facilitate the integration into the European database at the CCE, you should use the Access database template developed by the CCE. This template is described in Section 5 and can be downloaded from the CCE website. Excel-files and comma-delimited text files will be accepted, if the column headers are identical to the variable names of section 5.

The documentation should substantiate and justify sources and methods applied in response to this call, but be restricted to the data sources and deviations from the Mapping Manual (ICP M&M, 2016).

Please email your submission to jaap.slootweg@rivm.nl. The compressed (zipped) data can be attached to the email. Since we occasionally experienced blocking of emails, due to size or spam-filters, a submission should be accompanied by a separate, text-only mail to be able to verify the arrival of the submission.

3. Types of Critical Loads and how to submit them

We now distinguish three types of critical loads (variable names are also used in the Tables in Section 5):

(1) Critical loads of acidity *(CLacid)*: This is characterised by a Critical Load Function (CLF) of S and N (See Figure V.3 in the Mapping Manual) and is quantified by by $CL_{max}S$, $CL_{min}N$ and $CL_{max}N$, and generally computed by the SMB model.

(2) Critical loads of eutrophication *(CLeut)*: For eutrophication by N the critical load can either be computed by the SMB model (formerly known as $CL_{nut}N$) or by an empirical CL (as summarised in Bobbink and Hettelingh 2011) (formerly known as $CL_{emp}N$). In line with the definition of a critical load, if both a $CL_{nut}N$ and a $CL_{emp}N$ are determined for same ecosystem, the CL of eutrophication, denoted as $CL_{eut}N$, is the minimum of both. And only $CL_{eut}N$ should be reported.

(3) Biodiversity critical loads *(CLbdiv)*: Vegetation modelling can be used to establish limits of chemical variables (e.g., a minimum pH and maximum N concentration) at which typical/desired/key plant species for a habitat/ecosystem can thrive/survive. Values for N and S deposition combinations, i.e. a critical load function, can then be derived with soil-

chemical models (e.g. SMB) and associated data. These biodiversity N and S critical loads are named (in analogy to acidification) CLN_{min}, CLS_{max}, and CLN_{max}, CLS_{min} (see Figure 1).

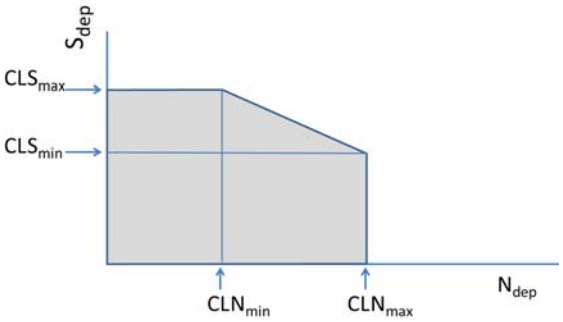

Figure 1: Critical load function for biodiversity, characterised by the two points (CLN_{min},CLS_{max}) and (CLN_{max},CLS_{min}) (see Chapter 3 in CCE Status Report 2015, www.wge-cce.org).

4. The grid system

An *ecord* is the part of an ecosystem that lies entirely in a single **0.10°×0.05° Longitude-Latitude grid cell**. A grid cell is referred to by its lower-left (south-west) grid coordinates in decimal degrees. You will need to overlay the grid with your maps containing the data to determine the locations (and potentially splitting up) of your critical loads.

5. Access Database template

The Tables in the database have different purposes and are listed below.
ecords – General site data, such as coordinates.
CLacid, *CLeut*, *CLbdiv* – Critical loads, one table for each type, with its related limits.
SiteInfo – General background data for the site.

Table 1. Attributes of the database-table '*ecords*'

Variable	Explanation	Note
SiteID	Unique(!) identifier of the site	1)
Lon	Longitude (decimal degrees)	2)
Lat	Latitude (decimal degrees)	2)
EcoArea	Area of the ecosystem within the grid cell (km^2)	3)
Nmethod	Method with which $CL_{eut}N$ of the site is derived: 2 – modelled nutrient nitrogen 4 – empirical N critical load 8 – any other method	
Protection	0: No specific nature protection applies 1: Special Protection Area (SPA), Birds Directive applies 2: Special Area of Conservation (SAC), Habitats Directive applies 3: SPA *and* SAC (1 *and* 2) 4: SPA *or* SAC (1 *or* 2) [don't know which one(s)] 9: A national nature protection program applies (but *not* 1 to 4!) -1: protection status unknown	
EUNIScode	EUNIS code, max. 6 characters	4)

Notes on Table 1 (see last column):

1) Use integer values only (4-bytes)!
2) The geographical coordinates of the site or a reference point of the polygon (sub-grid) of the receptor under consideration (in decimal degrees, i.e. 48.533 for 48º31', etc.);
3) Please don't submit spurious records with an ecosystem area smaller than 0.5 ha, unless it has relevance other than for exceedance calculations (e.g. a Natura 2000 site). Furthermore, make sure that the total ecosystem area does not exceed the size of the land area of your country in the respective grid cell;
4) You can find information on EUNIS at http://eunis.eea.eu.int/

Table 2. Attributes of the database-table '*CLacid*'

Variable	Explanation
SiteID	Identifier of the site (see *ecords* Table)
CLmaxS	Maximum critical load of sulphur (eq ha^{-1} a^{-1})
CLminN	Minimum critical load of nitrogen (eq ha^{-1} a^{-1})
CLmaxN	Maximum critical load of nitrogen (eq ha^{-1} a^{-1})
Crittype	Chemical criterion used for acidity CL calculations: =1: molar [Al]:[Bc]; =2: [Al] (eq m^{-3}); =3: base sat.(-); =4: pH; =5: [ANC] (eq m^{-3}); =6: molar[Bc]:[H]; =7: molar [Bc]:[Al]; =8: molar [Ca]:[Al]; =11: molar [Al]:[Bc] AND [Al]>0.1meq/L; = –1: other
Critvalue	Critical value for the chemical criterion given in 'Crittype'

Table 3. Attributes of the database-table '*CLeut*'

Variable	Explanation
SiteID	Identifier of the site (see *ecords* Table)
CLeutN	Critical load of eutrophication (eq ha^{-1} a^{-1})
cNacc	Acceptable (critical) N concentration if CLnutN calculation (meq m^{-3}) only if CLeutN = CLnutN! (otherwise, if CLempN is used, set to –1)

Table 4. Attributes of the database-table '*CLbdiv*'

Variable	Explanation
SiteID	Identifier of the site (see *ecords* Table)
CLNmin	Minimum critical load of nitrogen (eq ha^{-1} a^{-1})
CLSmax	Maximum critical load of sulphur (eq ha^{-1} a^{-1})
CLNmax	Maximum critical load of nitrogen (eq ha^{-1} a^{-1})
CLSmin	Minimum critical load of sulphur (eq ha^{-1} a^{-1})
HScrit	Value of the Habitat Suitability index ud for deriving CLbdiv

Table 5. Attributes of the database-table '*SiteInfo*'

Variable	Explanation
SiteID	Identifier of the site (see *ecords* Table)
thick	Thickness (root zone!) of the soil (m)
nANCcrit	The quantity $-ANC_{le(crit)}$ (eq ha^{-1} a^{-1})
Cadep	Total deposition of calcium (eq ha^{-1} a^{-1})
Mgdep	Total deposition of magnesium (eq ha^{-1} a^{-1})
Kdep	Total deposition of potassium (eq ha^{-1} a^{-1})
Nadep	Total deposition of sodium (eq ha^{-1} a^{-1})
Cldep	Total deposition of chloride (eq ha^{-1} a^{-1})
Cawe	Weathering of calcium (eq ha^{-1} a^{-1})
Mgwe	Weathering of magnesium (eq ha^{-1} a^{-1})
Kwe	Weathering of potassium (eq ha^{-1} a^{-1})
Nawe	Weathering of sodium (eq ha^{-1} a^{-1})
Caupt	Net growth uptake of calcium (eq ha^{-1} a^{-1})
Mgupt	Net growth uptake of magnesium (eq ha^{-1} a^{-1})
Kupt	Net growth uptake of potassium (eq ha^{-1} a^{-1})
Qle	Amount of water leaving at the bottom of the root zone (mm a^{-1})
lgKAlox	Equilibrium constant for the Al-H relationship (log10) (The variable formerly known as K_{gibb})
expAl	Exponent for the Al-H relationship (=3 for gibbsite equilibrium)
cOrgacids	Total concentration of organic acids (m*DOC) (eq m^{-3})
Nimacc	Acceptable nitrogen immobilised in the soil (eq ha^{-1} a^{-1})
Nupt	Net growth uptake of nitrogen (eq ha^{-1} a^{-1})
fde	Denitrification fraction ($0 \leq fde < 1$) (-)
Nde	Amount of nitrogen denitrified (eq ha^{-1} a^{-1})
Prec	Annual precipitation (mm a^{-1})
TempC	Annual average temperature (°C)
CNrat	C/N ratio in the topsoil (g g^{-1})

Variable	Explanation
Measured	On-site measurements included in the data for CL calculations: 0: No measurements, 1: ICP Forest, 2: ICP Waters, 4: ICP Integrated Monitoring, 8: ICP Vegetation, 16: Other measurement programme. (if more than one of the listed possibilities applies, add the numbers!)

References:

Bobbink R, Hettelingh J-P (eds), 2011. Review and revision of empirical critical loads and dose response relationships. Proceedings of an international expert workshop, Noordwijkerhout, 23-25 Juni 2010, RIVM Report 680359002, Coordination Centre for Effects, RIVM, Bilthoven

ICP M&M, 2016. Mapping Manual, www.icpmapping.org, accessed 12 Oct 2016