PECs in soil guidance - comparison of old and new exposure assessment

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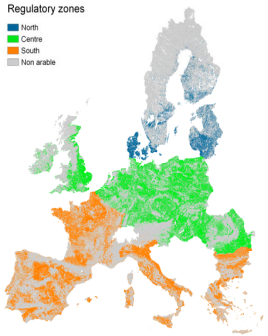
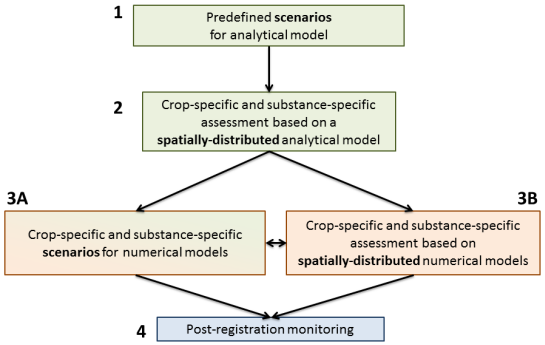
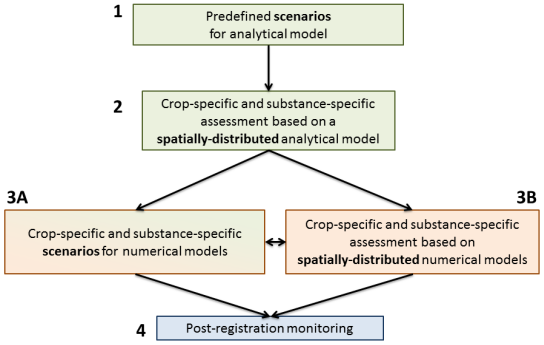
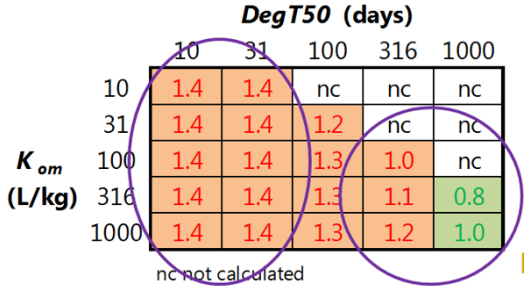




Topics

- The new assessment procedure for PECsoil
  - exposure assessment goals
  - tiered assessment scheme
- First results
- Next steps
- Conclusions

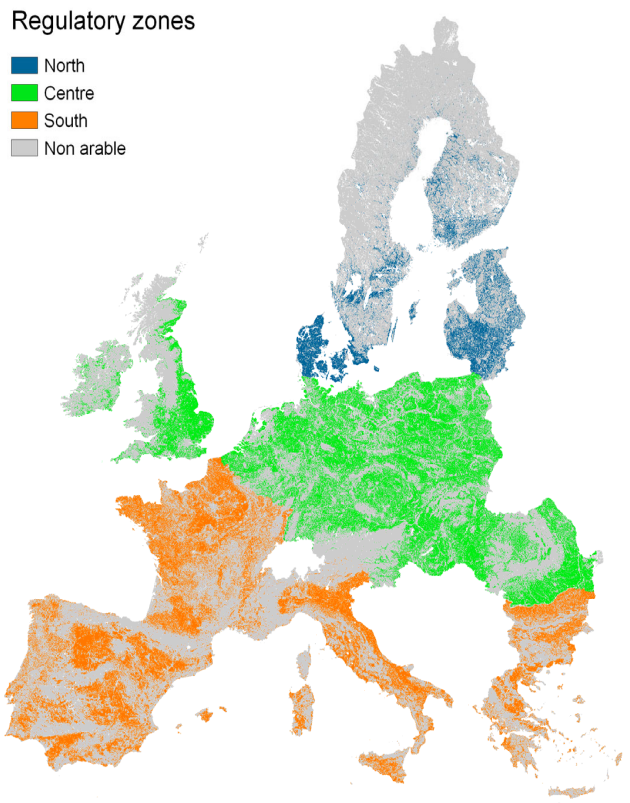




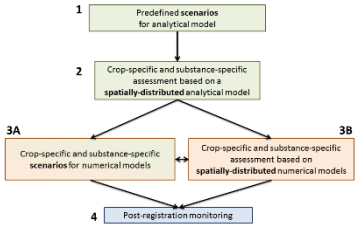
The exposure assessment goal

The exposure concentration should not exceed
the regulatory acceptable concentration
in 90% of the area of intended use
of a pesticide in the three regulatory zones

The area of intended use is approximated
by the area of the crop in which the pesticide
is intended to be used



The tiered approach



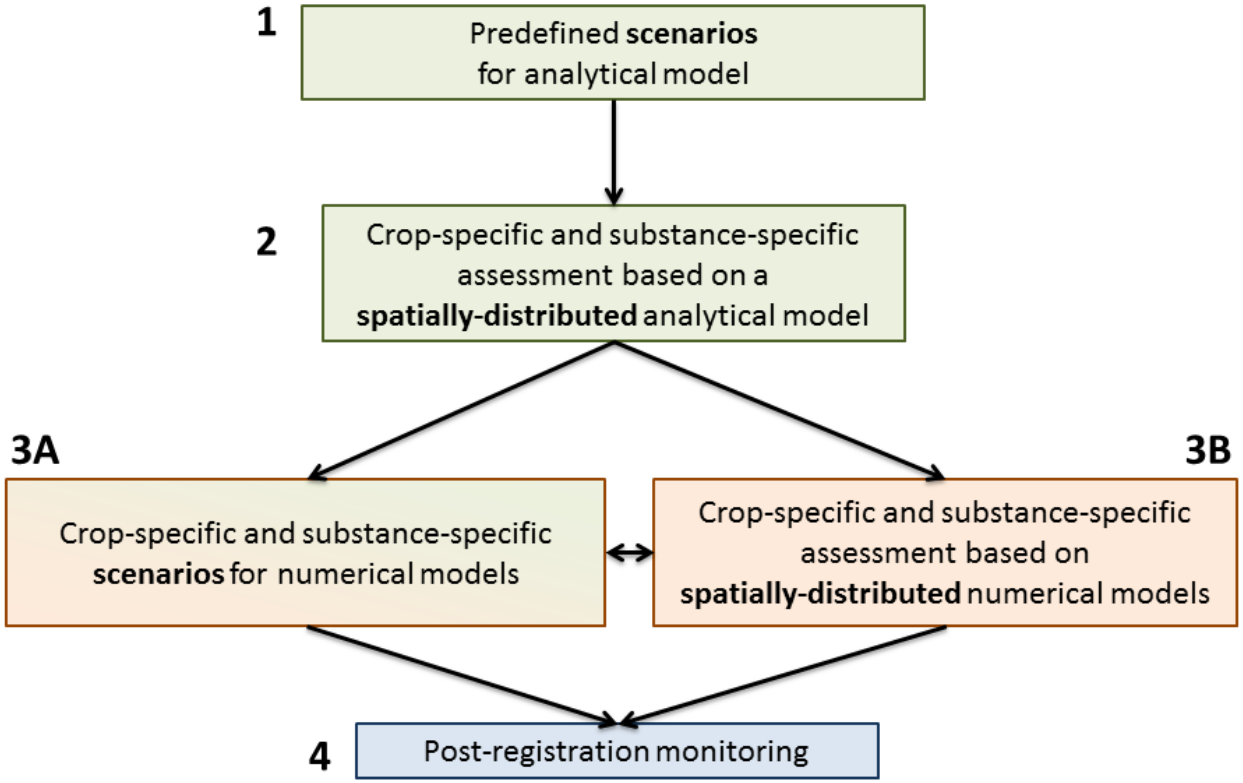
- 4 levels with increasing realism from lower to higher tier

- Different crop-types (annual and permanent) and application techniques

- Wash-off from crop canopy
    - Predefined default wash-off amounts by PERSAM at lower tiers
    - Specific wash-off amounts calculated by PEARL/PELMO at higher tier

- Substance properties consistent with FOCUS groundwater and surface water exposure assessment

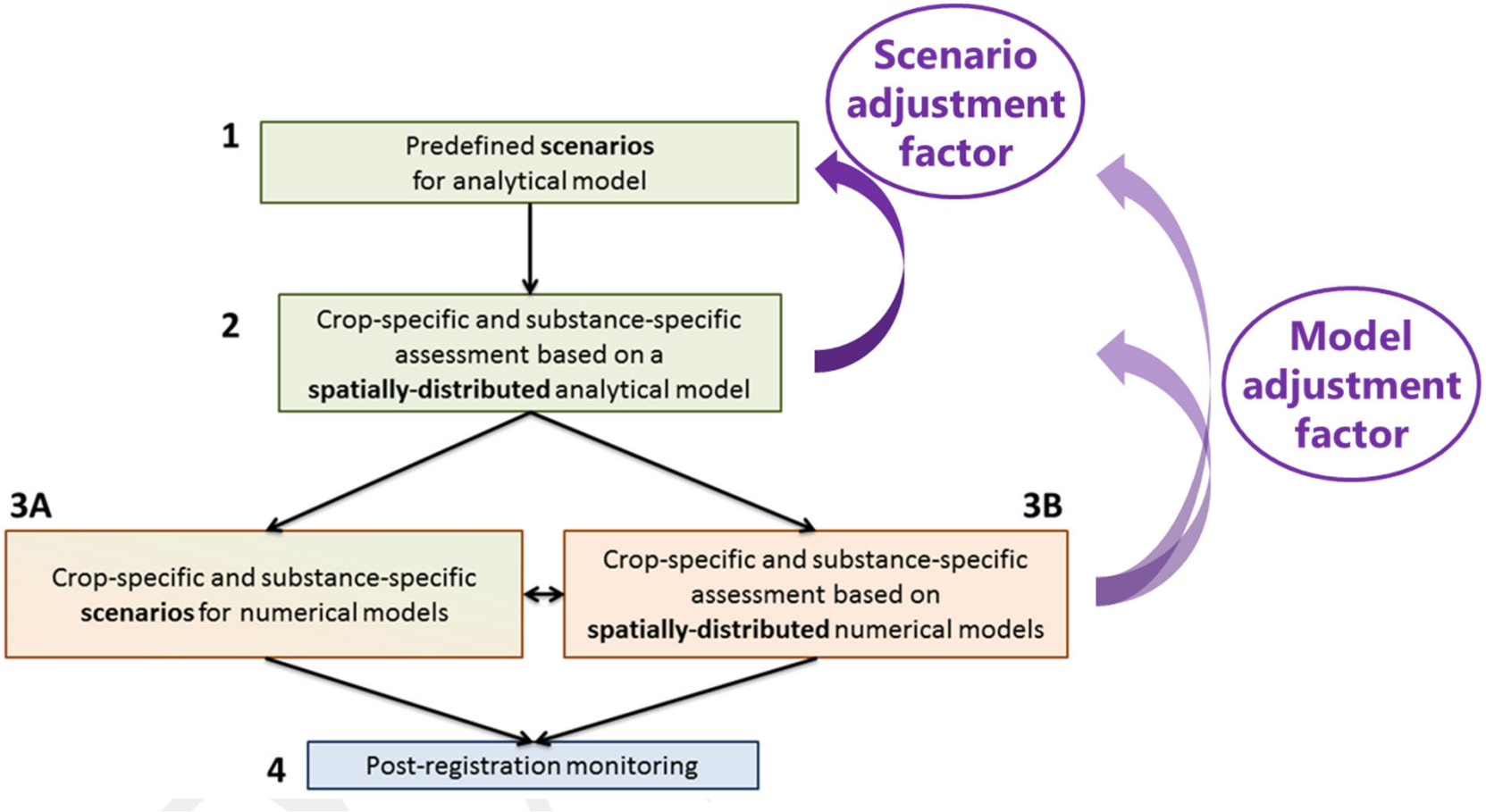
The tiered approach 1



Performed by PERSAM

Reference Tier: Performed by PEARL/PELMO

The tiered approach 2



- No need to perform or report lower tier assessment if a higher tier is selected (e.g. user may go directly to Tier-3A)

First results and impact assessment 1

Current approach

New exposure assessment goal (spatial 90th percentile)

Increase/decrease of PEC soil by factor of

- **Short living substances: ~ 1.3 – 2.1**
- **Persistent substances: ~ 0.5 – 1.5**

Foliar wash-off

Increase of PEC soil by factor of ~ 1.0 – 4.0 (on average) (depending on BBCH)

Non-uniform distribution

Increase of PEC soil by factor of 2.8 (air blast application in permanent crops only, conditionally)

New approach

Tier-3 (Reference tier)

Spatial modelling, EU data on soil, weather and crops

First results and impact assessment 2

- Impact for short-living and long-living substances:
  (Example for sunflowers in the central zone)

***DegT50* (days)**

K_{om} (L/kg)	10	31	100	316	1000
10	1.4	1.4	nc	nc	nc
31	1.4	1.4	1.2	nc	nc
100	1.4	1.4	1.3	1.0	nc
316	1.4	1.4	1.3	1.1	0.8
1000	1.4	1.4	1.3	1.2	1.0

nc not calculated

Short living substances:
Shift in **soil density**

Assumptions

- 1 kg/ha pre-emergence
- Worst-case ***DissT50*** =
  3 × geomean ***DegT50***

Persistent substances:
Addition of **leaching** & shift in ***DT50***

First results and impact assessment 3

Why are PECs higher than before? An example:

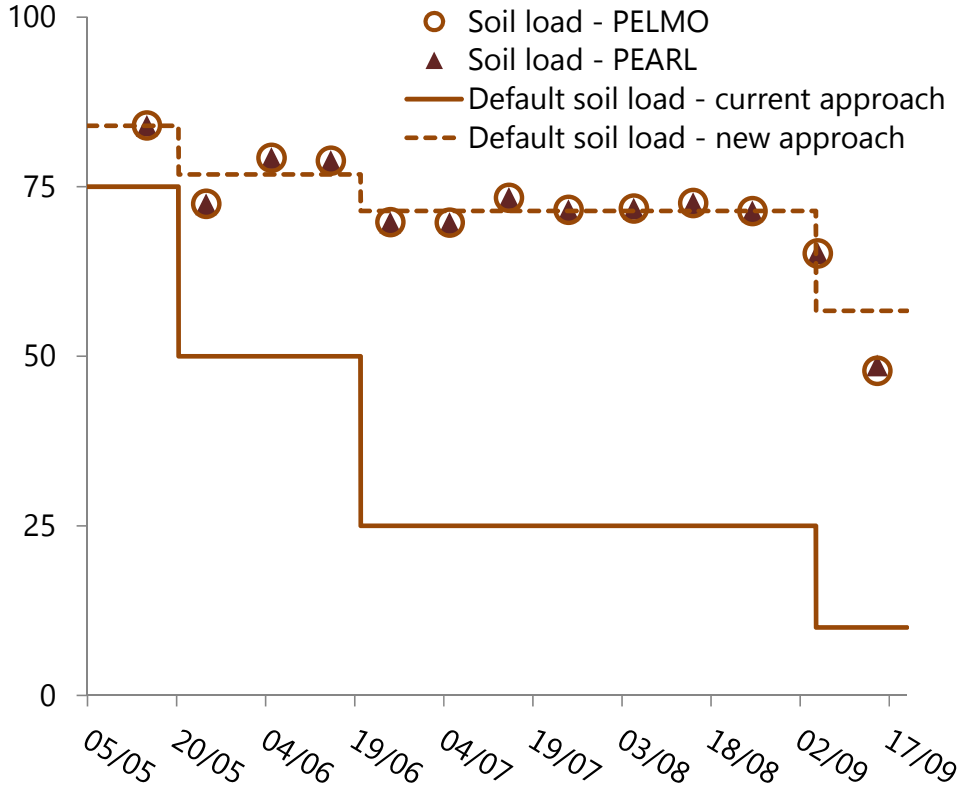
- Tier 3: Properties of spatial 90th percentile scenarios
  Maize, DT50 = 100 d, Kom = 100 L/kg, 1 kg/ha, pre-emergence

Scenario	Soil density (kg/L)	T_{avg} (°C)	Rainfall (mm)
Current approach	1.50	Undefined (20 °C if based on lab, ambient if based on field data)	Undefined
New approach – North	0.94	7.7	747
New approach – Centre	1.02	8.0	783
New approach – South	1.12	10.6	763

First results and impact assessment 4

- Foliar wash-off and soil load

  (maize, Hamburg, average of the 20 years assessment period):



Assumptions

- DT50crop = 10 d
- Wash-off factor = 0.1 mm^{-1}

Next steps

- PELMO has been submitted into FOCUS version control.
  PEARL to be submitted into FOCUS version control Q4 2018
- Revision of PERSAM
  - Contract partner selected
  - Start of contract in June 2018
  - End of contract in February 2019 (release of final PERSAM)
- PERSAM will be made available via its web site
- PELMO/PEARL will be made available via FOCUS version control
- Adoption and note taking of EFSA GD possible in Q2 2019
- Info/Training sessions by EFSA
  - Technical stakeholder meeting in June 2019
  - Webinar Q4 2019

Conclusions 1

- DegT50 aligned with other exposure assessments
- Consistent handling of substance properties (DegT50, Kom) depending on soil properties (pH)
- Refinement options at Tier 3A (numerical models)
- Non-spray applications
  (e.g. soil incorporation of granules and small seeds)
- Non-uniform applications in annual crops
  (e.g. row treatments or crops grown on ridges)
- PEARL & PELMO harmonized further with respect to crop canopy processes

Conclusions 2

- On overall the 1-scenario calculation in the current procedure is replaced by a 3-scenario calculation (North-Centre-South) in the new procedure

- Dependent on the compound properties and the scenario the new procedure may be more conservative. However, especially for persistent substances the result could be less conservative than the current procedure (leaching out of the topsoil is now included in the assessment)

- Until new ecotox effect guidance is available, the PECs in soil are calculated for total content (in line with the current procedure)
  - the ecotoxicological averaging depth is 5 cm
  - there is no need for pore water exposure assessment

- No need to perform or report lower tier assessment if a higher tier is selected (e.g. user may go directly to Tier-3A)

Overall Conclusion

- The EFSA PECs in soil GD takes environmental variability into account and provides guidance for special situations and refinement options which are not available in the current procedure.

- The science in the EFSA GD is a substantial step forward compared to the current PECs in soil procedure and improve the exposure assessment in Europe.

Acknowledgements

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Disclaimer - the views expressed in this presentation are those of the author, and not those of EFSA.

Thank you very much for your attention!