



Daisy 7 launch

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What's new

- Codebase dragged out of the 90s
 - Github, cmake, new installers
 - Note: New TextPad instructions
 - Thanks Silas
- Technical documentation
 - A10 replacement
 - Thanks Merete and Maja
- Bug fixes
 - SOM, NH₄, m.m.
 - Thanks Merete and Maja
- New chemicals
 - Thanks Maja and Camilla
- Python interface
 - For selected components
 - Thanks Silas and Per
- N₂O production from denit
 - Thanks Parton et al (1995)
- PFAS support
 - Air-Water Interface sorption
 - Thanks Camilla (Lunch meeting Apr 2)
- New denitrification module
 - Tobias will present his work
 - Lunch meeting June 4.

Python support

- 3 components supported
 - **Function**
 - Adsorption (Camilla Apr 2)
 - Reaction (Tobias June 4)
- Python

test_T_fun.py:

```
def T_fun (T):  
    if T > 30:  
        return 2.0  
    if T < 10:  
        return 0.0  
    return 1.0
```

- Daisy

test_T_fun.dai:

```
(deffunction my_T_fun Python  
    "Call Python function to find temperature dependency."  
    (module "test_T_fun")  
    (name "T_fun")  
    (domain [dg C])  
    (range []))  
  
(defrootdens MyRoot local  
    (death_T_factor my_T_fun))
```

How to download and install -> Github

The screenshot shows a browser window with two main parts. On the left is the Daisy website, and on the right is the GitHub repository page for 'daisy-model/daisy'.

Daisy Website (Left):

- Logo: Daisy Department of Plant and Environment
- Navigation: Daisy > Downloads
- Download section:
 - Windows
 - TextPad
 - Mac OS X
 - Linux
 - Documentation
 - Tools and Guides
 - Projects and Collaboration
 - Publications

GitHub Repository (Right):

- Repository: daisy-model / daisy (Public)
- Navigation: Code, Issues (23), Pull requests (2), Actions, Projects, Security, Insights
- Release: v7.0.7 (Latest)
- Assets (7):

Asset Name	Size	Time
daisy-7.0.7-Darwin.pkg	4.88 MB	19 hours ago
daisy-7.0.7-win64.exe	14.4 MB	16 hours ago
exercises.pdf	415 KB	3 hours ago
reference.pdf	1.44 MB	3 hours ago
tutorial.pdf	371 KB	3 hours ago
Source code (zip)		2 days ago
Source code (tar.gz)		2 days ago

Textpad configuration - changes

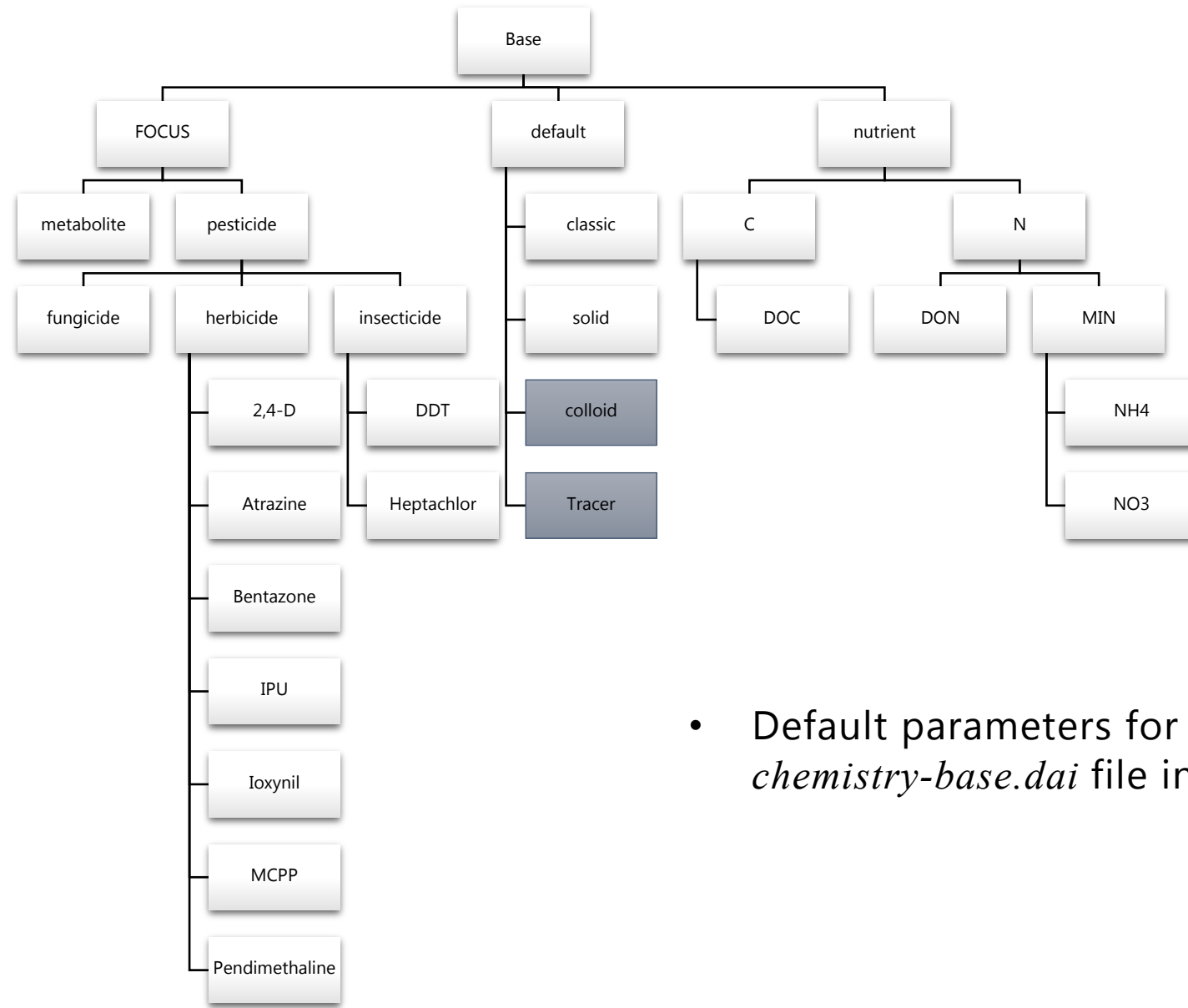
Add Daisy 7 to the "Tools" menu

Be aware that the procedure is different for Daisy ≥ 7 than for ≤ 6 .

- Start TextPad.
- Open the "Configure" menu.
- Select "Preferences..."
- Click on "Tools" (the name, not the small box with a beside it).
- Click on "Add" and choose "**Command Prompt...**" from the drop down menu.
- Write "Daisy" and press "Apply".
- Click the box next to "Tools" to view the available tools.
- Select "Daisy".
- Copy the string "start /b /wait daisy.exe \$File" into the text field names "**Parameters**".
- Copy the exact string `([^\s]+):(\d+):(\d+)` to text field named "Regular expression to match output", replacing the old content. Use cut and paste to get it right.
- Choose "1" from the "File" drop down, choose "2" from the line drop down, and choose "3" from the "Column" drop down menu.
- Press Apply.
- Exit TextPad to make the changes take effect.

If you open a Daisy setup file, you should now be able to run the simulation by opening the "Tools" menu, the "External tools" submenu, and then selecting "Daisy". The output from the simulation will be placed in another window. If an error message contain a file name and line number, you will (sometimes) be able to go directly to the specified location by double clicking on the error message.

New chemicals: Tracer and colloids



- Default parameters for tracer and colloids in *chemistry-base.dai* file in the Daisy lib.

New SOM turnover parameterizations

SOM2000 (default before version 7)

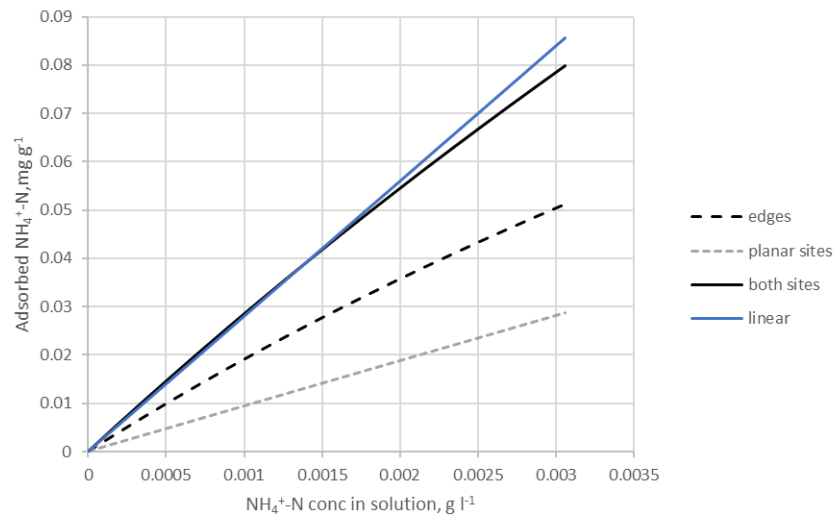
- SMB2 → SOM2 60 %
- SMB2 ↻ SMB2 40 %
- Bio-incorporation efficiency 50 %

SOM2025 (default from version 7)

- SMB2 → SOM2 40 %
- SMB2 ↻ SMB2 60 %
- No bio-incorporation

New ammonium sorption parameterization (linear)

- vS_S_model for NH_4^+ sorption to clay particles (Schouwenburg and Schuffelen (1963)).
- Erronous parameterized (vS_S_Hansen) → erronous parameterization of the linear NH_4^+ sorption model ($NH4_Hansen$)
- New parameterization ($vS_S_Styczen$) → new parameterization of the linear NH_4^+ sorption model ($NH4$)



Model/parameter	K_{oc} [cm ³ /g]	K_{clay} [cm ³ /g]
Old linear model (NH4, now NH4_Hansen)	117.116	117.116
New linear model (NH4)	213	28

- Test: 20 year, Spring Barley, 115 kg N/ha/year

Total Difference [kg N/ha]		N leaching	N uptake	N harvest	NH4 nitrification	NO3 uptake	NH4 uptake	N2O from nitrification
JB1	Linear New (NH4) vs. Old (NH4_Hansen)	4.0	-3.8	-3.4	-26.9	-30.2	26.3	-0.5
JB6	Linear New (NH4) vs. Old (NH4_Hansen)	-0.2	9.7	6.3	-120.1	-108.7	118.5	-2.4

Total Difference [kg N/ha]		N leaching	N uptake	N harvest	NH4 nitrification	NO3 uptake	NH4 uptake	N2O from nitrification
JB1	Linear New (NH4) vs. Old (NH4_Hansen)	0.3	-0.1	-0.2	-1.0	-1.2	32.8	-0.7
JB6	Linear New (NH4) vs. Old (NH4_Hansen)	0.0	0.4	0.3	-4.5	-4.4	147.2	-3.0

New documentation

- daisy.ku.dk/technical-manual/
- This week:
 - Chapter 6. Solute transport
 - Chapter 11. System management model
 - Appendix 2.4: SSOC-SVAT model
- *More to come soon..*
 - *Chapter 7. Nitrogen*
 - *Chapter 10. Crop model*
 - *Appendix 7.1, 9.4 and 10.3*

DAISY Soil Plant Atmosphere System Model

Technical Description

Editors: M.E. Styczen, P. Abrahamsen, M. Holbak and E. Diamantopoulos

List of content

[1. System and modelling concepts](#)

[2. Weather and reference ET](#)

[3. Surface processes](#)

[4. Water flow in soils](#)

[5. Heat transport](#)

[6. Solute transport](#)

7. Mineral Nitrogen

General info: [Daisy description](#), Hansen et al. (1991)

[8. Pesticide transport](#)

9. Soil organic matter model

10. Crop model

General info: [Daisy description](#)

Root water uptake, Hansen and Abrahamsen (2009)

[Uptake of nitrogen by roots](#)

[Guide on crop calibration](#)

Hansen et al. (2012a)

[11. System management model](#)

12. Integrated model

[Daisy 2D Numerics](#)

[D3 2 safir](#)

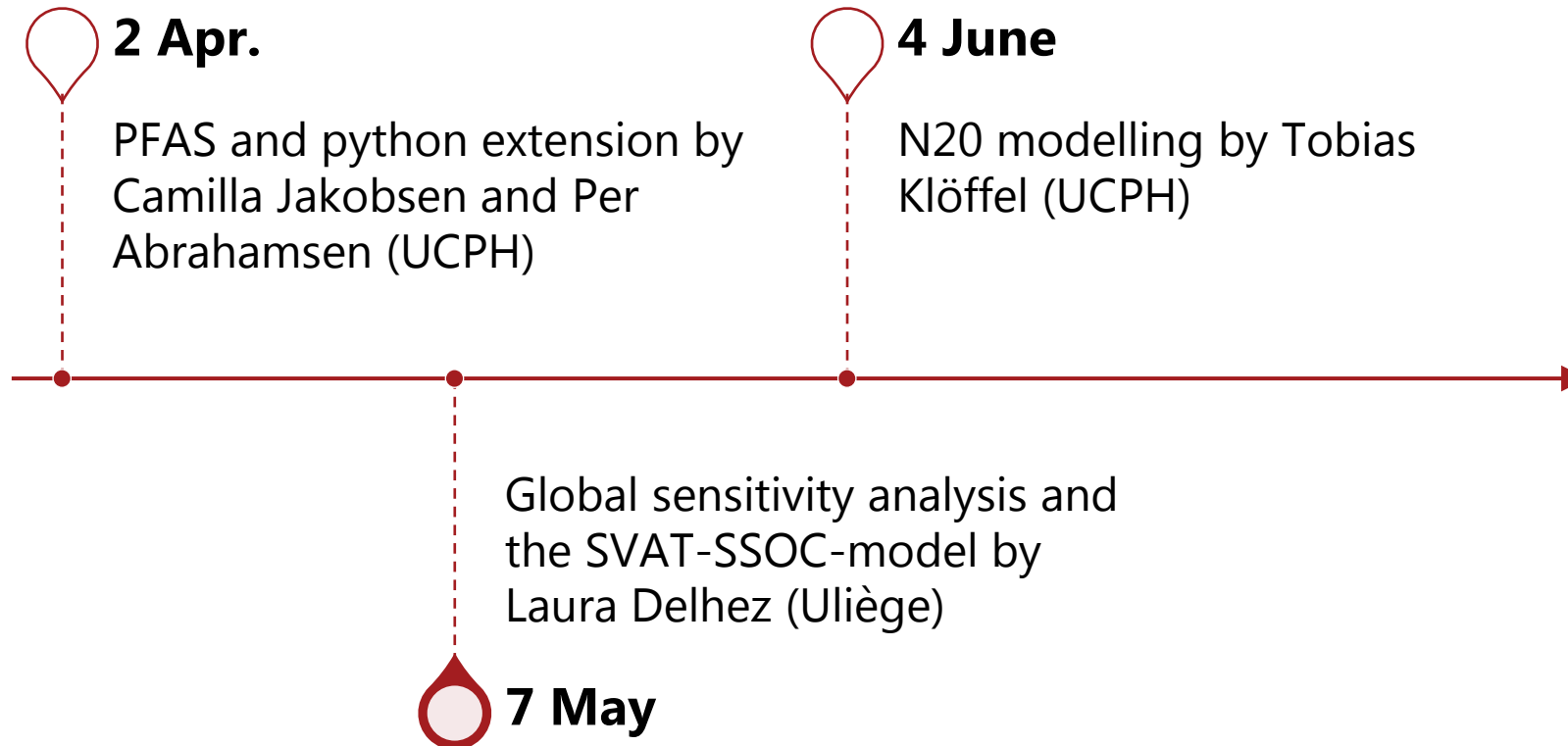
Hansen et al. (2012a)

Abrahamsen and Hansen (2000)

Appendices

[2.1 Optional implementations of reference evapotranspiration and the PM-models](#)

Future Daisy-user-lunch-meetings



12.30-13.30 physical/online

write daisy@ku.dk if you do not get an invite this week