



Step4ward – An Efate Toolbox

Dirk Nickisch^{1*)}, Joaquin Real Llandera¹⁾ & Thomas Lutz¹⁾

- 1) RIFCON GmbH, Goldbeckstraße 13, 69493 Hirschberg, Germany
- *) Email: dirk.nickisch@rifcon.de

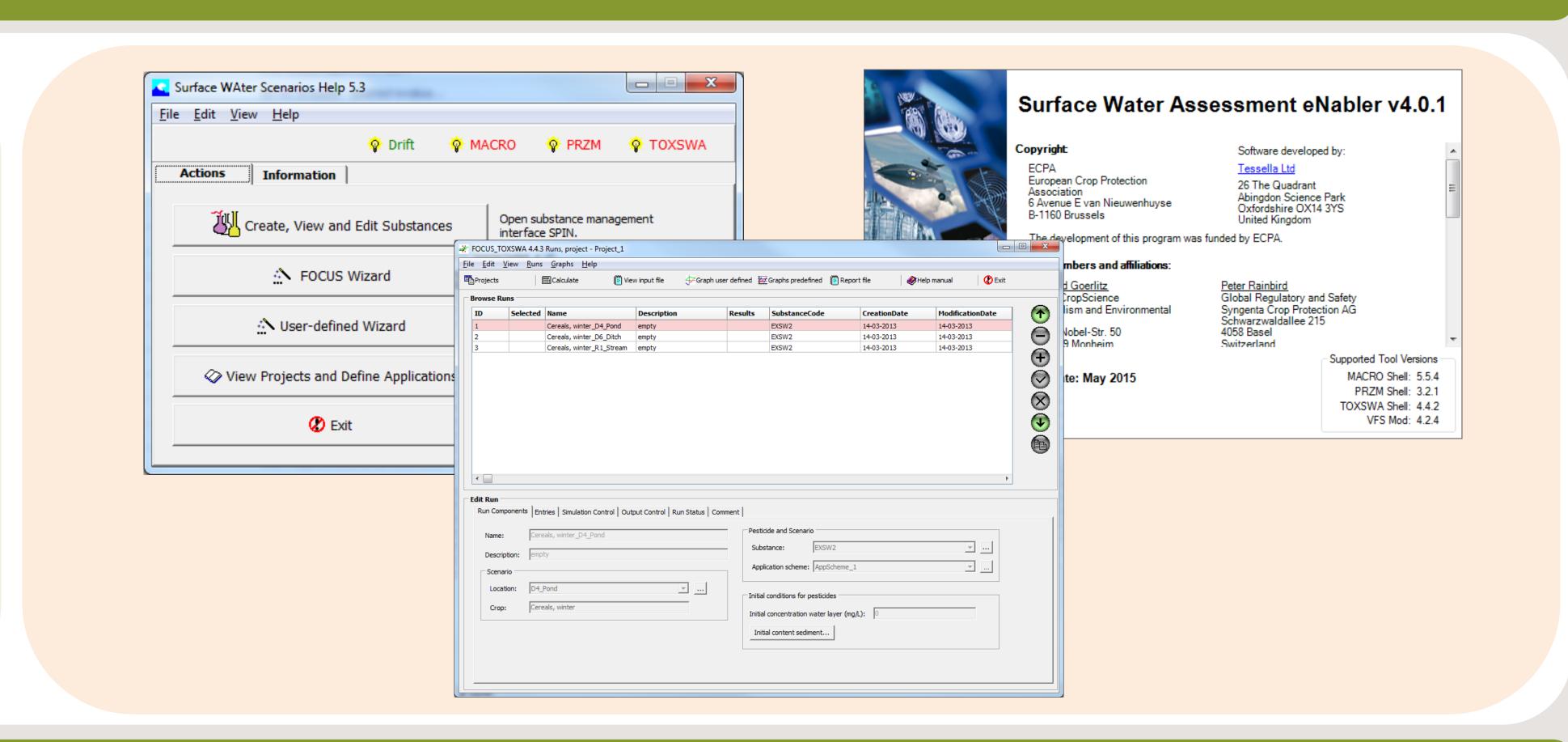
SUMMARY

'Step4ward' is a user-friendly Windows® toolbox to automate PECsw calculations, extract data from the current models FOCUS TOXSWA and SWAN and create MS Word® tables in the current dRR format. Software tools are very helpful and well-established for modelling environmental fate and exposure of plant protection products, and also for decision-making in a regulatory context. Although the models were developed for regulatory purposes, model outputs, mostly text files, are not ready for use in regulatory reports or dossiers and need further formatting. Remarkably, the EU provides dRR templates with ready-made tables for predicted environmental concentrations in soil and surface water, which are harmonised with the ecotoxicological section. Therefore, there is a high potential for reducing writing workload for all involved parties. At present, the main functionalities for writing reports and dossiers are already available within 'Step4ward' and a variety of additional output options can be added to the toolbox in the near future.

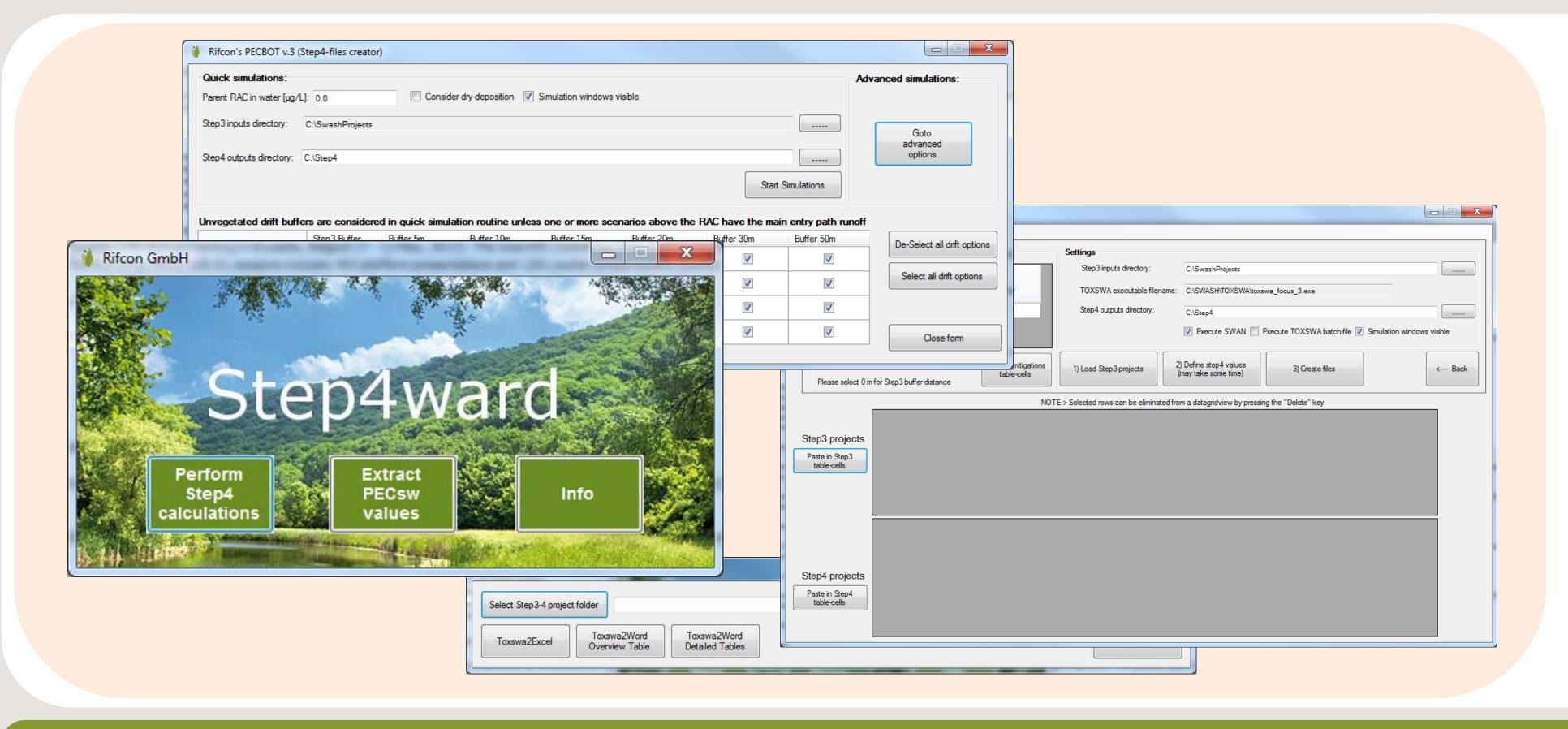
INPUT DATA

Step4ward requires three kinds of input data:

- SWASH project / TOXSWA data: input and output files containing substance and application pattern information
- SWAN command line version:
 STEP 4 runs considering mitigation measures like runoff or drift reduction
- EVA Excel sheet:
 Estimation of dry deposition values, if vapour pressure meets the triggers



FUNCTIONALITIES



Step4ward functionalities can be divided into two main groups:

- Automation of STEP 4 calculations:
 Execution of STEP 4 runs based on a RAC or user-defined settings
- Preparation of STEP 3 and STEP 4 output:
 Preparation of Excel sheets for a quick overview of calculations or Word documents for the use in dRR dossiers

OUTPUT DATA

Step4ward offers a variety of output options in Excel or Word format:

- STEP 4 output files stored in folders with consistent names (substance abbreviation, drift buffer width, runoff mitigation, drift reduction factor)
- Detailed overview of STEP 3/4 runs: application dates selected by user or by PAT, occurrence dates of maximum PECs, main entry paths, actual and time weighted PECs, chosen mitigation measures, folder names
- PEC_{SW} results in Word dRR 2015 format

			Step4 folder st						ucture durchsuchen 🔎					PECsw [µg/L]		PECsed [µg/kg]		
:hm	en ▼ Fre	eigeben für	▼ Brenn	en Neu	er Ordner				■ ▼ □ ②				Time after peak [d]		TWA	Act	TWA	
	Name		^		Änderung	sdatum Ty	p	Größe	_				0	7.857	-	1.465	-	
	<u></u> 5m	D			10.07.201	5.11:36 Da	teiordner						1	7.426	7.776	1.448	1.453	
	<u></u> 5m				10.07.201		teiordner						2	6.885	7.591	1.439	1.451	
	<u></u> 5m				10.07.201		teiordner						4	4.968	6.938	1.156	1.414	
	<u></u> 5m				10.07.201		teiordner						7	2.099	5.694	0.888	1.314	
	l 10n	nD			10.07.201	5 11:36 Da	te Table	1. Clob	l maximum FOCU	S Ston 3 DF Com and D	FCorn for FYSWI fo	llowing appli	ation	0.936	3.715	0.591	1.082	
	10mD_N50				10.07.201	5 11:37 Da	ite Table	1. 0100	Il maximum FOCUS Step 3 PEC _{SW} and PEC _{SED} for EXSW1 following of test product to winter cereals			nowing appli	ation	0.703	2.796	0.439	0.917	
		nD_N75			10.07.201	5 11:37 Da	ite		or test produc	ct to winter cerears				0.743	2.284	0.376	0.799	
		nD_N90			10.07.201		Scena	rio Wate	rb Max PECsw	Dominant entry	21 d- PEC _{sw,twa}	Max PEC		0.599	1.721	0.269	0.639	
	№ 10n				10.07.201		FOC			route	(μg/L)			0.770	1.535	0.300	0.580	
		nDR_N50			10.07.201		0	, J	(µg/L)		(µg/L)	(µg/kg)		0.239	1.242	0.193	0.478	
		nDR_N75 nDR_N90			10.07.201		D1	dite	7.857	Drainage	2.796	1.465						
	10n				10.07.201													
		nD_N50			10.07.201		I D1	strea	m 6.042	Drainage	2.519	1.235	EC values		D1, Stream after a	pplication of 1 x 1000 g	a.s./ha in winter	
		nD_N75			10.07.201			3:4 -	01.600	Duction	15 500	7,006		cereals				
		nD_N90			10.07.201	5 11:37 Da	D2	dite	s1.690	Drainage	15.590	7.096	I	PECsw [µg/L]		PECsed [µg/kg]		
t d	<u></u> 20n	nD			10.07.201	5 11:36 Da	nte D2	strea	m 53.850	Drainage	10.400	4.178	ter peak [d]		TWA	Act	TWA	
		nD_N50			10.07.201	5 11:37 Da				Zianage				6.042	-	1.235	-	
		nD_N75			10.07.201		D3	ditc	6.565	Spray drift	0.464	0.484		2.272	5.825	1.171	1.224	
		nD_N90			10.07.201							2.222		0.103	5.559	1.138	1 212	
	<u></u> 20 n				10.07.201		200 3	pon	d 0.219	Spray drift	0.030	0.020		4.349	5.196	0.906		
	<u></u>	nDR_N50			10.07.201	5 11:38 Da	D4	strea	m 5.482	Spray drift	0.072	0.237		4.961	4.780	0.686		
	В	С	D	Е	F	G			3.702	opiu, uni	0.072	0.23		1.050	3.411	0.444		
io V	/aterbod	y File	Substance	Step	Mitigatio	n Report/f	o D5	pon	d 0.383	Drainage	0.229	0.102		0.611	2.519	0.317		.6
	Ditch	537	EXSW1	Step 3	-	WC_EX	SI To							0.441	2.027	0.266	_	
	Stream		EXSW1	-	_	WC_EX	כע ו	strea	m 5.914	Spray drift	0.415	0.294		0.295	1.486	0.191		
	Ditch		EXSW1	-	_	WC_EX	1000	dite	n 8.314	Drainage	2.386	0.926		0.463	1.307	0.228	*	
	Stream		EXSW1			WC_EX	_	- Lanc	0.514	Diamage	2.500	0.520		0.546	1.041	0.120		
							_ I K I	pon	d 0.337	Runoff	0.133	0.058						
+	Ditch		EXSW1	-	-	WC_EX			22.22				FC walnes	of EVCWI for	D2 Ditab affan	0.444 0.317 0.266 0.191 0.228 0.120 plication of 1 PECsed Act 7.096 6.797 6.244 5.342	A ()	* / *
+	Pond		EXSW1		-	WC_EX		strea	m 28.560	Runoff	0.611	1.781	EC values		D2, Ditch after app	pheation of 1	NU	
_			EXSW1		-	WC_EX	D 2	strea	m 4.193	Runoff	1.854	4.254		cereals				
	Pond		EXSW1			WC_EX	⁵ '	Suca	7.177	ACMIO!	1.034	4.234		PECsw [µg/L]		PECsed		
	Stream	545	EXSW1	Step 3	-	WC_EX	SI R4	strea	m 7.857	Spray drift	0.041	0.163			TWA	Act		
	Ditch	546	EXSW1	Step 3	-	WC_EX	SI L							81.69	-	7.096	M	
	Pond	547	EXSW1	Step 3	-	WC_EX	SW1	-	winter cereals	1000 14-Nov-197	78-09h00 25-Nov-1978	-08h00 28-N	1	45.22	60.47	6.797	L V	
	Stream	548	EXSW1	Step 3	-	WC_EX	SW1	-	winter cereals	1000 14-Nov-197	78-09h00 25-Nov-1978	-02h00 25-N	2	42.13	50.64	6.244		
			EXSW1		-	WC_EX		-	winter cereals		80-09h00 26-Nov-1980		1 4	21.39	40.54	5.342		
			EXSW1			WC_EX		_	winter cereals		79-09h00 03-Nov-1979		1 /	12.28	30.35	4.818		
		-50		21263							20 1101 2373	23.00	21	7.218	21.00	2.929		
													28	4.245 1.786	15.59 12.40	1.882		
													20	0.535	8.920	0.389		