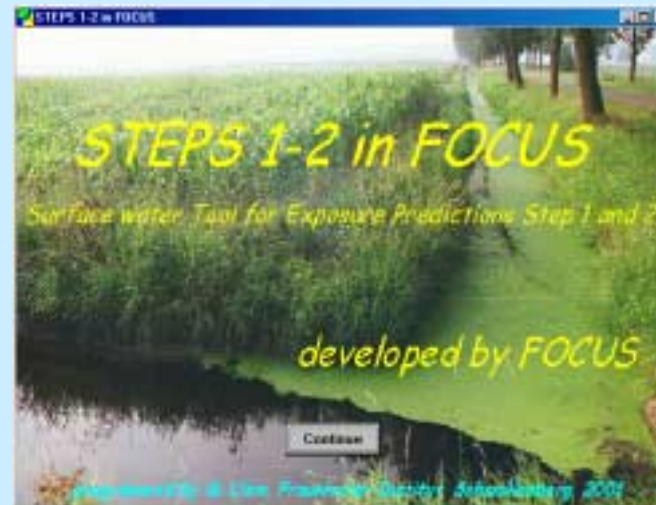


# FOCUS STEP 1 and 2 Simulations

**Michael Klein**

on behalf of the FOCUS working group on  
Surface Water Scenarios,

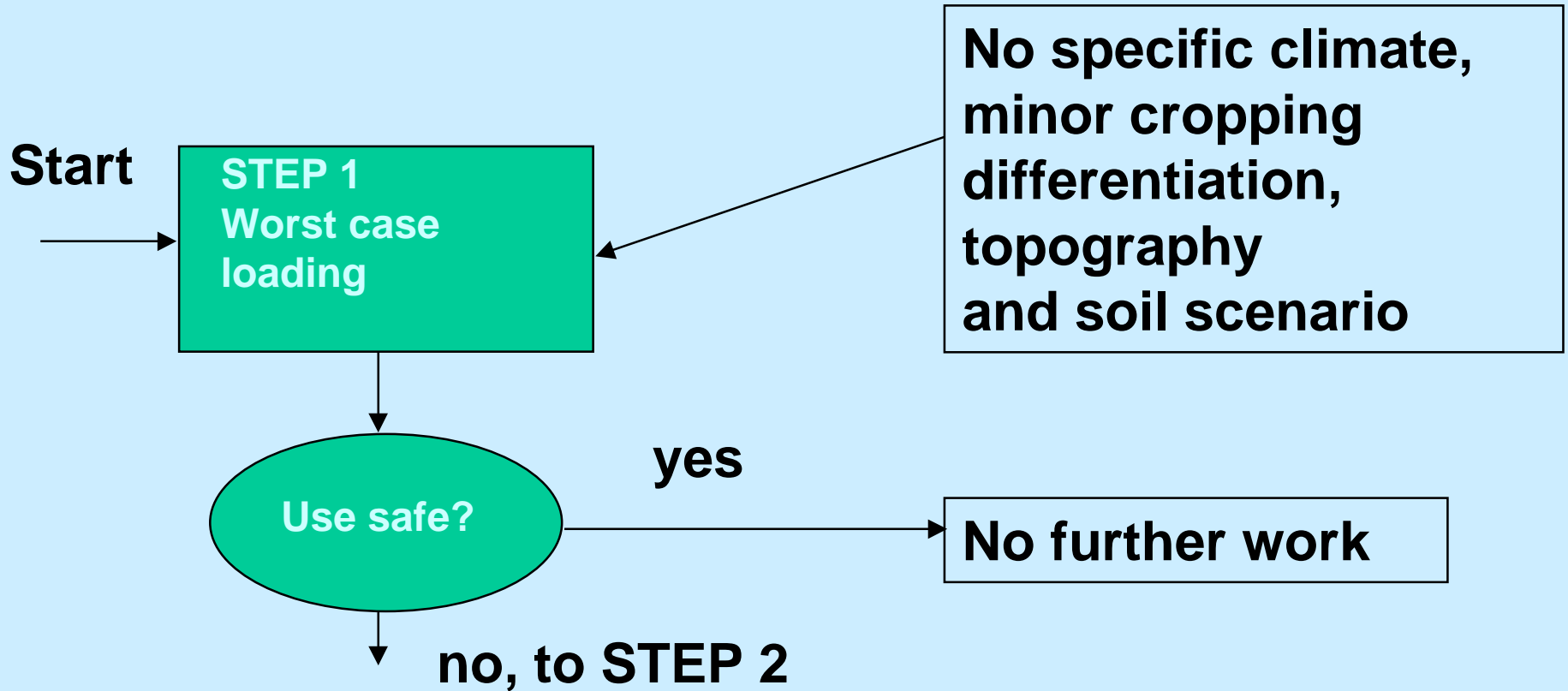
Fraunhofer-Institut, Schmallenberg, D,  
presented at the 1st EU-Modelling workshop, Silsoe, UK



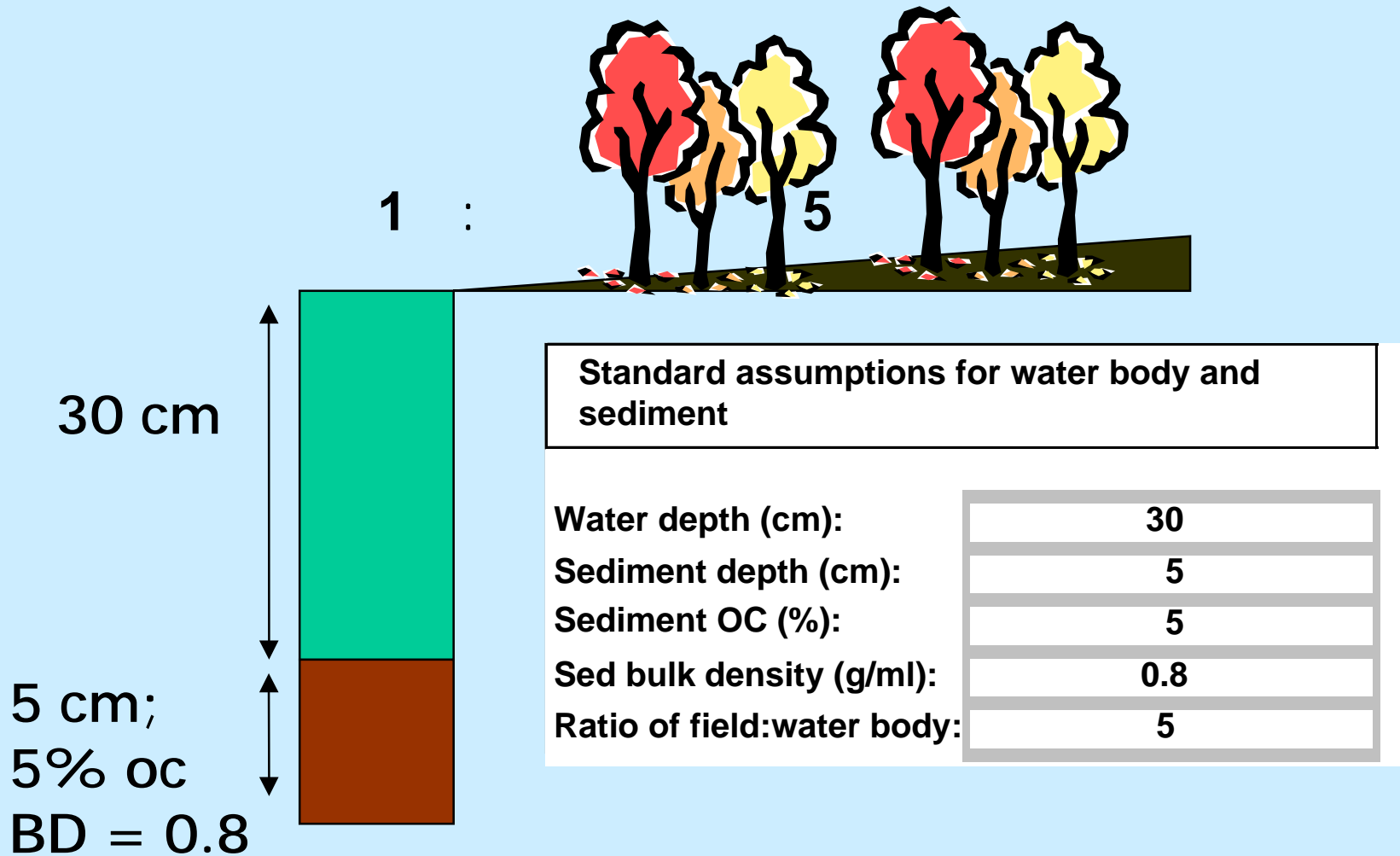
# Tiered Approach

- **STEP 1: single application,  
fixed scenario**
- **STEP 2: multiple application,  
regional variation in Europe**
- **STEP 3: advanced modelling,  
specific European scenarios**
- **STEP 4: site specific calculation**

# Step 1



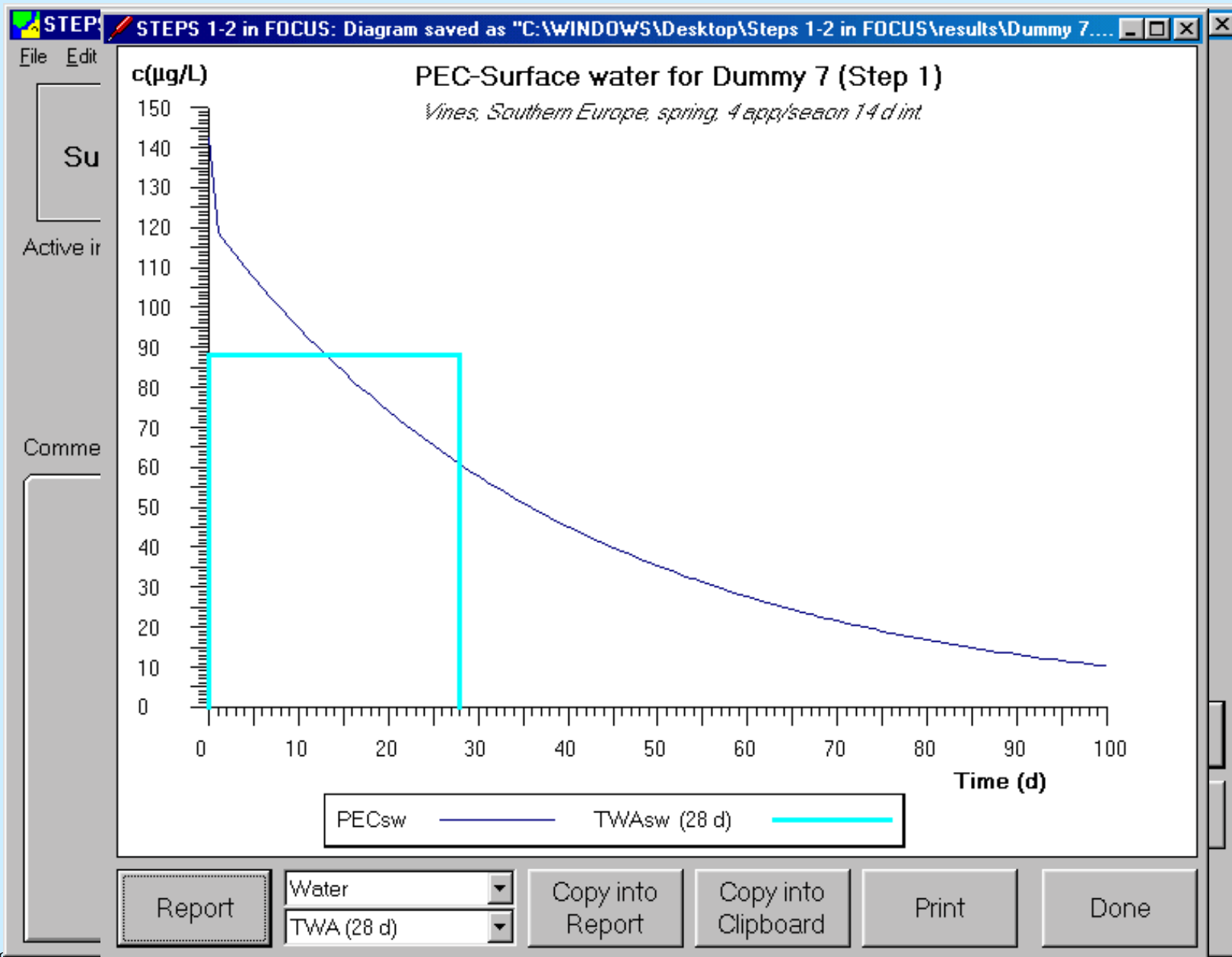
# Soil & Water Body Scenario at Steps 1 (and 2)



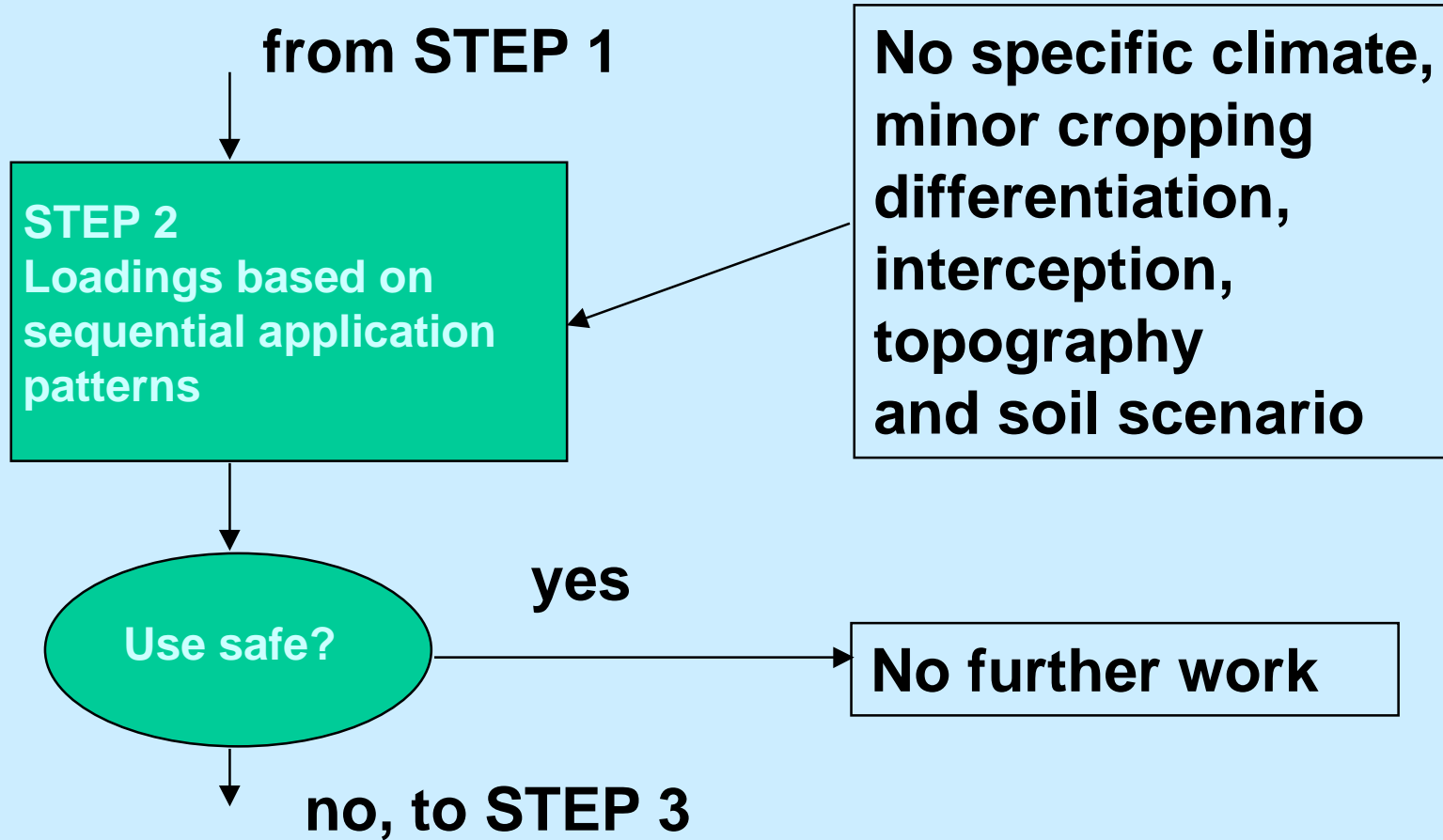
# STEP1: Input into Surface water

Crop	Distance crop-water (m)	Drift (% of application)	Runoff/drainage (% of application)
cereals, spring	1	2.759	10
cereals, winter	1	2.759	10
citrus	3	15.725	10
cotton	1	2.759	10
field beans	1	2.759	10
grass / alfalfa	1	2.759	10
hops	3	19.326	10
legumes	1	2.759	10
maize	1	2.759	10
oil seed rape, spring	1	2.759	10
oil seed rape, winter	1	2.759	10
olives	3	15.725	10
pome / stone fruit, early applns	3	29.197	10
pome / stone fruit, late applns	3	15.725	10
potatoes	1	2.759	10
soybeans	1	2.759	10
sugar beet	1	2.759	10
sunflower	1	2.759	10
tobacco	1	2.759	10
vegetables, bulb	1	2.759	10
vegetables, fruiting	1	2.759	10
vegetables, leafy	1	2.759	10
vegetables, root	1	2.759	10
vines, early applns	3	2.699	10
vines, late applns	3	8.028	10
appln, aerial	5	34.3	10
appln, hand (crop < 50 cm)	1	2.759	10
appln, hand (crop > 50 cm)	3	8.028	10
no drift (incorp or seed trmt)	1	0	10

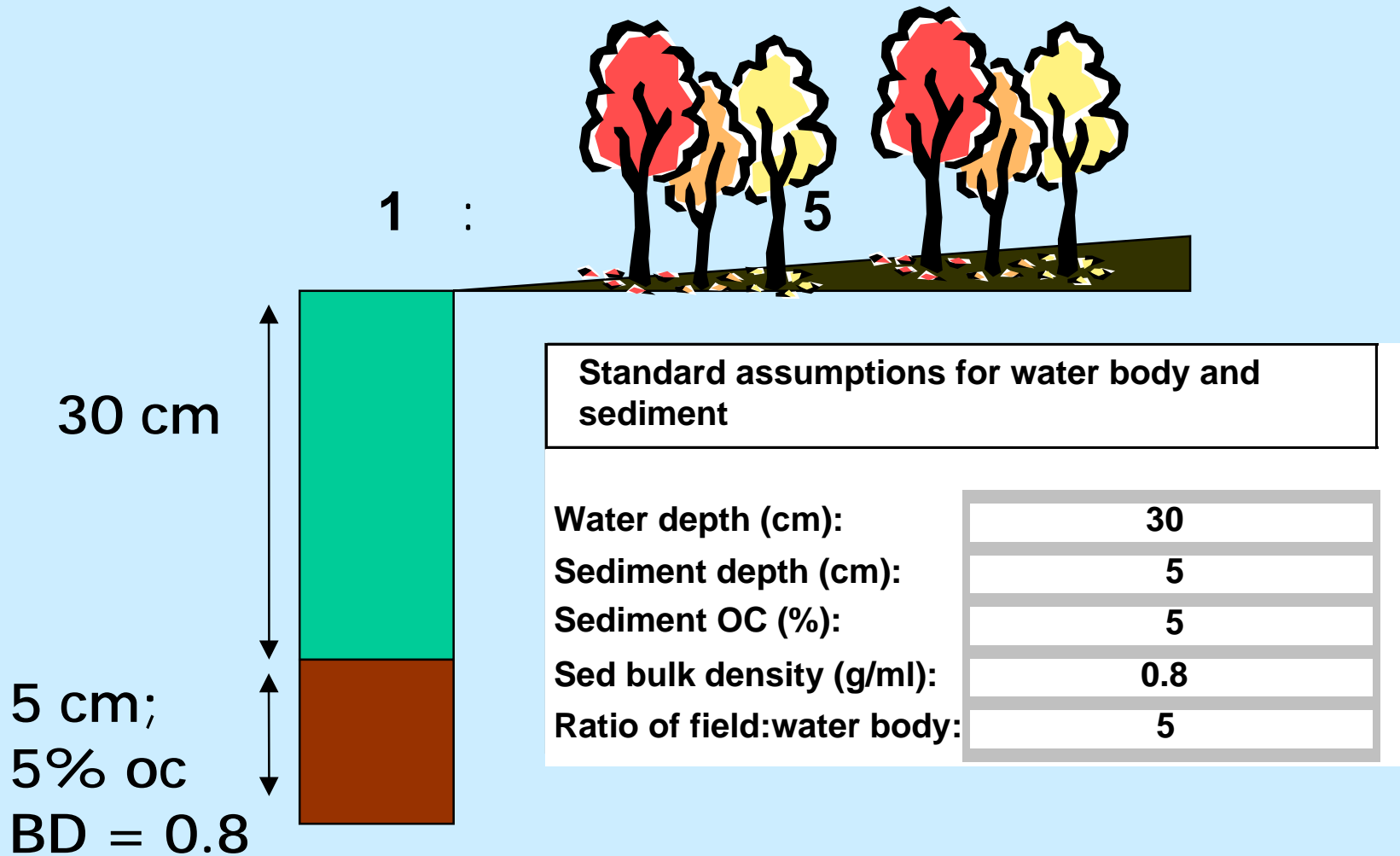
# Step 1: Example Results



## Step 2

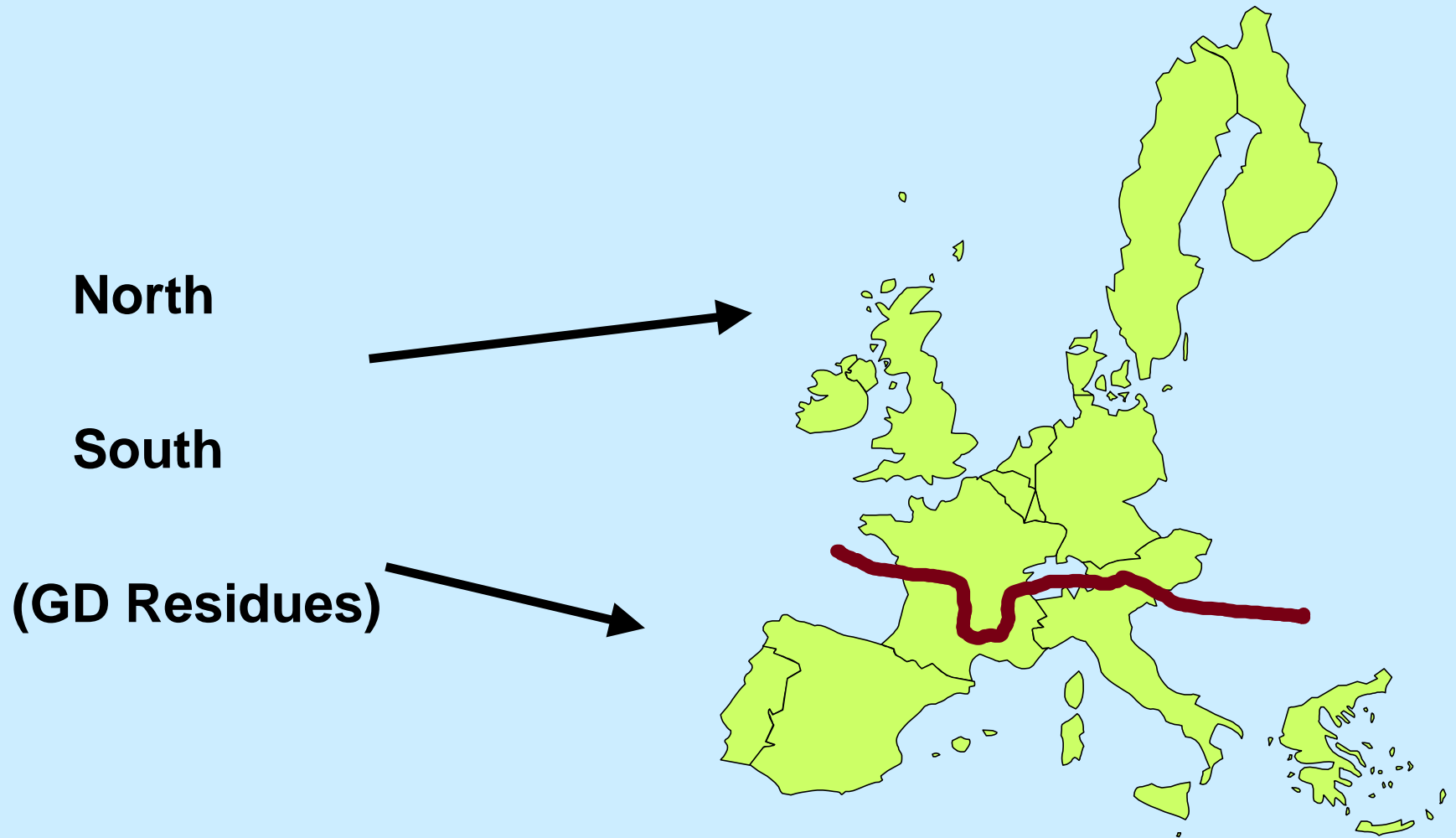


# Soil & Water Body Scenario at Step 2 (same as Step 1)





# Regional Differences



# Regional difference

## Combined Drainage + Runoff

% of application rate

Location	spring	summer	autumn
North	1	1	4
South	2	1	4

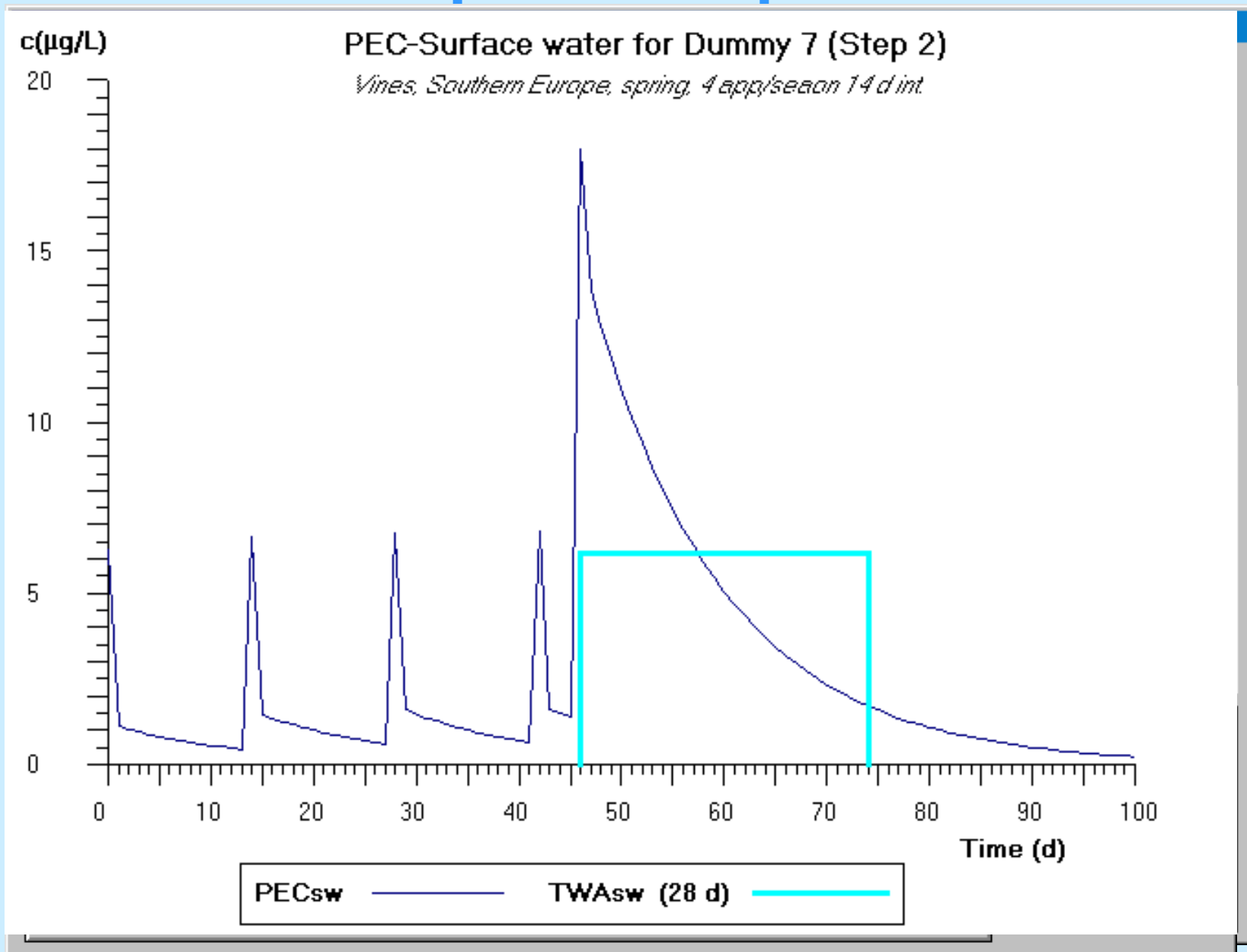
## STEP 2: Input into Surface water

crop	no interception	minimal crop cover	average crop cover	full canopy
cereals, spring	0	0.25	0.5	0.7
cereals, winter	0	0.25	0.5	0.7
citrus	0	0.7	0.7	0.7
cotton	0	0.25	0.6	0.7
field beans	0	0.25	0.4	0.7
grass / alfalfa	0	0.4	0.6	0.75
hops	0	0.2	0.5	0.7
legumes	0	0.25	0.5	0.7
maize	0	0.25	0.5	0.75
oil seed rape, spring	0	0.4	0.7	0.75
oil seed rape, winter	0	0.4	0.7	0.75
olives	0	0.7	0.7	0.7
pome / stone fruit, (early)	0	0.2	0.4	0.7
pome / stone fruit (late)	0	0.2	0.4	0.7
potatoes	0	0.15	0.5	0.7
soybeans	0	0.2	0.5	0.75
sugar beet	0	0.2	0.7	0.75
sunflower	0	0.2	0.5	0.75
tobacco	0	0.2	0.7	0.75
vegetables, bulb	0	0.1	0.25	0.4
vegetables, fruiting	0	0.25	0.5	0.7
vegetables, leafy	0	0.25	0.4	0.7
vegetables, root	0	0.25	0.5	0.7
vines, early applns	0	0.4	0.5	0.7
vines, late applns	0	0.4	0.5	0.7
appln, aerial	0	0.2	0.5	0.7
appln, hand (crop < 50 cm)	0	0.2	0.5	0.7
appln, hand (crop > 50 cm)	0	0.2	0.5	0.7
no drift (incorp/seed trtmt)	0	0	0	0

# Assumptions and processes modelled

- **Daily time step**
- **Mass is conserved.  $PEC_{sw}$  and  $PEC_{sed}$  are governed by processes of adsorption/ desorption and degradation only**
- **Following drift events compound is partitioned into sediment over a 1 day period**
- **At run-off/drainage event compound is partitioned between water and sediment at time of addition to surface water**

# Step 2: Example Results



## Models involved

**STEPS1\_2**  
**in FOCUS**

# *Steps 1-2 in FOCUS*

*Surface water Tool for Exposure Predictions - Step 1 and 2*

*developed by FOCUS*

Continue

*programmed by M. Klein, Fraunhofer-Institut, Schmallenberg, 2001*