

FOOTPRINT

Functional **T**ools for **P**esticide
Risk Assessment and
Management



FOOTPRINT annual meeting, 22-23 November 2007
Casa Don Guanella, Barza d'Ispra, Italy

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First things first



- > FOOTPRINT is very different from other research projects in that we have a genuine will to see the tools being most useful to end-users
- > Your feedback as potential end-users is key
- > 'Anything you will say will be recorded and used'
- > Sincere thanks for your interest in the project and for being here today
- > Thanks to Giovanna and her team for arranging the annual meeting
- > Thanks to all 23 FOOTPRINT partners who participated this week



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Objectives of these 2 days



- > To present you the latest research undertaken in FOOTPRINT
- > To provide you with an update on the overall progress
- > To introduce a first version of FOOT-FS
- > To propose plans to ensure that the FOOT tools are being supported beyond the end of the EU funding



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Agenda for day #1



- > Overall presentation of FOOTPRINT
- > Reporting on some of the science undertaken in FOOTPRINT
 - Agro-environmental scenarios
 - The FOOTPRINT SUGAR index
 - Start of the validation work
- > The 3 FOOT tools with a special focus on FOOT-FS
- > FOOTPRINT social dinner
 - Restaurant *La Quassa*, in Ispra
 - Bus leaving at 19:45 tonight



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Agenda for day #2



- > Coffee from 8:30, Start at 9:00
- > Discussion and feedback
- > Break-out sessions and get-together sessions
- > Morning
 - General feedback on the FOOT tools
 - Hypothetical case studies
- > Afternoon
 - Proposals for life after FOOTPRINT
- > Close 15:30



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Where are we?



- > 2 years gone
 - Remarkable achievement at this stage
 - Getting Gamma versions of the 3 FOOT tools in 2 years was always to be a challenge
 - Most people didn't expect us to deliver
- > A year to go
 - Finalisation and optimisation of the FOOT tools
 - Evaluation / validation studies
 - Register interests
 - Ensure that FOOTPRINT does not end with the EU funding



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The FOOTPRINT project



The FOOTPRINT project



- > 3-year EU-funded research project as part of FP6
- > A very applied project
- > 1 January 2006 - 31 December 2008



The FOOTPRINT partnership



- > 15 partners from 9 European countries
- > Pesticide fate specialists, modellers, hydrologists, hydrogeologists, agronomists, data and GIS specialists, soil scientists, climatologists, ecotoxicologists, and tool developers



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The FOOTPRINT partners



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The grinning faces



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Project objectives



- > Overall objective: to develop a set of computer tools that will allow users to:
 - i) identify the dominant pathways and sources of pesticide contamination in the agricultural landscape.
 - ii) estimate levels of pesticide concentrations in surface water and groundwater.
 - iii) make scientifically-based assessments of how the implementation of risk reduction strategies is likely to reduce pesticide contamination of water resources.



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Project operational goals



- > 1) to develop a suite of three pesticide risk assessment and management tools, for use by three different user communities:
 - Farmers and extension advisors at the local (farm) scale
 - Water managers at the catchment scale
 - Policy makers/registration authorities at the national/EU scale.




- > 2) to evaluate the usability and performance of the FOOT tools through piloting and evaluation studies at their various scales of application.



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The three FOOT tools



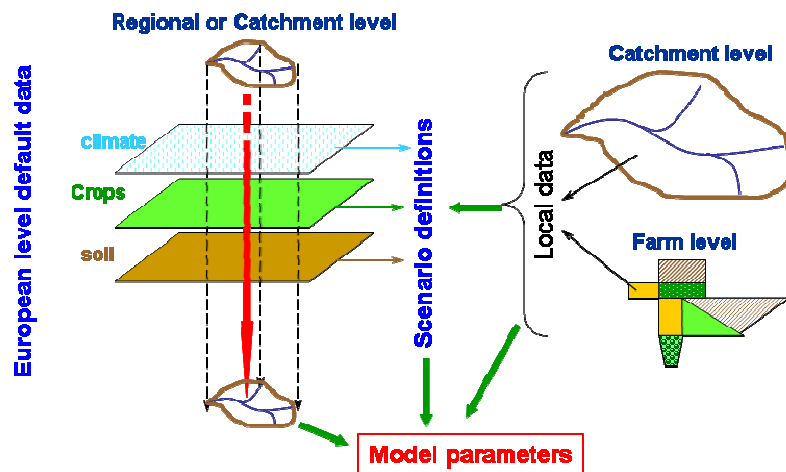
			
End-users	Farmers Extension advisers	Water managers	Policy & decision makers
Scale	Local (farm)	Catchment	National / EU

- > All three tools will share the same philosophy and underlying science.



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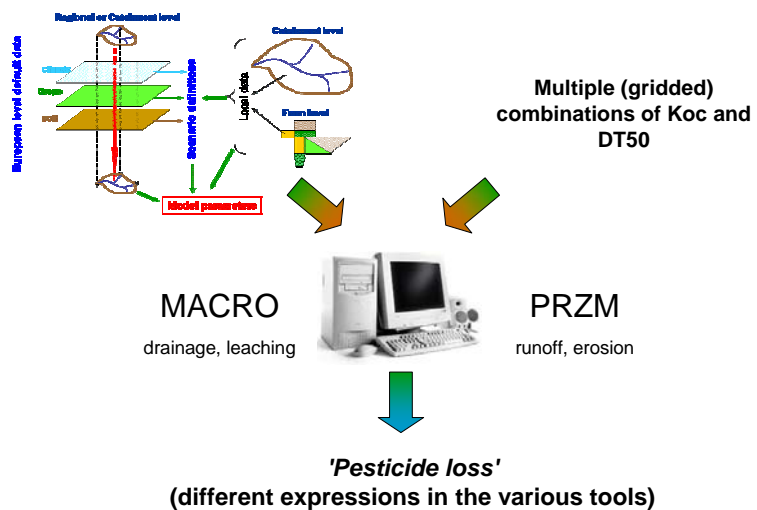
Agroenvironmental scenarios



Provide an extensive characterisation of environmental conditions in the EU where pesticides are used

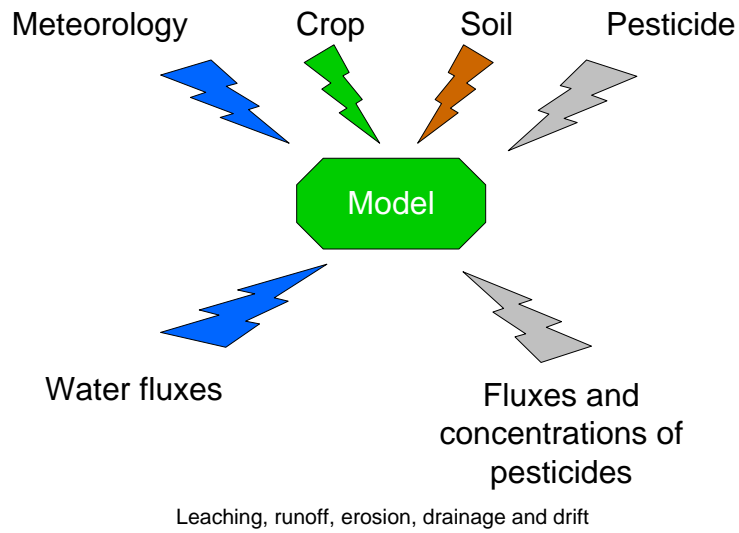
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How does FOOTPRINT work?



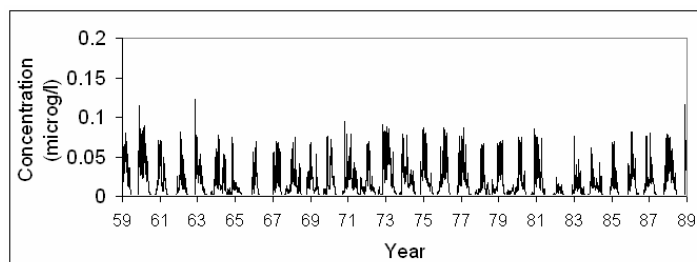
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What model?



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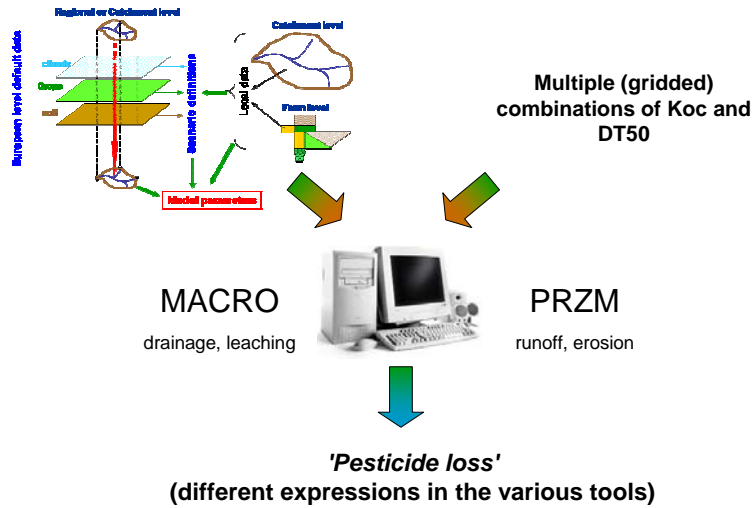
Typical output of a model



Prediction of daily concentrations of pesticides over 30 years

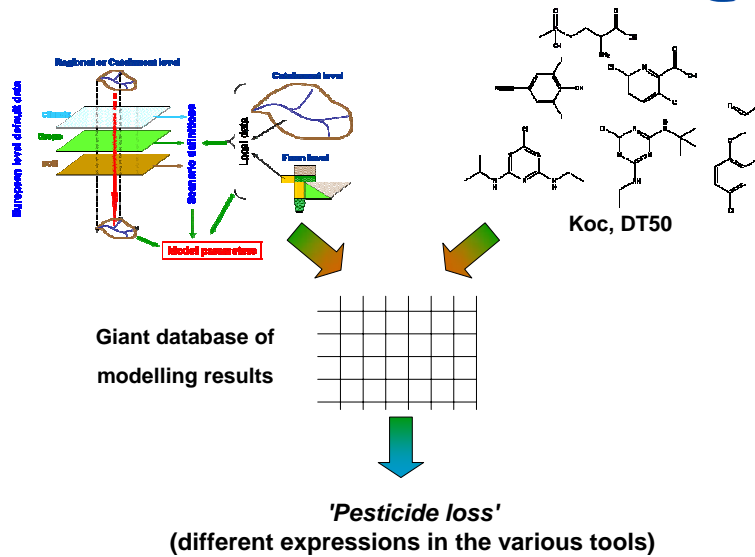
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How does it work?



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How does it work?



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Modelling

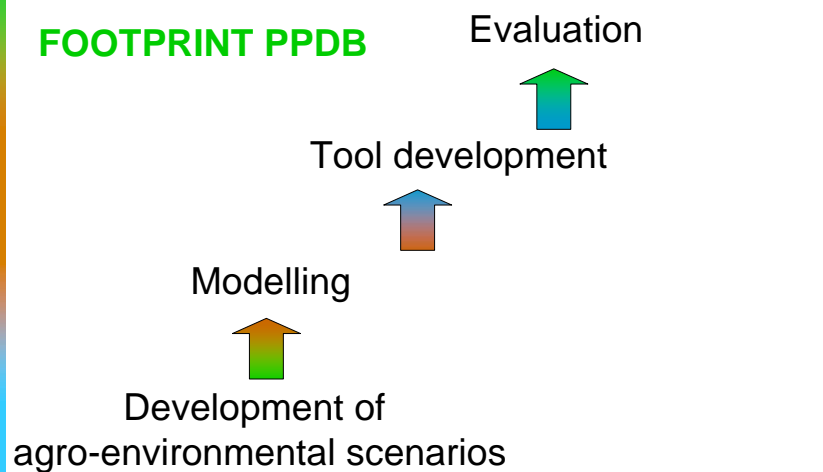


- > Running MACRO and PRZM for millions of times requires ENORMOUS computing power (and storage!)
- > **FOOTPRINT@work**: development of a dedicated IT architecture which uses corporate computers which are not being used (at night, at weekends, during holidays) for running pesticide fate models
- > Use of distributed IT infrastructures (CERN resources)



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The 4 steps in FOOTPRINT



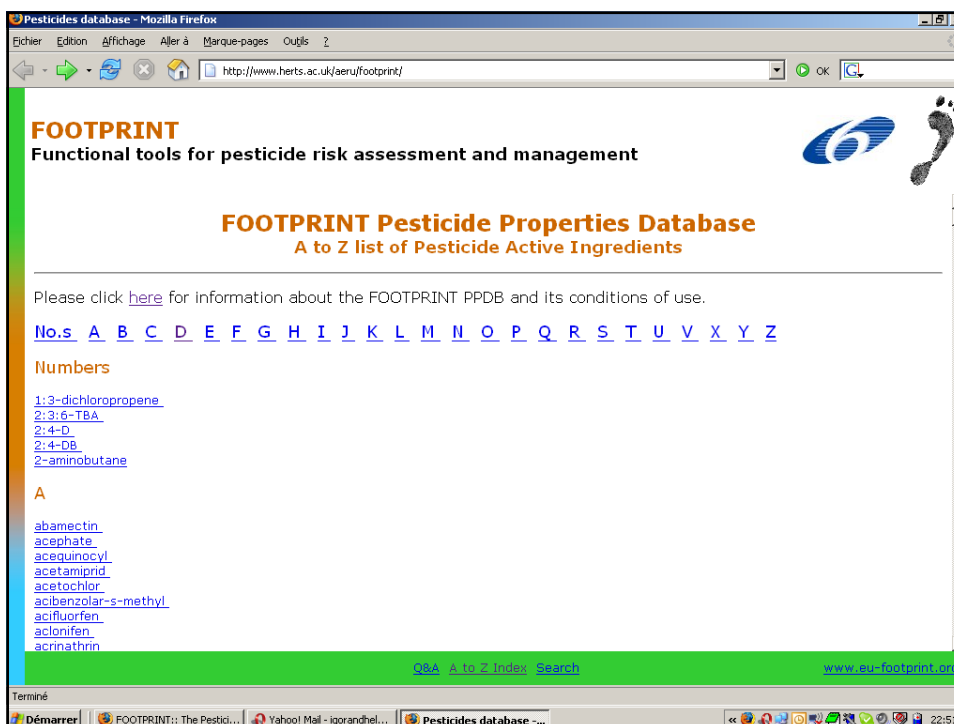
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The FOOTPRINT PPDB


- > *FOOTPRINT Pesticide Properties Database*
- > Developed by the University of Hertfordshire for FOOTPRINT
- > Holds environmental fate and ecotoxicological data for 725 compounds and 377 metabolites
- > Quality assurance scheme (origin of the data + confidence)
- > Numerous internal and external quality checks
- > Free online access via the FOOTPRINT web site / version on CD
- > Database available in English, French, Italian and Spanish



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FOOTPRINT
Functional tools for pesticide risk assessment and management



FOOTPRINT Pesticide Properties Database
A to Z list of Pesticide Active Ingredients

Please click [here](#) for information about the FOOTPRINT PPDB and its conditions of use.

No.s [A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [J](#) [K](#) [L](#) [M](#) [N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#) [U](#) [V](#) [X](#) [Y](#) [Z](#)

Numbers

- [1:3-dichloropropene](#)
- [2:3:6-T&A](#)
- [2:4-D](#)
- [2:4-DB](#)
- [2-aminobutane](#)

A

- [abamectin](#)
- [acephate](#)
- [acequinocyl](#)
- [acetamiprid](#)
- [acetochlor](#)
- [acibenzolar-s-methyl](#)
- [acifluorfen](#)
- [aclonifen](#)
- [acrinathrin](#)


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Pesticides database - Mozilla Firefox

http://www.herts.ac.uk/aeru/footprint/

FOOTPRINT

Functional tools for pesticide risk assessment and management



351 - glufosinate-ammonium

General Information

Description: A non-selective, non-residual phosphonic acid contact herbicide.

Approved for use in the following countries:

FI	SE	DK	IE	UK	NL	BE	LU	DE	AT	FR	ES	PL	MT	GR	CY	CZ	HU	SK	PT	IT	SI	EE	LV	LT
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓		✓	✓	✓	✓	✓	✓	

General status:

Pesticide Type	Herbicide
Chemical Group	Phosphonic acid
CASS RN	77182-82-2
Chemical Formula	C ₈ H ₁₅ N ₂ O ₄ P
Molecular mass (g/mol)	198.2
Generic Name	ammonium 2-amino-4-(hydroxy-methyl-phosphoryl)-butanoate
EC Directive 91/414 Status	Dossier/DAR

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Terminé


Démarrer FOOTPRINT:: The ... Yahoo! Mail - igora... Pesticides datab... XnView - [ppdb1.p... D:\Travail\Miscella... 22:53

Pesticides database - Mozilla Firefox

http://www.herts.ac.uk/aeru/footprint/

FOOTPRINT

Functional tools for pesticide risk assessment and management



Environmental Fate

Property	Value	Source/Quality Score/Other Information	Interpretation	
Solubility - In water at 20 °C (mg l ⁻¹)	1370000	B5	High	
LogP	-1.22	B5	Low	
Bulk density (g/ml)/Specific gravity	1.40	B5	-	
pKa at 25 °C	Unknown	-	-	
Vapour pressure at 25 °C (mP)	0.1	L3	-	
Henry's constant at 25 °C (Pa m ³ mol ⁻¹)	4.48E-09	L3	-	
Henry's constant at 20 °C (dimensionless)	5.84E-12	Q2	-	
Soil DT50 (days)	Typical	7	B5	Slightly persistent
	Lab	34	B5	-
	Field	7	B5	-
Aqueous photolysis DT50 (days)	Stable	L2	Persistent	
Neutral hydrolysis DT50 (days)	100	A5	Moderately persistent	

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Pesticides database - Mozilla Firefox

http://www.herts.ac.uk/aeru/footprint/

FOOTPRINT
Functional tools for pesticide risk assessment and management



Toxicology


Property	Value	Source/Quality Score/Other Information	Interpretation
WHO toxicity class	III	-	Slightly hazardous
Mammals - Acute oral LD50 (mg kg ⁻¹)	1620	B5 rats	Moderate
Mammals - Short term NOEL (mg kg ⁻¹)	64 mg/kg BW/day (545ppm diet)	B5 rats	Low
Birds - Acute LD50 (mg kg ⁻¹)	2000	B5 Japanese quail	Low
Fish - Acute LC50 (mg l ⁻¹)	12.3	B5 Rainbow trout	Moderate
Aquatic invertebrates - Acute EC50 (mg l ⁻¹)	15	B5 <i>D. magna</i>	Moderate
Algae - Acute EC50 (mg l ⁻¹)	46.5	F4 <i>Scenedesmus quadricauda</i>	Low
Honeybees - LD50 (µg bee ⁻¹)	600	B5 oral	Low
Earthworms - Acute LC50 (mg kg ⁻¹)	1000	B5 <i>Eisenia foetida</i>	Low
Aquatic plants - EC50 (mg l ⁻¹)	1.47	F4 Duckweed	Moderate

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Interest and use well beyond expectations

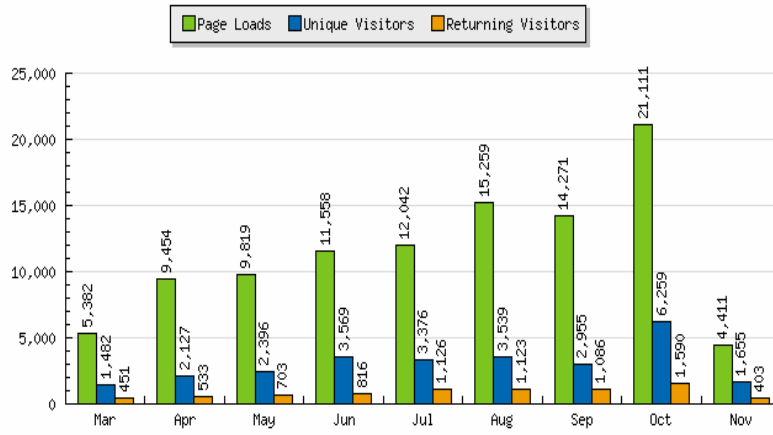


- > The web site is accessed a lot from all parts of the world
- > Lots of positive feedback
- > The database starts to be integrated in existing risk assessment systems (SUSAP)
- > DB managers bombarded by emails when the server went down!



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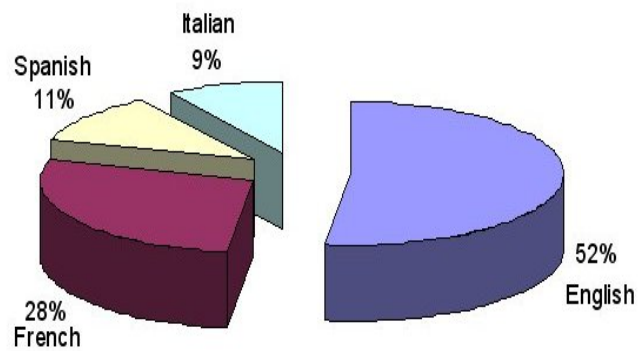
Web stats March to November 2007



>103,300 page loads
> 27,300 unique visitors as of 9th November 2007

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Web stats March to November 2007



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How is FOOTPRINT doing?



> The project is doing well

- Deliverables of good quality. Some deliverables late, but we're working on it!
- Scientific advances which are submitted to peer review as they are produced
- Very enthusiastic and motivated team
- Good collaboration between partners
- Part of the same challenging / successful adventure

> Objectives for the near future

- Keep the momentum going
- Keep on delivering
- Ensure the sustainability of the FOOTPRINT initiative



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How are the FOOT tools doing?



> FOOT-FS

- Developed by the University of Hertfordshire
- First version released in June 2007
- Impressive piece of software already (not a beta)

> FOOT-CRS

- Developed by GEOSYS
- First Gamma version released in November 2007
- On-going development
- GEOSYS person could not attend + version issues

> FOOT-NES

- Developed by the University of Giessen / Inovagis
- First Gamma version released in October 2007
- On-going development
- Version issues now fixed!



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Dissemination activities



- > FOOTPRINT web site
 - ca. 2000 unique visitors per month
 - (+ FOOTPRINT PPDB: ca. 6000 unique visitors per month)
- > Project newsletter in April 2007 well received.
- > 6 scientific papers, 4 papers being currently drafted, 5 more to come
- > ca. 30 FOOTPRINT presentations were given in 2007
- > Special FOOTPRINT session at Piacenza 2007
- > Soon to come:
 - Educational section
 - New newsletter



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Dissemination activities



- > FOOTPRINT reputation: a dynamic group of people developing innovative tools which are expected to be most useful to a wide range of users
- > Significant communication effort towards potential end-users
 - There is little point developing innovative tools if they are not being used and distributed extensively
 - There is urgency in reducing the transfer of pesticides to water resources (public, transposition in legislation)



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Taking your feedback into account



- > Orléans, 20 months ago
- > I left the kick-off meeting with 2 strong take-home messages delivered by AC members
 - We don't want to hear about uncertainty in the predictions of the tools
 - You do need to think very early on about what you need to do when the EU funding finishes (end of 2008)



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Beyond 2008



- > The EU funding stops at the end of next year
- > Yet there is a large agreement among FOOTPRINT partners and potential end-users that the FOOTPRINT initiative should continue
- > FOOTPRINT partners propose to create a structure to:
 - Provide support for the FOOT tools and disseminate the research
 - Undertake or commission innovative research
 - Derive new versions of FOOTPRINT



FOOTPRINT⁺

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Where we are going



- > 11 deliverables in 2006, 17 in 2007, 18 in 2008
- > Activities in Year 3
 - Modelling, modelling and modelling
 - Development of Beta versions
 - Evaluation of the tools
 - Finalisation of the FOOT tools
 - Communication about FOOTPRINT and the tools
 - FOOTPRINT+
- > A challenging year ahead (yet again!)



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Concluding remarks



- > FOOTPRINT has already produced useful outputs and will continue to do so
- > Genuine will to see the FOOTPRINT tools being used widely throughout Europe
- > We will keep our eyes on the (FOOT)ball



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Acknowledgements



The funding of the **FOOTPRINT** project
by the European Commission
through its Sixth Framework Programme
is gratefully acknowledged



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