1. INTRODUCTION

FROGS (French Refinement Of Groundwater Scenarios)
UIPP Training

Paris, 22-23 January 2015

UIPP Environmental Methodology Working Group

Agenda, 22-23 January 2015

- 10h: 1-Welcome & Introduction
- 10h15: 2-Methodology
  - 2.1 Agronomic Units
  - 2.2 Crop parameterization
  - 2.3 Meteo & irrigation
  - 2.4 Soil selection & parameterization
  - 2.5 FROGS update

- 12h30: Lunch break

- 13h30: 3-Implementation of FROGS in the French evaluation scheme
- 14h: 4-Demo and exercises
  - Data entry
  - Evaluation of results
- 16h30: 5-Conclusions

UIPP Workgroup

UIPP Workgroup Members, January 2015

- Ludovic Loiseau (chair) – Syngenta
- Christian Guyot – (UIPP)
- Wolfgang Reiher – Dr. Knoell Consult
- Lucas Garcia – BASF
- Klaus Hammel – Bayer CropScience
- Stefan Schubert – Dow
- Steve Knowles – Dow
- Haytham Shbaita – BASF
- Carole Obeidy – Syngenta

Previous Members

- Claude Beigel, Michael Berardozzi, Nicolas Domange, Laetitia Comoretto, Marie Cecchi, Gunnar Kahl

French Refinement Of Groundwater Scenarios
History

- **2000 : CET-SSM Environment working group brainstorming**
- **2004 : SSM - Environment WG / Groundwater subgroup**
  - Start of groundwater scenarios project
  - Proposal of a methodology for scenario construction (C. Brown, York Univ.)
  - Soil selection : INRA Infosol (Orléans), determination of typical soils
  - Concept and building of Agronomic Units
  - Gathering and compilation of crop data (emergence and harvest dates, rotations)
- **June 2006 : Last meeting of the SSM Groundwater subgroup**
  - First simulation tests
  - Presentation of B. Remy at 8th Fresenius AGRO conference
  - Project stopped uncompleted
- **2007-2010 : UIPP environmental methodology subgroup pursues work**
  - AFSSA : Internship of V. Balot (report and presentation at GFP)
  - UIPP : Finalization of data collection, database, interface, test simulations, report

French **R**efinement **O**f **G**roundwater **S**cenarios
History

- **2010 : Release of FROGS 1.1.1.1**
- **2011: Release of FROGS 2.2.2.2**
- **January 2014: release of FROGS 3.3.3.3**
    - Adaptation to FOCUS (2009)
    - Adaptation to Pearl 4.4.4
    - Use of agricultural survey from 2010
    - Improvement of crop surfaces allocation

History

ComTox Methodology Groundwater Workgroup: Regulators, scientific institutes (INRA, INA-PG), technical institutes (Arvalis) and industry (UIPP)

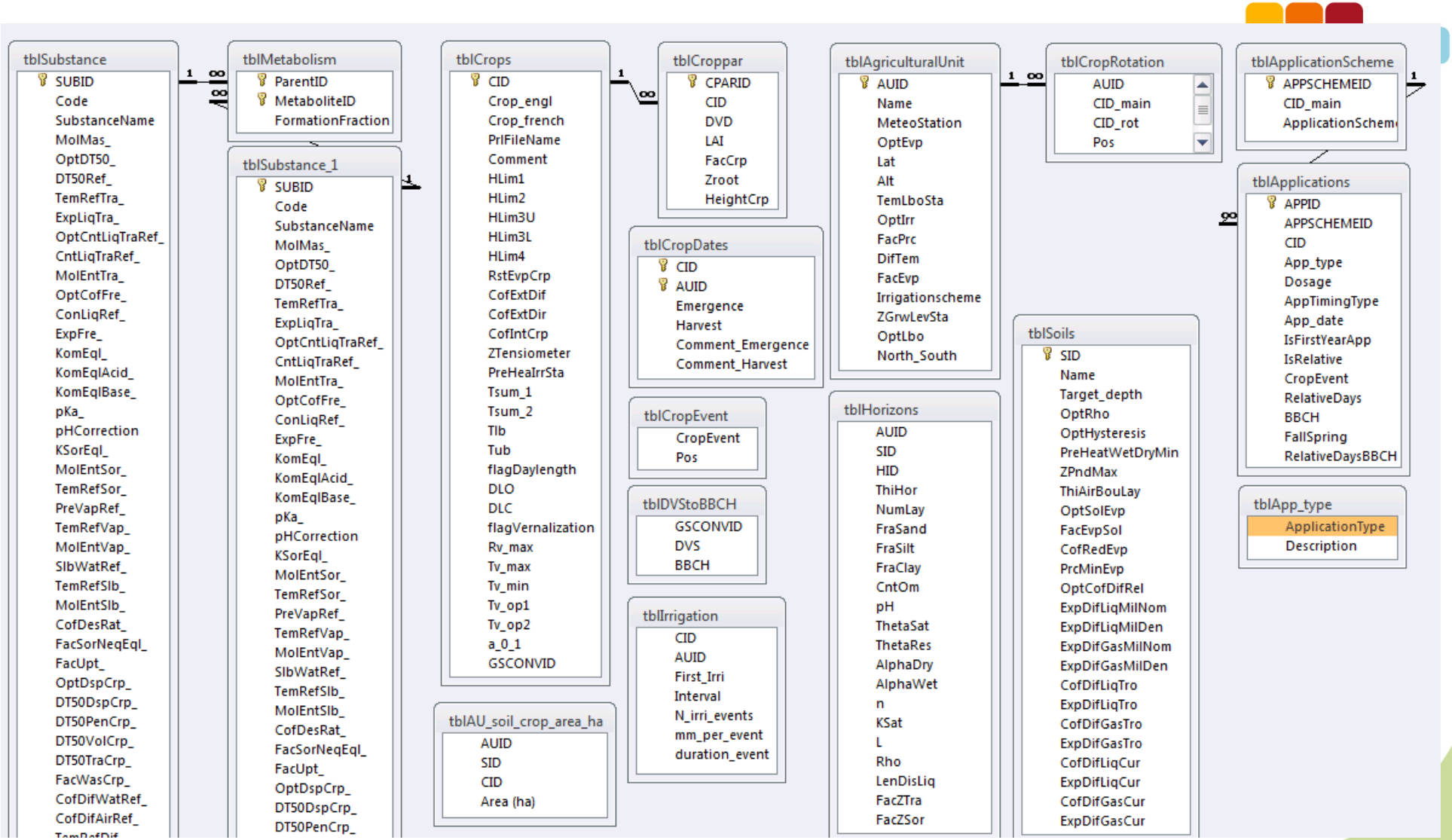
- André-Bernard Delmas (INRA – SSM – Versailles)
- Brigitte Rémy (INRA – SSM – Versailles)
- Laure Mamy (INRA – SSM – Versailles)
- Paul Gaillardon (expert ComTox),
- Christine Lebas (INRA – Infosol – Orléans)
- Xavier Morvan (INRA – Infosol – Orléans)
- Ary Bruand (Université d'Orléans)
- Benoît Réal (Arvalis – Institut du Végétal)
- Igor Dubus (BRGM)
- Yves Coquet (INRA – INA PG)
- Enrique Barriuso (INRA – EGC – Grignon)
- Guy Soulas (Université Bordeaux II)
- Christian Guyot (Bayer CropScience)
- Ludovic Loiseau (Syngenta)
- Claude Beigel (BASF)

Key principles from SSM work

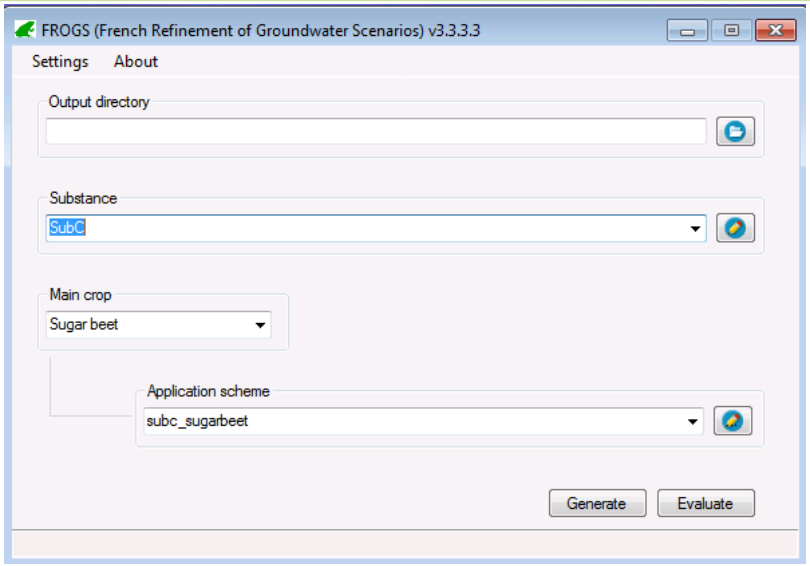
Higher-tier scenarios describing realistic conditions

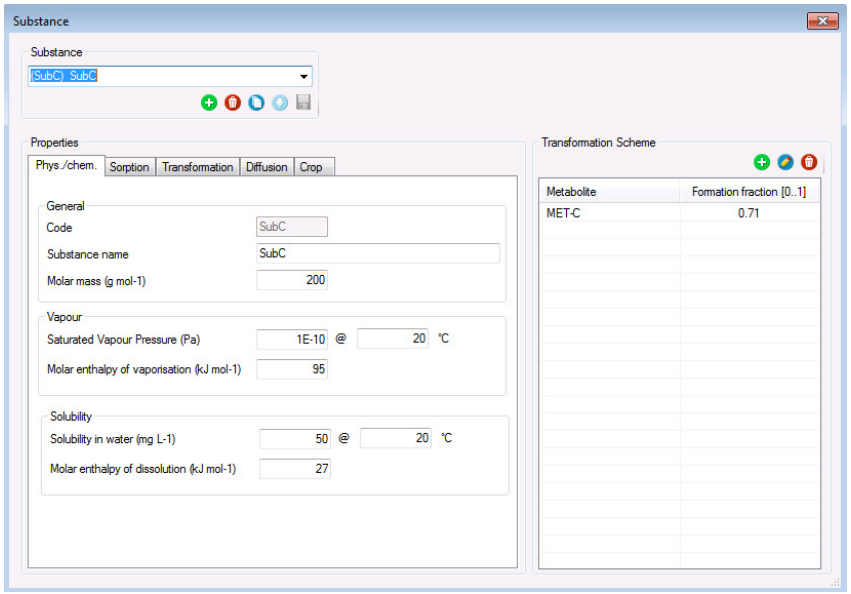
- **Tier 2, national Scenarios only needed if standard European FOCUS scenarios show exceedances**
- **Variety of representative conditions rather than worst-cases**
  - Selection of real soil profiles of depth ranging between 40 – 140 cm
  - Crop rotations to be considered
  - Main field crops: wheat, barley, maize, oilseed rape, sugar beets, potatoes, sunflower
  - Choice of average values for parameterization (soil, meteo and crop parameters)

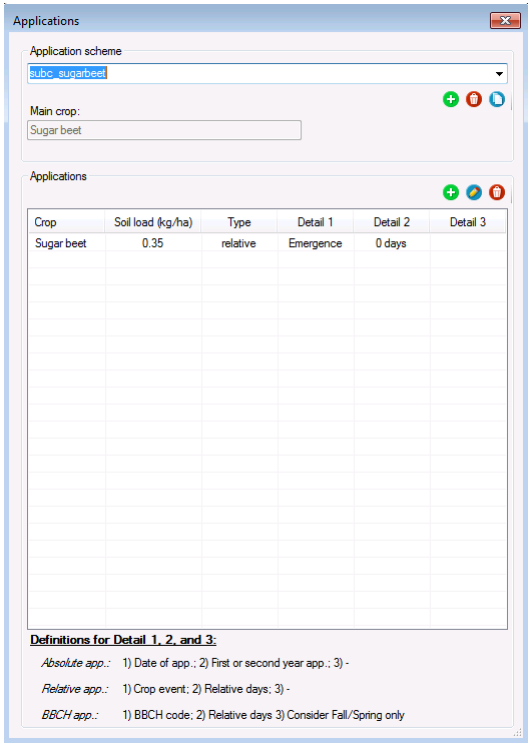
French Refinement Of Groundwater Scenarios
The Database

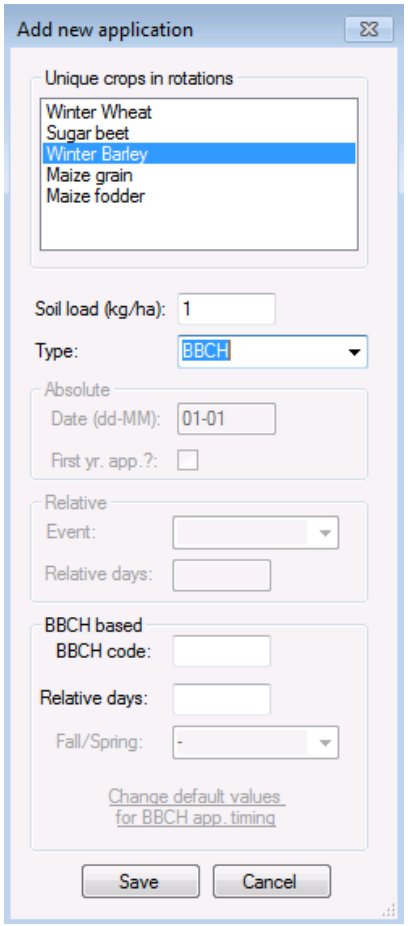


French Refinement Of Groundwater Scenarios
The Shell

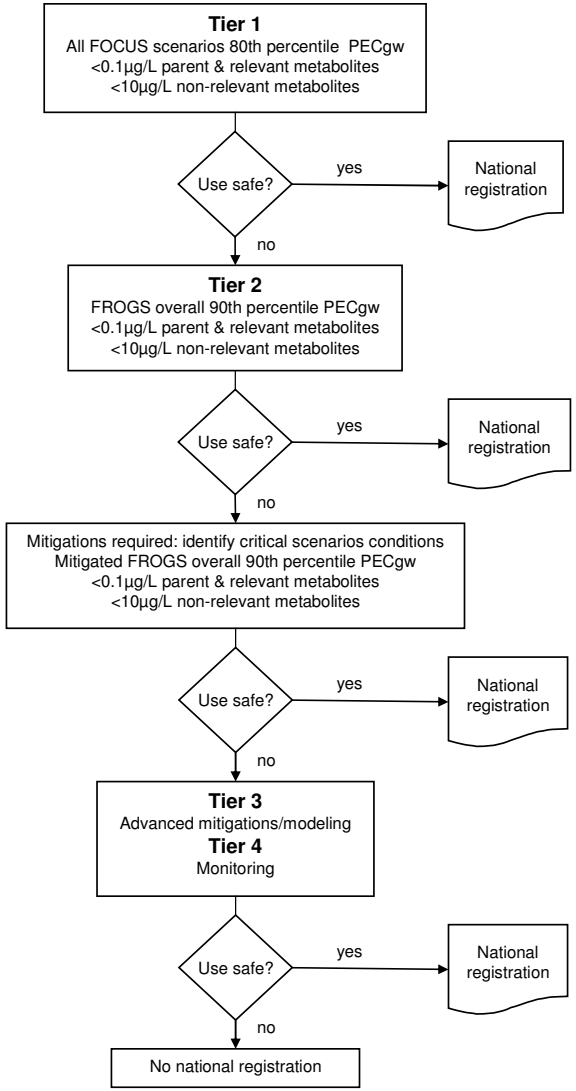








French Refinement Of Groundwater Scenarios
Groundwater Assessment Scheme



- **Implementation of FROGS into the national risk assessment procedure in line with EU / zonal assessment**
- **Protection goal: overall 90th areal percentile pecgw in line with existing focus recommendations**
- **Mitigation options possible**

Conclusions

- **Realistic environmental conditions in terms of climate, soils and management derived from readily available data**
- **Compliant with FOCUS principles (FOCUS-Pearl, 90th percentile threshold)**
- **Straightforward and easy-to-use tools**
- **Causal analysis of PECgw exceedances enables implementation of mitigation options**
- **Main limitations are due to limited availability of environmental data at sufficient spatial resolution; most severe is high aggregation of soil data**

Thank you very much for your kind attention.