



WULCA
A LIFE CYCLE
INITIATIVE PROJECT



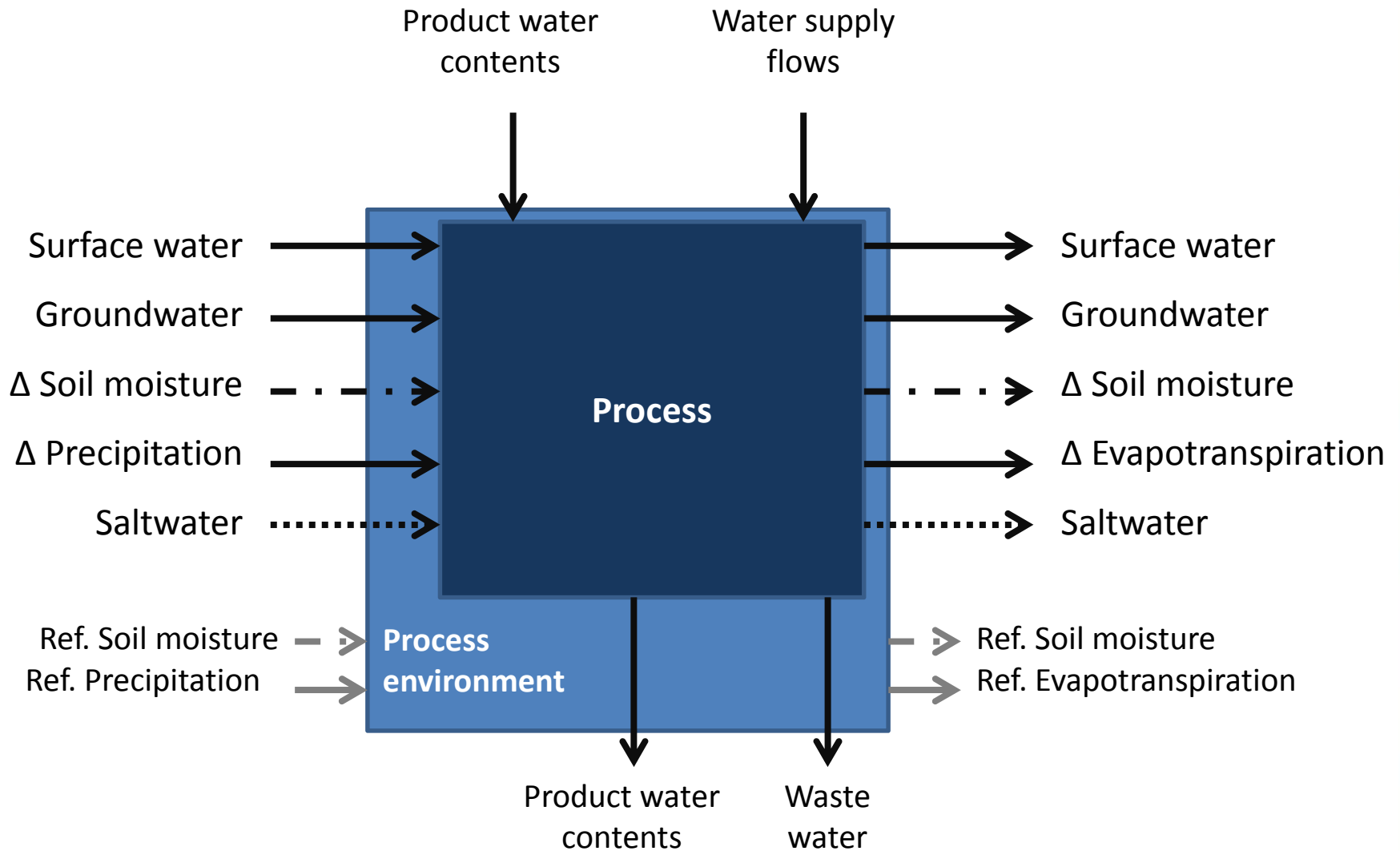
SETAC Glasgow May 12 2005
Stephan Pfister

New water data in ecoinvent v3

Relevance of water flows

- Increased demand for water footprinting
- Relevance of water consumption in agricultural products and power production
- Globally relevant but regional variability
- Abiotic resource perspective (freshwater):
 - Water consumption (mainly evaporation) relevant
 - Water quality as secondary resource impact
 - In-stream effects of infrastructure rather land use

Process water balance



Inventory problem:

- Previously:
 - ecoinvent v2 data on water withdrawals only
 - But: Water **consumption** relevant for most methods
 - No consistent consideration of outputs

Water in ecoinvent v3

- Only physical water flows are recorded
 - Water input from sea, surface water, groundwater and from air (precipitation)
 - Water output to sea to surface water and to air (evaporation)
 - Product integration (inputs and outputs, as flow properties)
- Quality issues are addressed by emission to water and resource use from water
 - Water quality to be calculated by impact assessment methods
- Regional information attached as shape file information
 - So far not beyond country level

Main sources for water flows

- Quantis water database (Quantis 2012)
 - Industrial water data mainly based on ecoinvent v2 and split of water flows:
 - Cooling vs process water (default split: 80% process)
 - Consumptive shares (adjusted by ecoinvent)
 - Process: default 15% but sector data applied to ~50% of datasets
 - Cooling: 50:50 mix of cooling pond and onces-through cooling
 - Crop data based on Pfister et al. (2011a)
 - Hydropower data based on Pfister et al. (2011b)
 - For 149 processes additional data was derived by Quantis
- New wcoinvent data sets (not consistently updated yet)

Water resource impact assessment

- Methods for impact assessment not included
 - Generally geographically explicit methods; not yet fully supported
 - No water archetypes defined as separate flows
 - Water scarcity nor water quality
 - Heat release to water excluded in v3
- Integration of regionalization
 - Advanced software tools required
 - Algorithms exist
 - Ongoing developments
 - Also required for integrating quality aspects
 - Required for supply chain assessment
 - Especially relevant for water flows of industrial products

Uncertainties

- No data without uncertainty information!
 - Water flows generally of low quality (low cost)
 - Basic uncertainty adjusted (k-factors):

	c	p	A
Water outputs	1.5	1.5	3
Water inputs	1.2	1.2	3

Conclusions

- Great effort to create comprehensive water database in LCA framework
- Still improvements to come in future versions
- Uncertainty need to be properly considered
- Software development required for impact assessment inclusion.

New water data in ecoinvent v3

...Out now!!!

