



WULCA Task #3: Quantitative comparison of water impact assessment methods

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Anne-Marie Boulay, Stephan Pfister, Cécile Bulle, Manuele Margni

Anne-Marie Boulay, M.Sc.A.
Ph.D. Student
CIRAIG – Ecole Polytechnique de Montreal

Plan

- Project description
- Comparisons
- Results (→ preliminary!)
- Conclusion

Project description and objective

- Midpoint indicators
 - Water scarcity (quantity)
 - Water stress (quantity and quality)
- Endpoint indicators on human health
 - Deprivation for domestic, agricultural and fisheries users (Pfister, Boulay, Motoshita)

Objective: to understand the implications of modeling choices, data and hypothesis in scarcity indicators

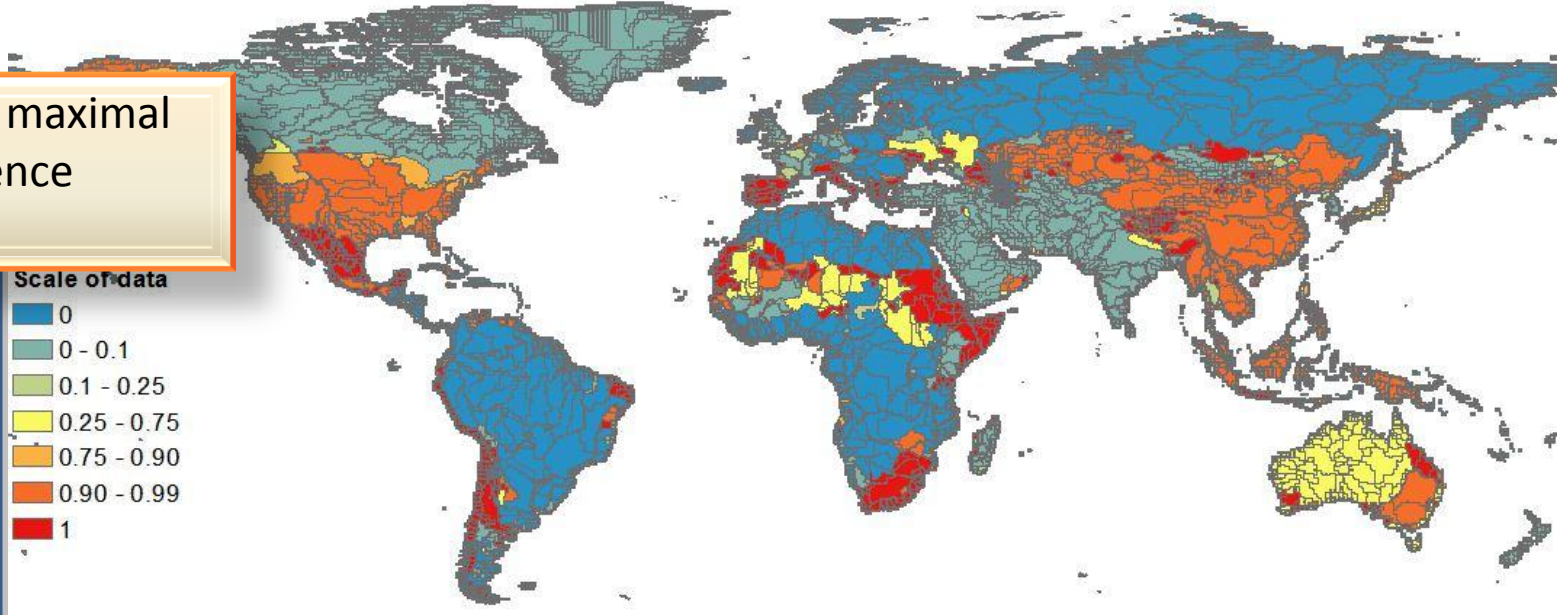
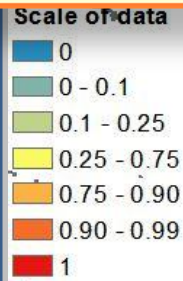
Description

- 4 methods
 1. Boulay (simplified)
 2. Pfister
 3. Swiss Ecoscarcity
 4. Blue water scarcity (WFN)
- 5 questions
 1. Regional choices
 2. Consumption or withdrawal-based scarcity assessment
 3. Temporal variability
 4. Source of water (surface, ground or unspecified)
 5. Source of data
- 2 indicators
 1. Rank correlation coefficient (Spearman)
 2. Mean difference coefficient (Gini)

Regional Choices – what is the most relevant scale of data and of results?

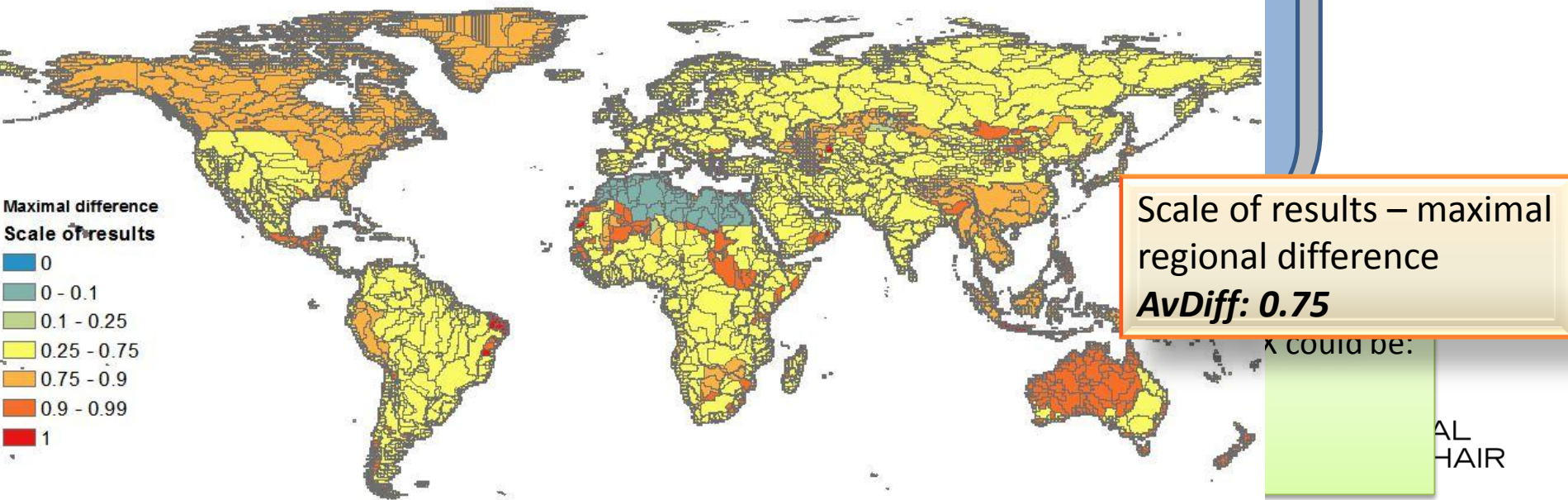
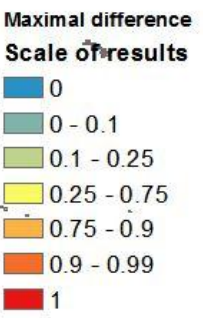
Scale of Data – maximal regional difference

AvDiff: 0.35

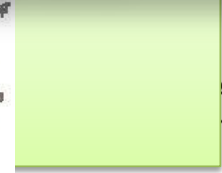


Scale of results – maximal regional difference

AvDiff: 0.75



x could be:



AL
HAIR

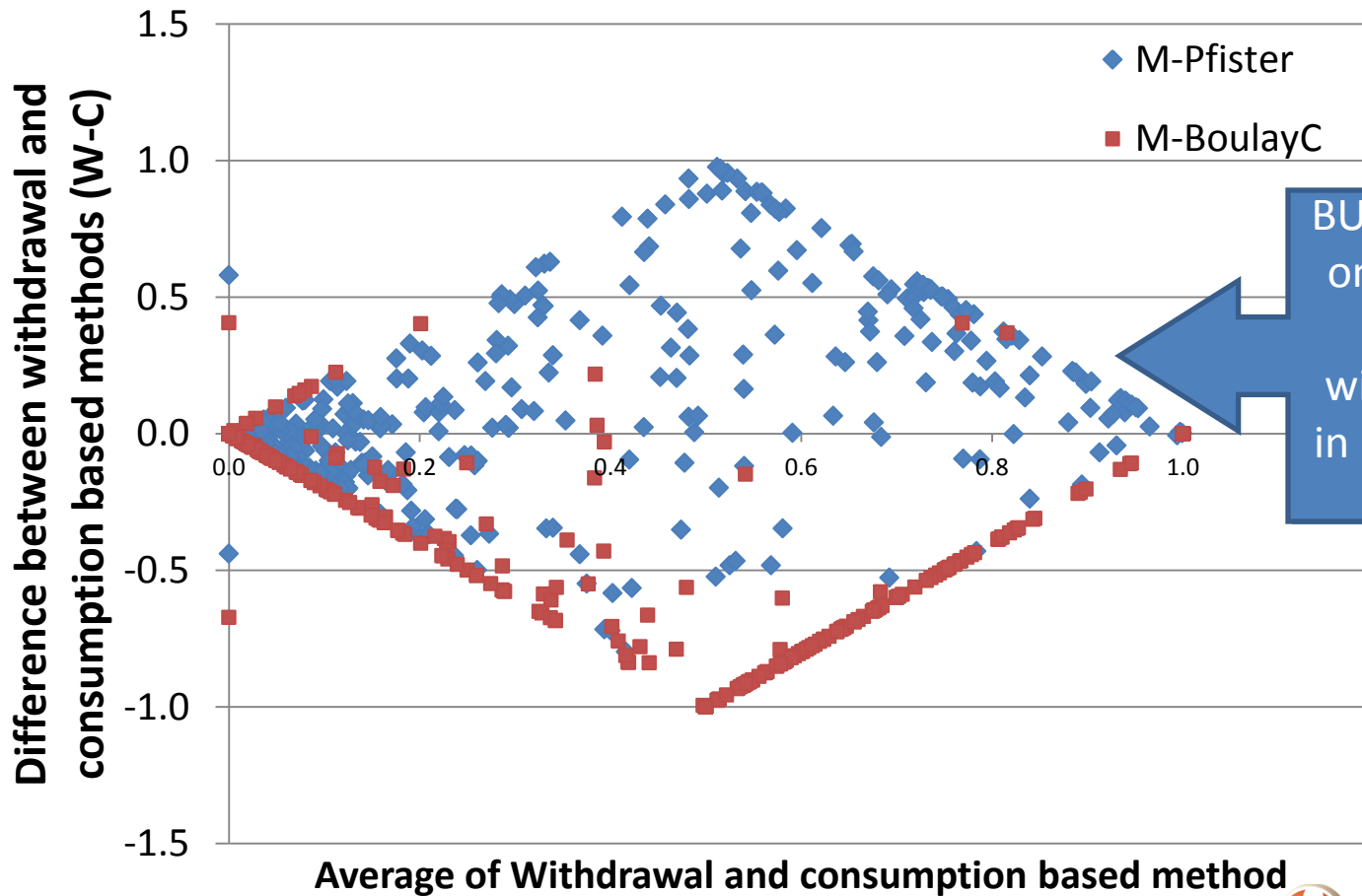
Consumption vs withdrawal-based scarcity

Scarcity is fct() of:

Withdrawal-to-availability ?

Consumption-to-availability ?

	RCC	Av Diff
Pfister	83%	0.15
Boulay	82%	0.14

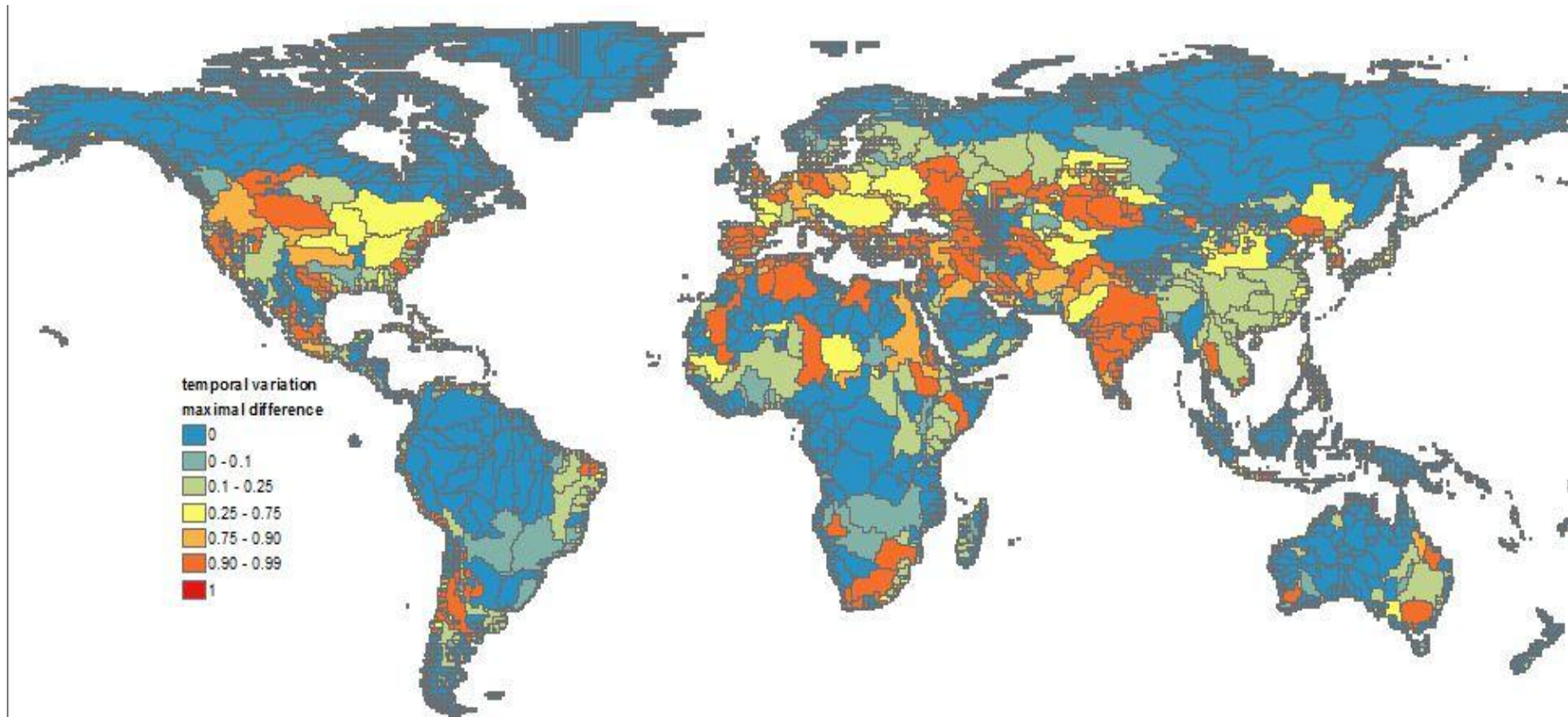


BUT...Scarcity based on consumption is higher (then withdrawal-based) in Boulay and lower in Pfister

Temporal variation

*Comparing monthly versus annual
assessment*

RCC: 96%
AvDiff: 0.03



Source of data

- Source of water:

- General
- Unspecified
- Surface
- Ground

Source	RCC	Mean Difference
Surface	97%	0.04
Ground	86%	0.09
Unknown	96%	0.04

- Source of data:

Using Pfister's consumption-based indicator to compare results with:

- WaterGap data
- WFN data

RCC	Mean Difference
82%	0.10

Conclusion

- Source of water or regional variations only relevant in some regions
- Regional choices, source of data and consumption vs withdrawal-based scarcity significantly affect results, but:
 - Which data source is the most representative?
 - How should scarcity be defined when using consumption-to-availability ratios?
 - What is the most relevant spatial resolution?



Anne-Marie Boulay, Ph.D. Candidate
CIRAIG – École Polytechnique de Montréal
anne-marie.boulay@polymtl.ca