

Models & Micropollutants

Connecting Water Resources 2015

Ottawa, ON

11 MAR 2015

Peter VANROLLEGHEM



Canada Research Chair
in Water Quality Modelling



Models to the General Public

$E=mc^2$



Weather



Models to the General Public

Understanding

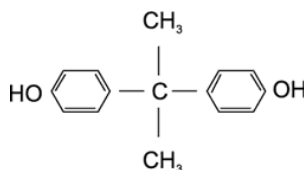


Prediction



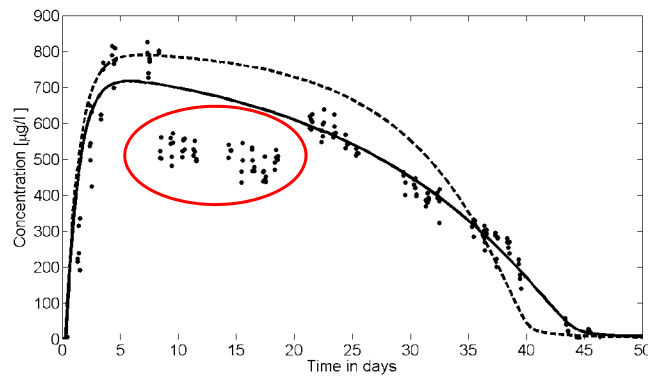
Understanding: Example 1

- Bisphenol-A (BPA)
 - Use
 - Polycarbonates (Bottles, CDs)
 - Epoxyresins (canned goods)
 - Banned in Canada



Understanding: Example 1

- BPA in effluent (*Injection of 10 g/d of BPA from day 1*)

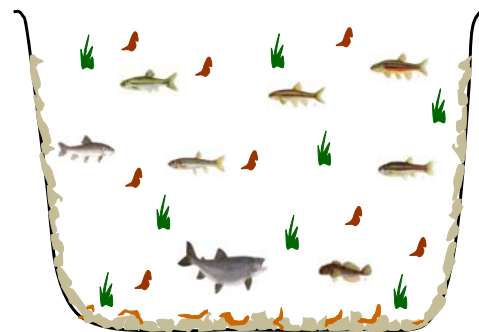


Understanding: Example 2

- Ecosystem impacts of MP's – Foodweb model



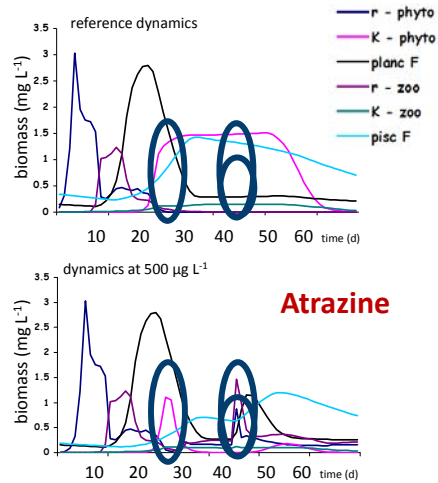
Experimental Lake Area
(Karen Kidd)



Understanding: Example 2

Foodweb model explains impact of herbicide:

- Disappearance of one phytoplankton
- Appearance of another phytoplankton
- Appearance of one zooplankton



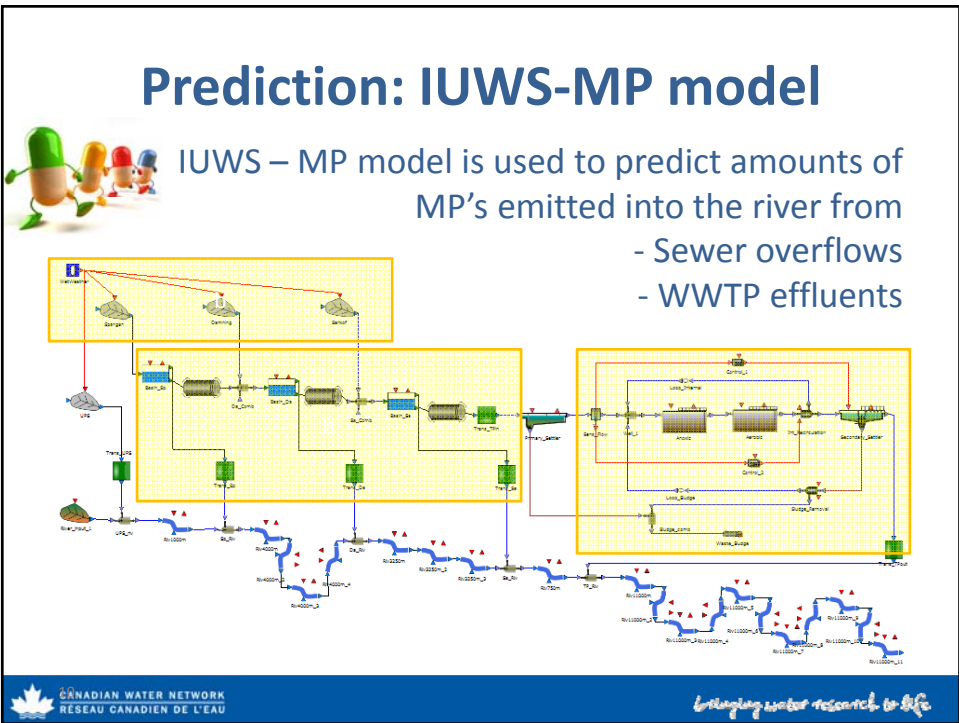
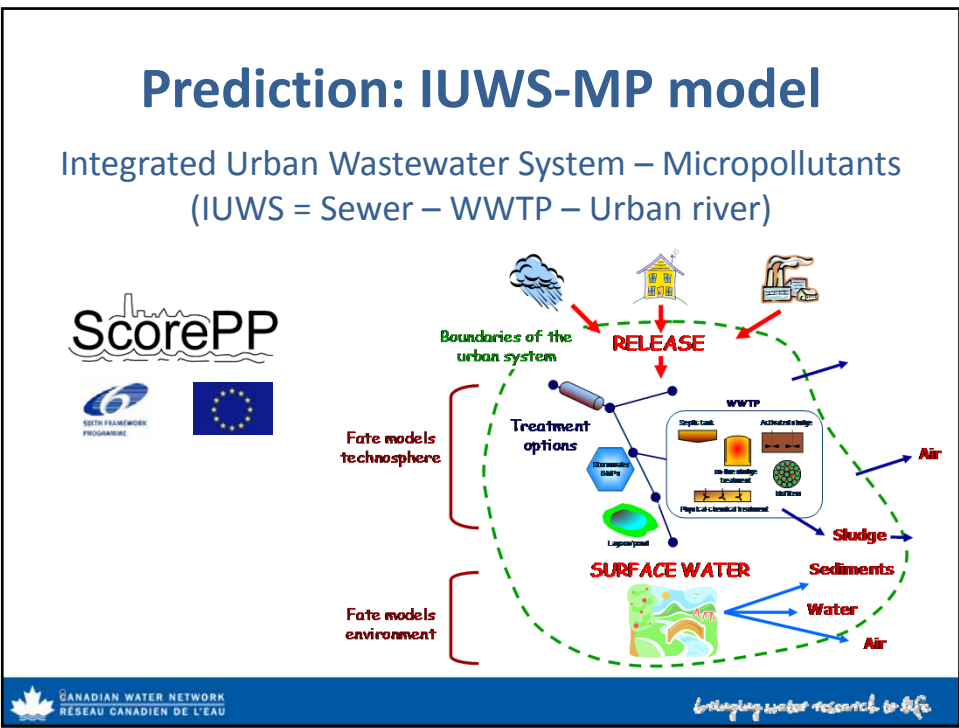
Models to the General Public

Understanding



Prediction





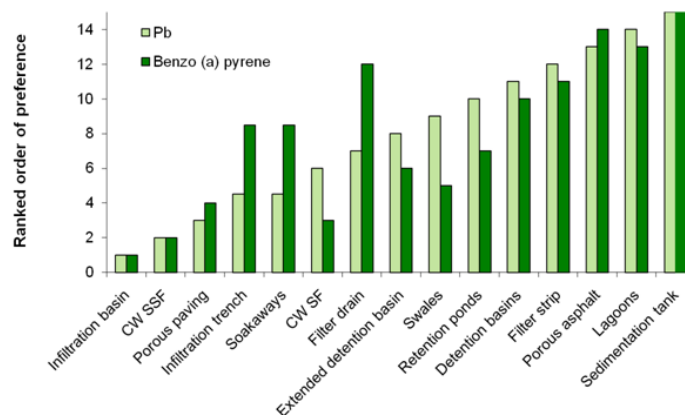
Prediction: IUWS-MP model

Overall emission can be reduced by Source Control measures, e.g. Best Management Practices (BMP's)



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Combined sewer overflows can be reduced by installing and optimally running Retention Tanks



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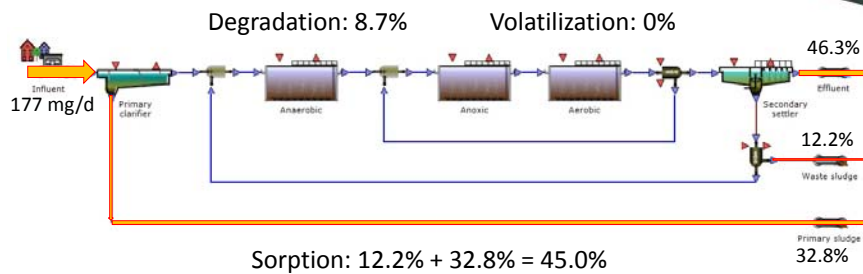
Improved wastewater treatment can reduce MP's presence in the WWTP effluent

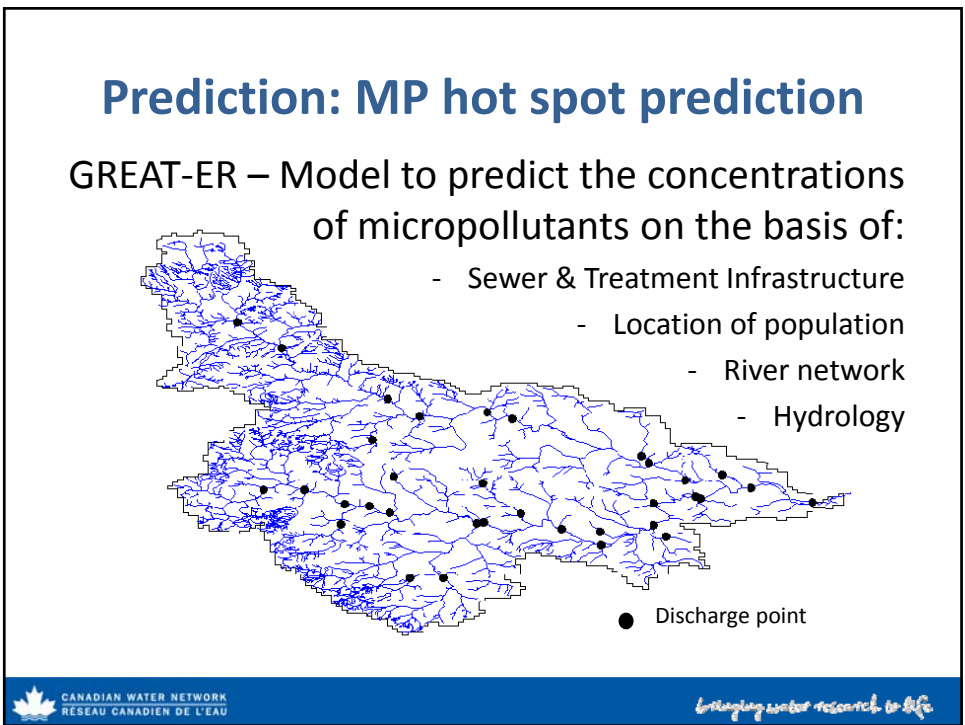
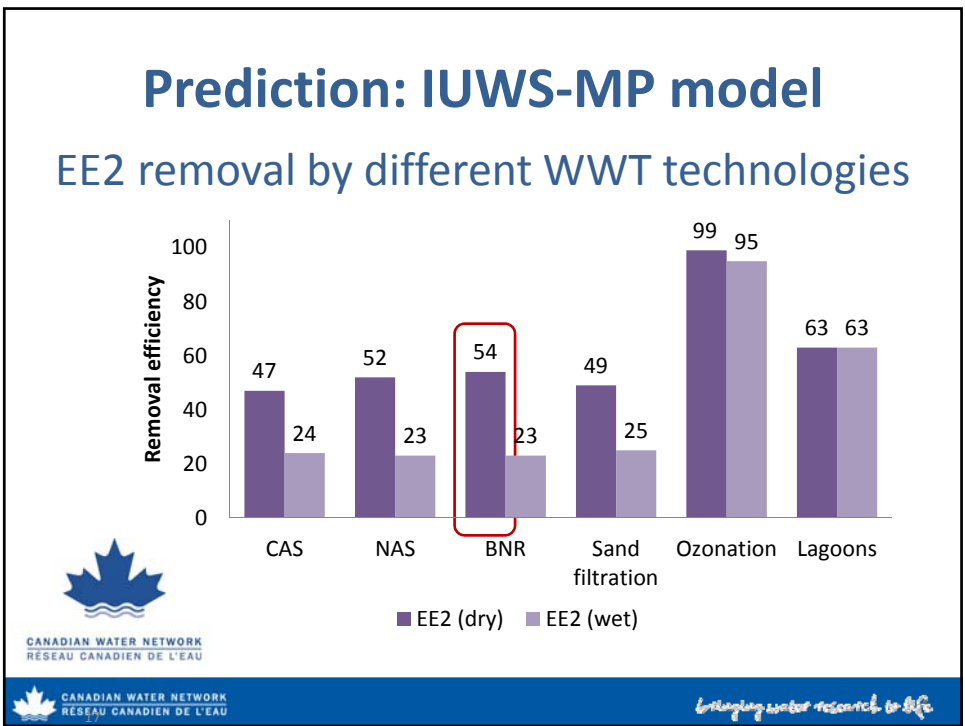


Prediction: IUWS-MP model

Improved wastewater treatment can reduce MP's presence in the WWTP effluent

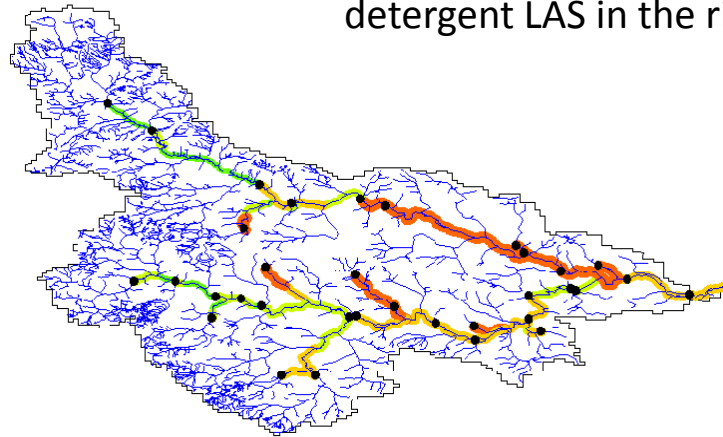
- Substance flux analysis of EE2 in BNR





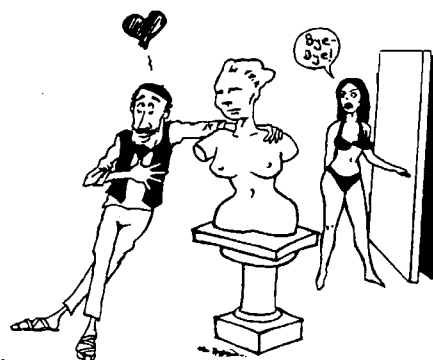
Prediction: MP hot spot prediction

GREAT-ER – Predictions on the detergent LAS in the river



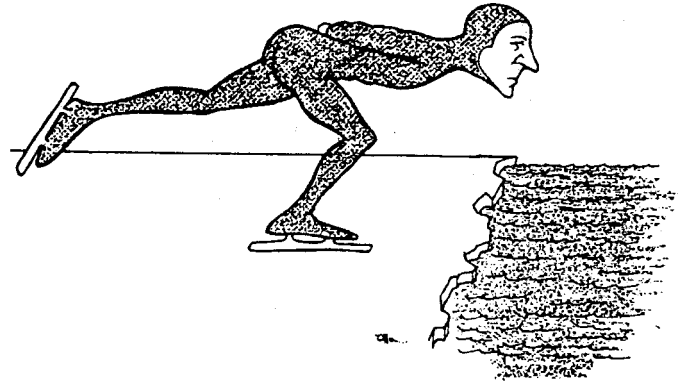
Epilogue

“Do not fall in love with your model”



Pygmalion

Don't extrapolate too far



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