

# Perspectives on lakes

Proclias water quality webinar

Annette B.G. Janssen & Maddalena Tigli



# Key sectors in this story



Water Quality (in development)\*

Maryna Stokal [🔗](#) [✉️](#)

\* Previous talk by Arthur Beusen



How can we benefit from each other?



Lakes

Rafael Marce [🔗](#) [✉️](#)

Don Pierson [🔗](#) [✉️](#)

Daniel Mercado-Bettin [🔗](#) [✉️](#)

Wim Thiery [🔗](#) [✉️](#)

# Lake sector (ISIMIP 2a/b)

- **Lake water temperature** (*Vanderkelen et al Geophysical Research Letters 2020, 47, (12)*)
- **Ice formation** (*Grant et al, Nature Geoscience 2021, 14, (11), 849-854.*)
- **Stratification** (*Woolway et al, Nature Communications 2021, 12, (1), 2318.*)
- **GHG emissions** (*Jansen et al Global Change Biology, 2022*)

**FOCUS ON PHYSICAL  
INDICATORS MAINLY**



## Lakes

Rafael Marce [📧](#) [✉](#)

Don Pierson [📧](#) [✉](#)

Daniel Mercado-Bettin [📧](#) [✉](#)

Wim Thiery [📧](#) [✉](#)

**BIOCHEMICAL INDICATORS**

# Key sectors in this story

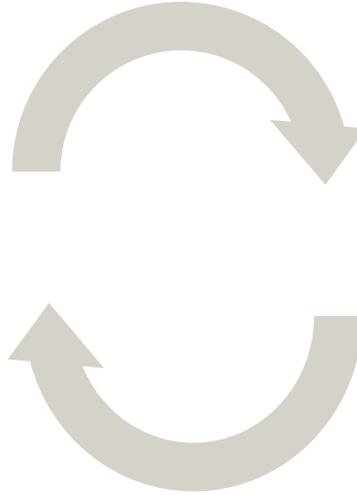


## Water Quality (in development)\*

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NUTRIENT LOADS



NUTRIENT RETENTIONS



## Lakes

Rafael Marce [🔗](#) [✉️](#)

Don Pierson [🔗](#) [✉️](#)

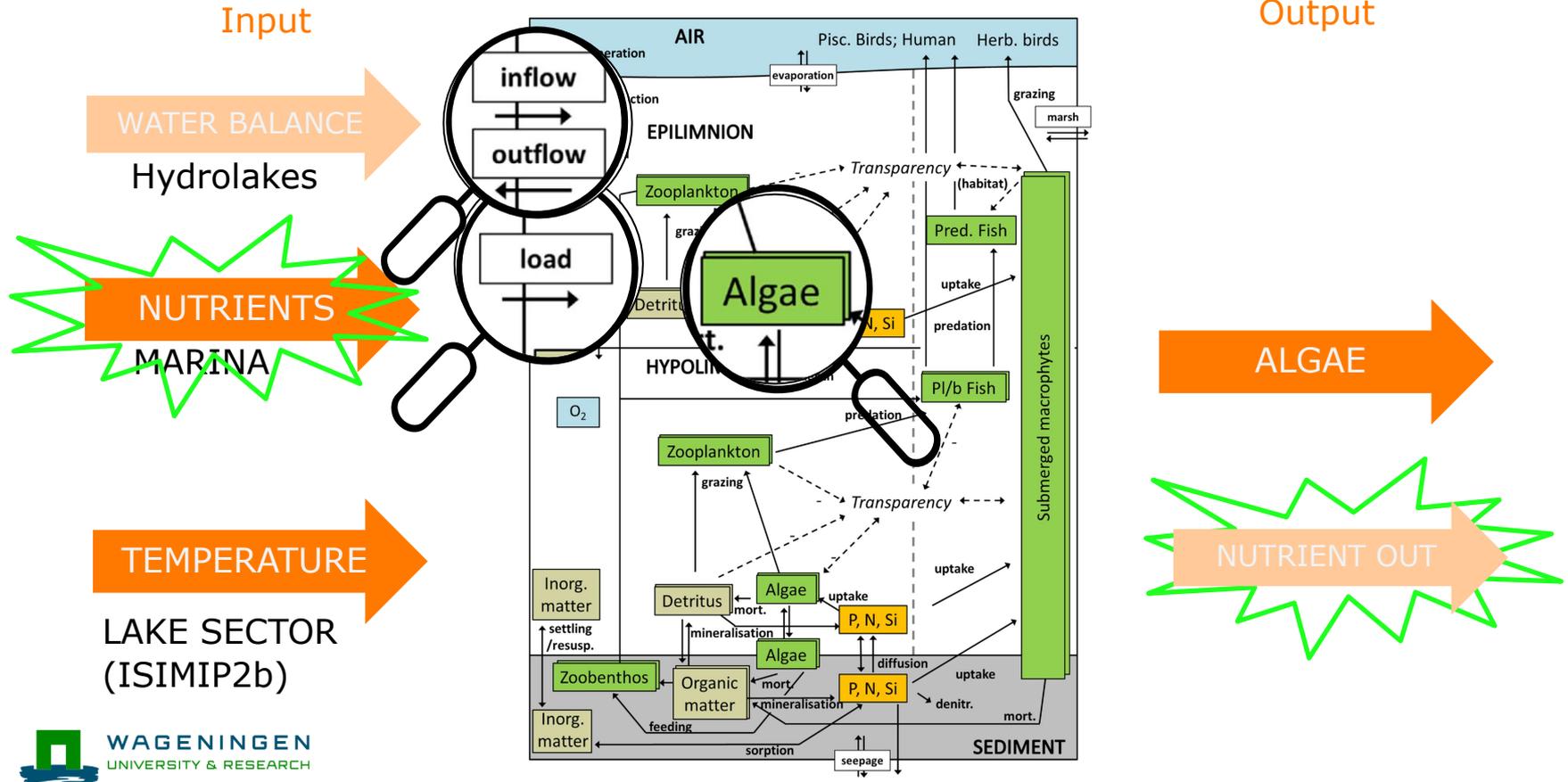
Daniel Mercado-Bettin [🔗](#) [✉️](#)

Wim Thiery [🔗](#) [✉️](#)

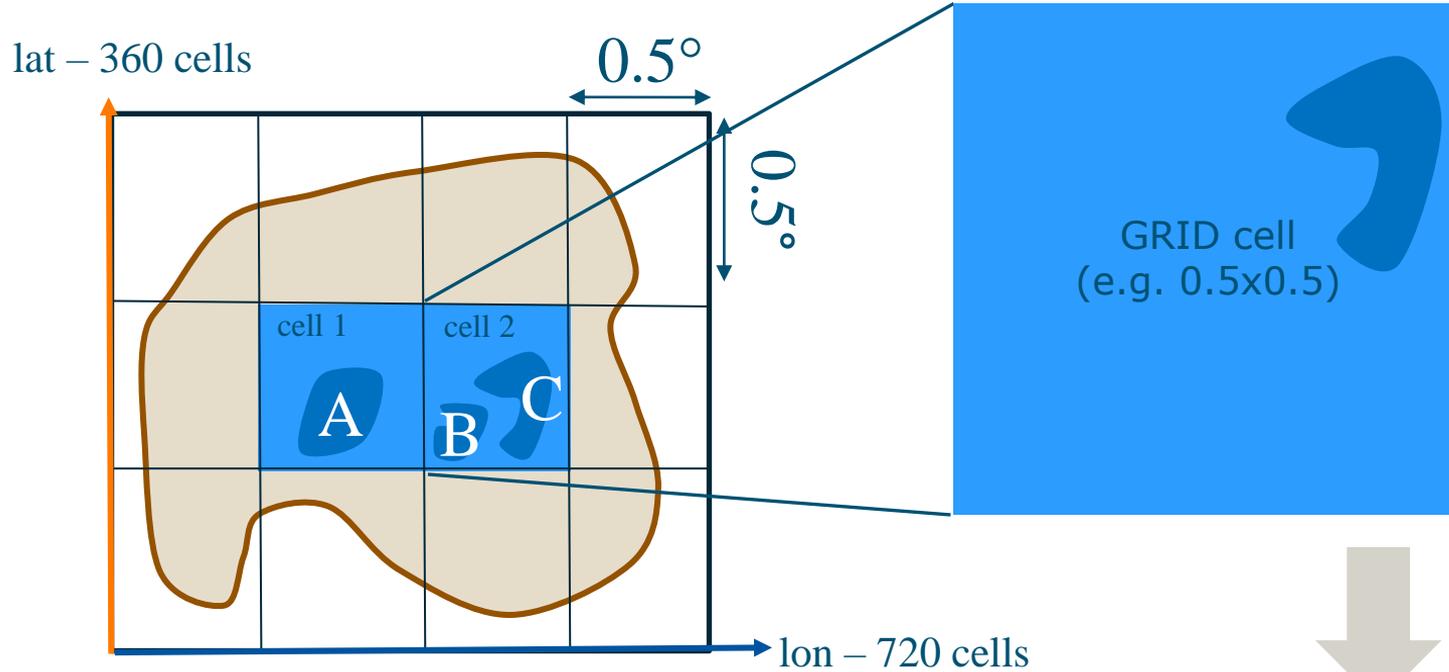
# First Attempt: **How will algal blooms develop in the future globally?**



# Model approach



# Representative lakes



New downscaling techniques

# Trophic state index

$$TSI(Chl) = 9.81 \times \ln(Chl) + 30.6$$



TSI	Trophic State
< 30	OLIGOTROPHIC
30-40	OLIGOTROPHIC / MESOTROPHIC
40-50	MESOTROPHIC
50-60	EUTROPHIC
60-70	EUTROPHIC / HYPEREUTROPHIC
> 70	HYPEREUTROPHIC

# Conclusions

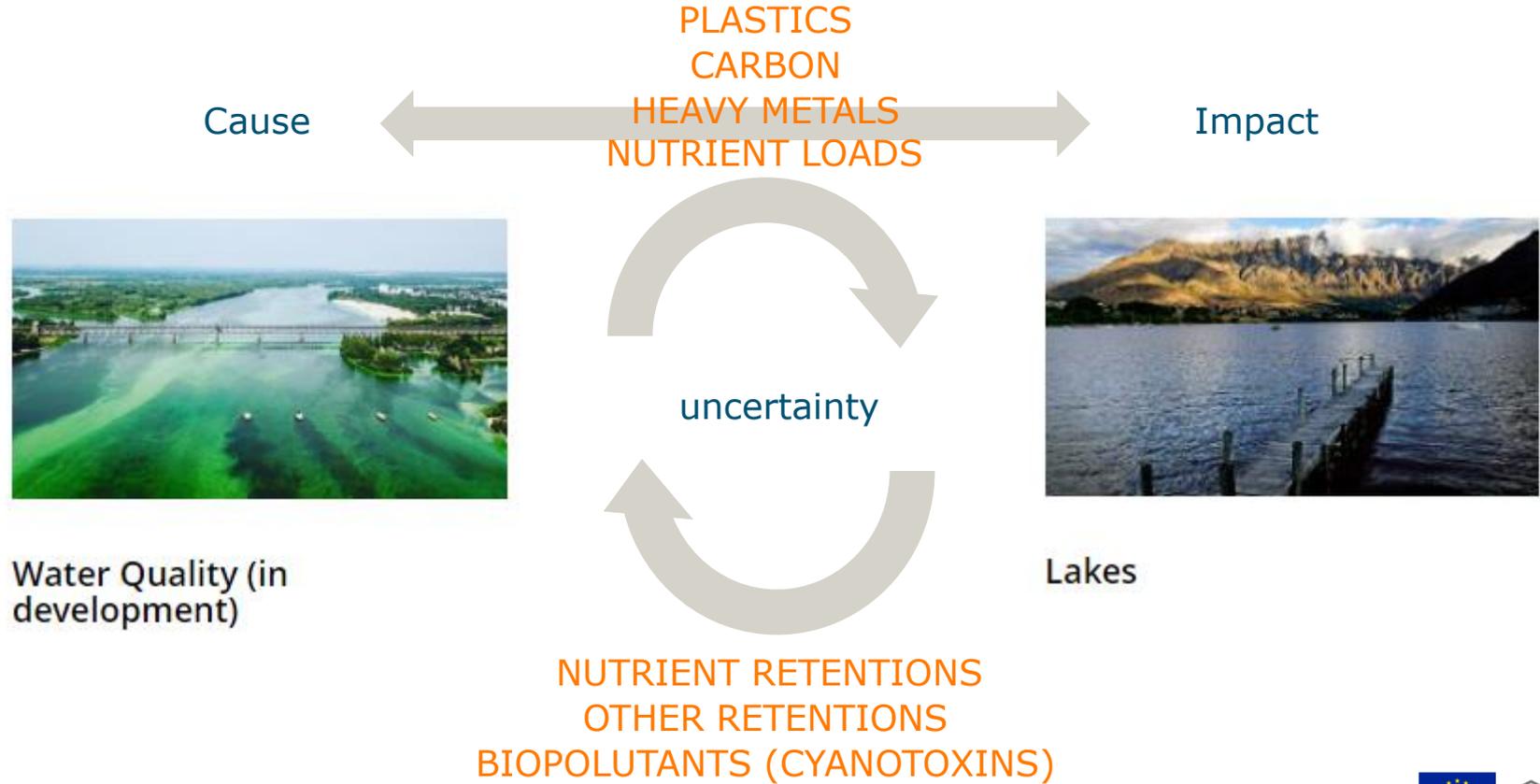
**2050 RCP2.6-SSP1**  
compared to 2010



**2050 RCP8.5-SSP5**  
compared to 2010



# VISION



*If the lake sector and water quality sector collaborate...*

What great research ideas would we able to work out?

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