QUANTIFYING IMPACTS OF WATER CONSUMPTION ON WETLANDS OF INTERNATIONAL IMPORTANCE

Francesca Verones

ETH Zurich, Institute for Environmental Engineering, Ecological Systems Design Group

Email contact: francesca.verones@ifu.baug.ethz.ch

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Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

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Content

- Wetlands of international importance

- Fate factors

- Effect and characterization factors

- Application

- Limitations and discussion points

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Wetlands of international importance

- Ramsar Convention

- Distribution inland wetlands

$$CF = FF \cdot EF \; [\text{species-eq·yr/m}^3]$$

3

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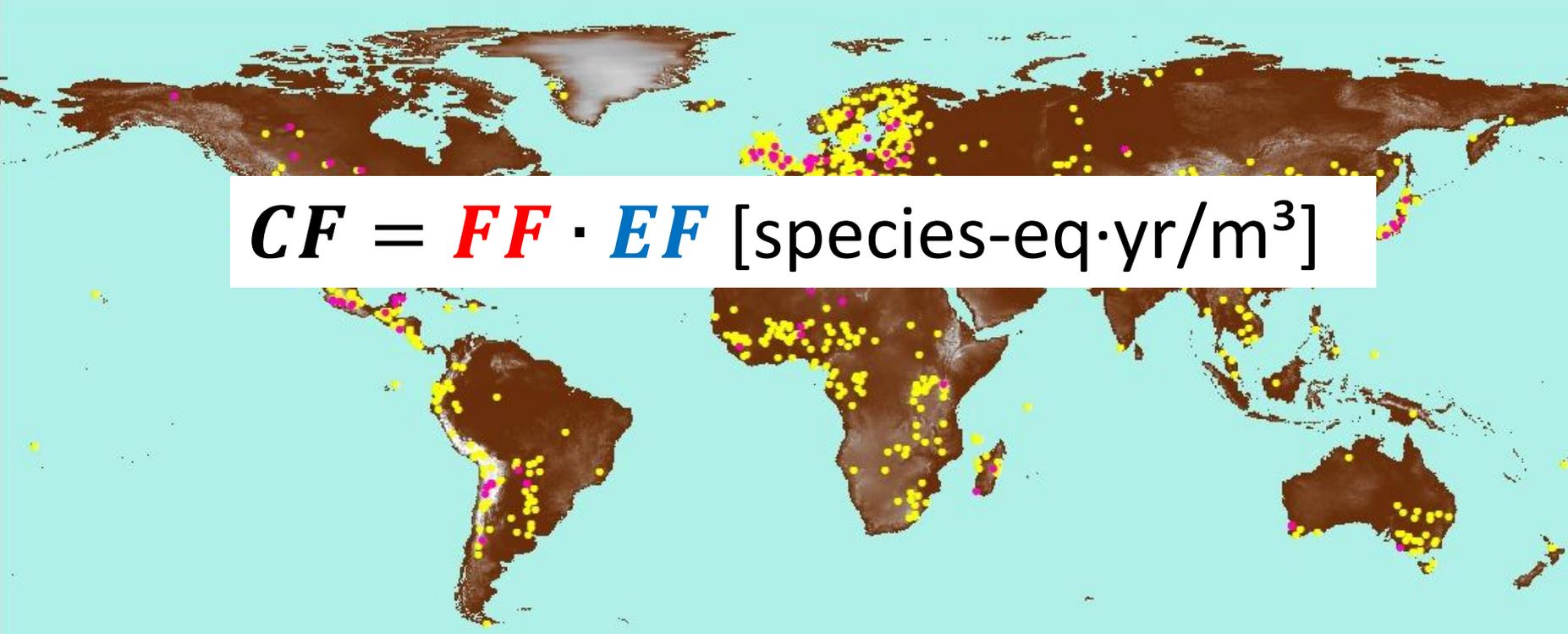
Fate factor development (I)

$$FF_i = \frac{(A_{reported,i} - A_{new,i})}{x_i}$$

- SW-fed

- GW-fed

Withdrawals from GW

P   PET

Q_{out}

s

I

m   GW

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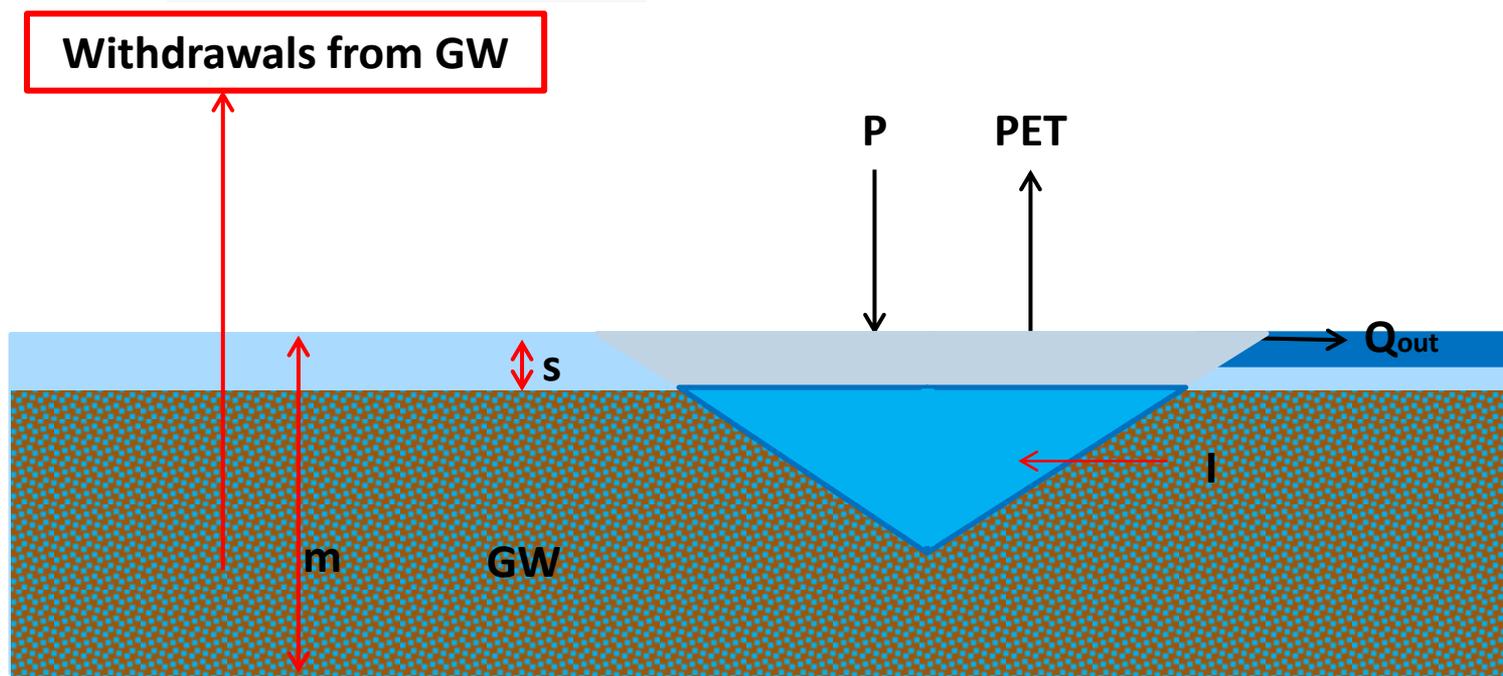
Fate factor development (II)

- Results

SW

GW

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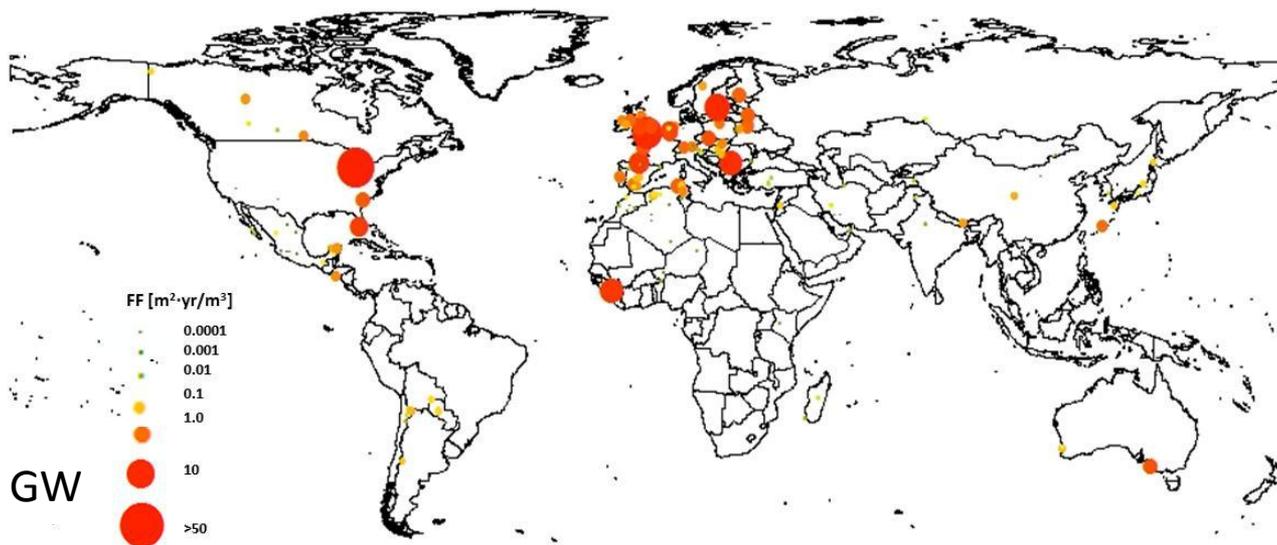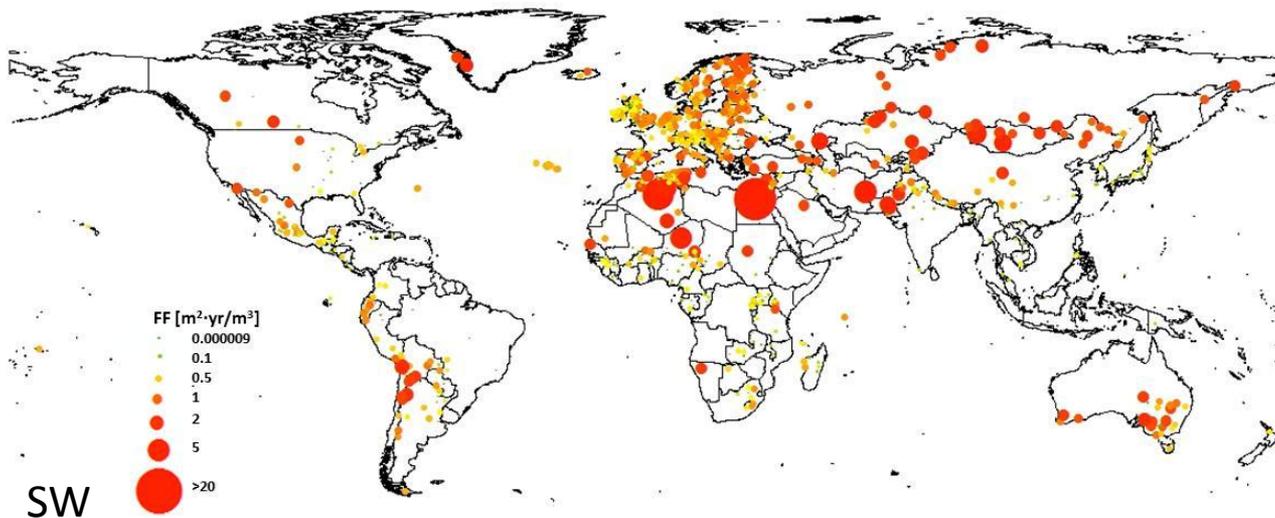
Effect factor development

$$EF_{bird,k} = \frac{\left(1 - \left(\frac{A_{new,k}}{A_{reported,k}}\right)^z\right) \cdot S_{bird,original}}{\left(A_{reported,k} - A_{new,k}\right)} \cdot \frac{RS}{CpA}$$
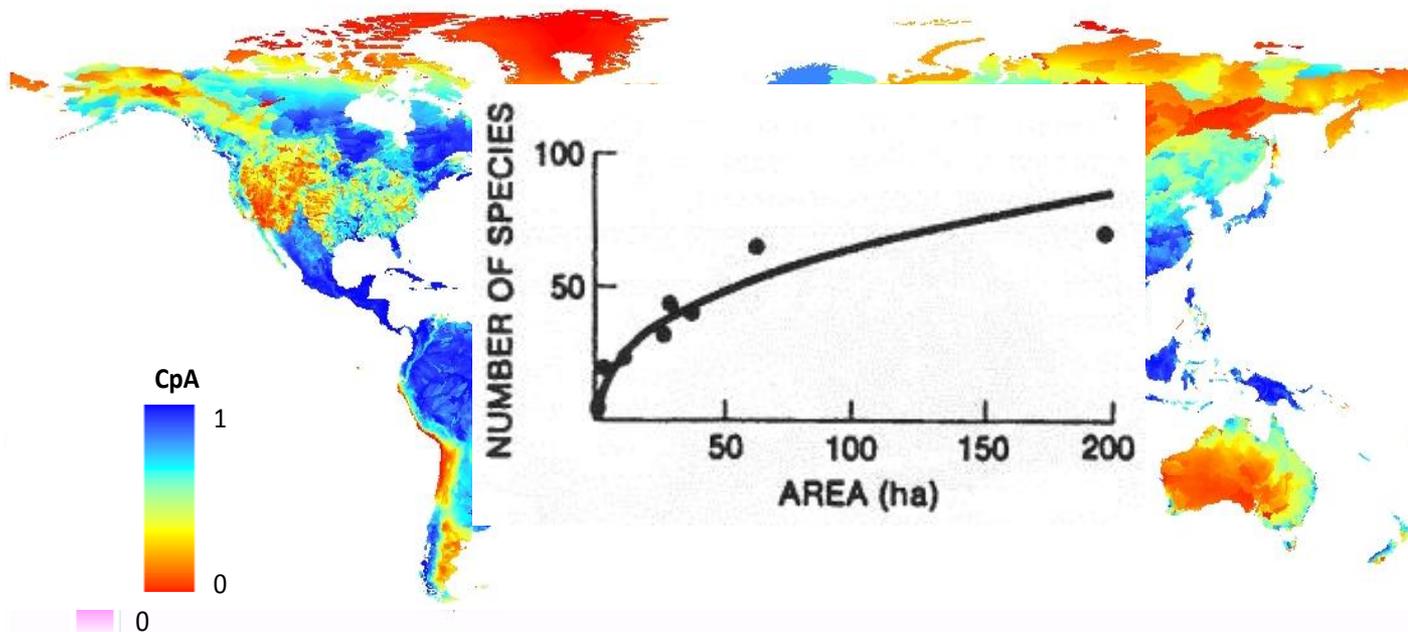
1. Species richness (waterbirds, non-residential birds, water-dependent mammals

2. RS: rarity score: reflecting the threat level (IUCN Redlist criteria) and EOO of species in each pixel

3.CpA: waterbodies per pixel→habitat degradation risk

Source: http://www.ecoaction.org/dop/no5/biodiversity.htm

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Characterization factors

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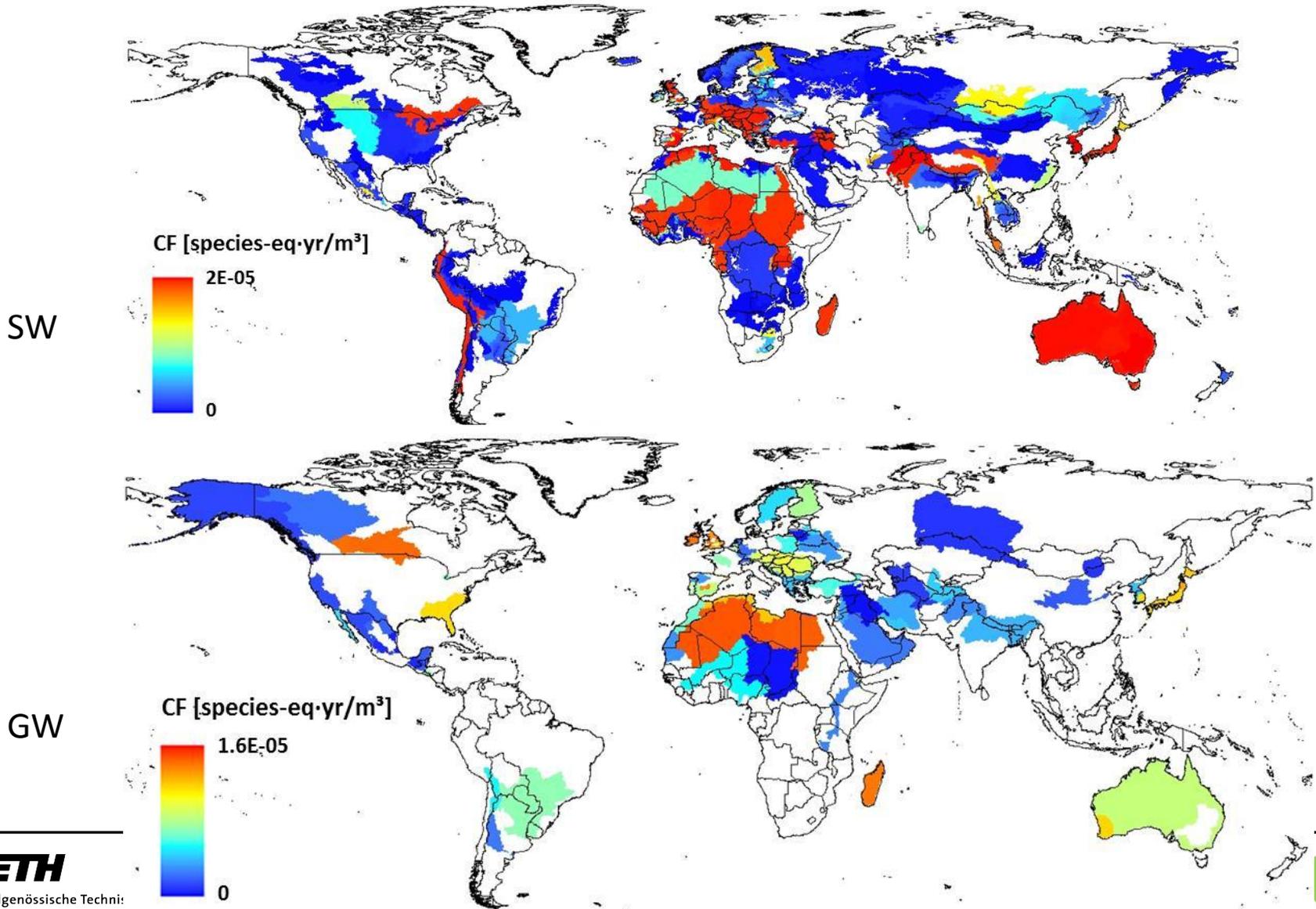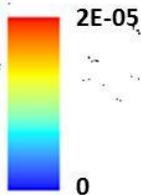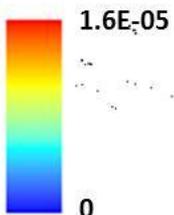
Application (I)

- Rose cultivation in Kenya

- LCA (not complete) for cultivation and transport to CH

- Lake Naivasha is SW-fed Ramsar wetland

- GW-fed wetland (lake Elmenteita)

- Water consumption per rose: 3.4 l SW, 0.7 l GW (WFN)

8

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Application (II)
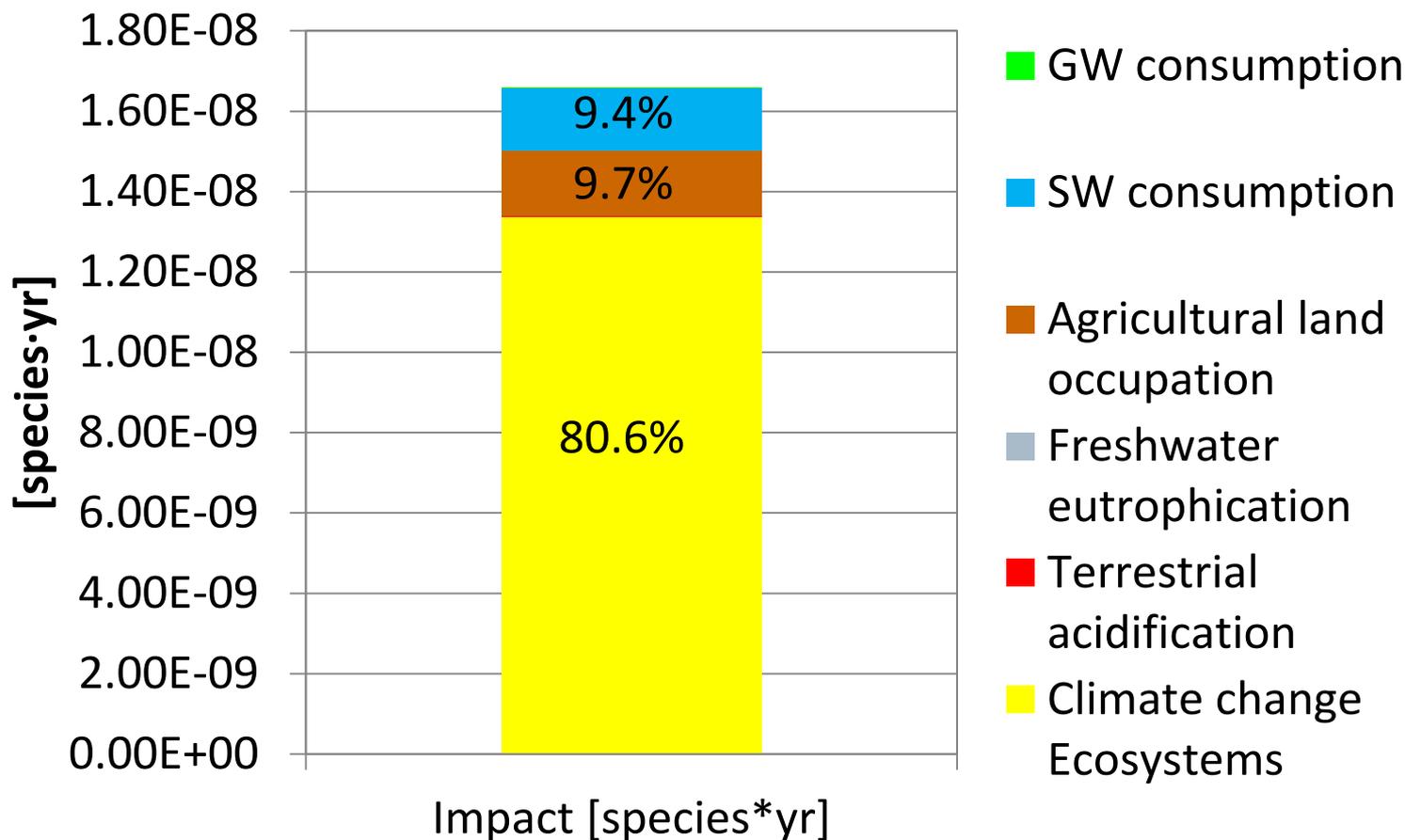
Limitations and discussion points

- Data quality ->uncertainties and sensitivity

- Data distribution -> «white» spots?

- Comparability diff. methods with diff. aspects/approaches of biodiversity loss

- Lack of hydrogeological models

- Resolution?

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Thank you for your attention.

✉ **francesca.verones@ifu.baug.ethz.ch**