ELINK-2 Data

Exposure and Effect Models for Pesticide Risk Assessment Across Scales: Availability, Limitations, and Data Gaps

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INTRODUCTION

Linking spatially and temporally explicit exposure models with effect models is a key objective of the ELINK-2 project [1]. Achieving this requires a clear understanding of what existing exposure and effect models can – and cannot – deliver in terms of data quality, spatial and temporal resolution, environmental compartments, and represented processes. Addressing this need is a core focus of the ELINK-2 Data group.

Are existing models fit for this purpose?

METHODS

- Unify **definitions on terms across scales** for the ELINK-2 workshop: extent, resolution, scale, complexity.
- Gather existing and regulatory accepted models, categorise by extent, scale, resolution and complexity to identify **potential challenges for linking exposure and effect models**.
- Keep track of how **ELINK-2 case studies connect across scales** and ensure harmonisation regarding data selection, statistical methods and terminology.

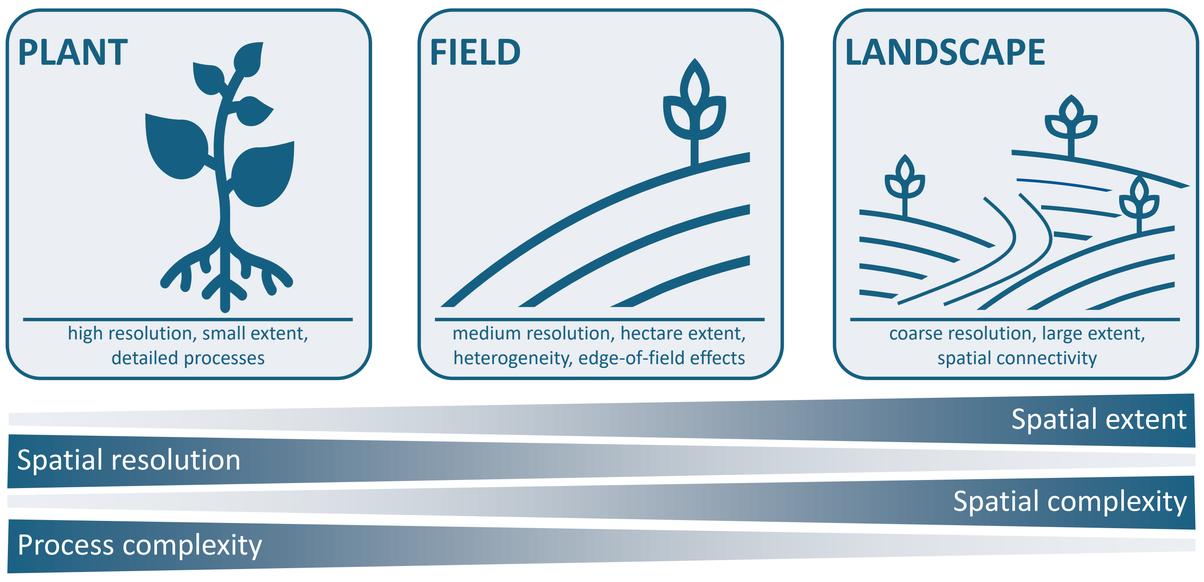

Figure 1: Spatial extent, spatial resolution, spatial complexity, and process complexity across plant, field, and landscape scale.

Figure 2: Key challenges associated with linking exposure and effect models, grouped into model availability, data gaps, and methodological limitations.

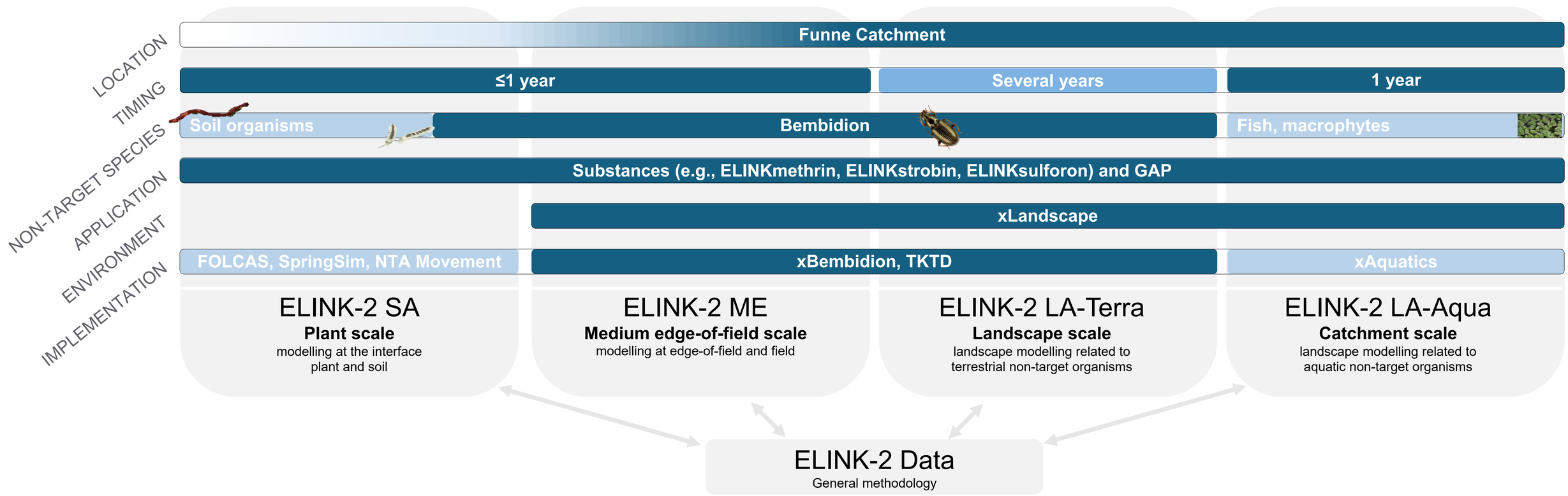

Figure 3: Overview of case studies and working groups of the ELINK-2 project spanning across the small scale plant (SA) – medium edge-of-field (ME) – landscape (LA). In the landscape domain, two case studies are established: Terra and Aqua.

RESULTS & OUTLOOK

- **Terminology for "scale" varies across disciplines.** The ELINK-2 data group will develop an agreed terminology across all subgroups, providing a shared basis for ELINK-2 and potentially supporting future risk-assessment terminology.
- **All regulatory models have limitations – combining models introduces additional challenges.** These include, e.g., data gaps for parameterisation and validation as complexity increases, mismatches between exposure and effects endpoints, and issues of model governance.
- **ELINK-2 will use case studies to evaluate the relevance and impact of these challenges.** This will help prioritise needs and resources for further development of risk-assessment models.

REFERENCES

[1] SETAC endorsed ELINK-2 workshop. (2026). ELINK-2: Linking exposure and effect modelling. https://elink2.info

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