Round Table
What is the next step to integrating SAM biology to the plant level?

Robert Faivre

INRAE - Département MathNum
MIA Toulouse

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Introduction

Points in abstracts and presentations

- integration
- multiscale
- plant model, cell model
- sensitivity to environment

References

- Scaling-up : from cell to landscape. Van Gardingen P. R., Foody G.M. and Curran P.J., editors. 1997. Society for Experimental Biology Seminar Series 63. 386p.
- Upscaling and downscaling methods for environmental research. Bierkens M.F.P., Finke P.A. and Willigen P. de, 2000. (Developments in plant and soil sciences ; No. 88). Kluwer. 190p.
- Faivre R., Leenhardt D., Voltz M., Benoît M., Papy F., Dedieu G. and Wallach D., 2004. Spatialising crop models. Agronomie, 24, 205-217.
- Methods of integrating data to uncover genotype–phenotype interactions. Ritchie M.D., Holzinger E.R., Li R., Pendergrass S.A. and Kim D. Nature Reviews Genetics volume 16, pages 85–97 (2015)

Scale Change for Data

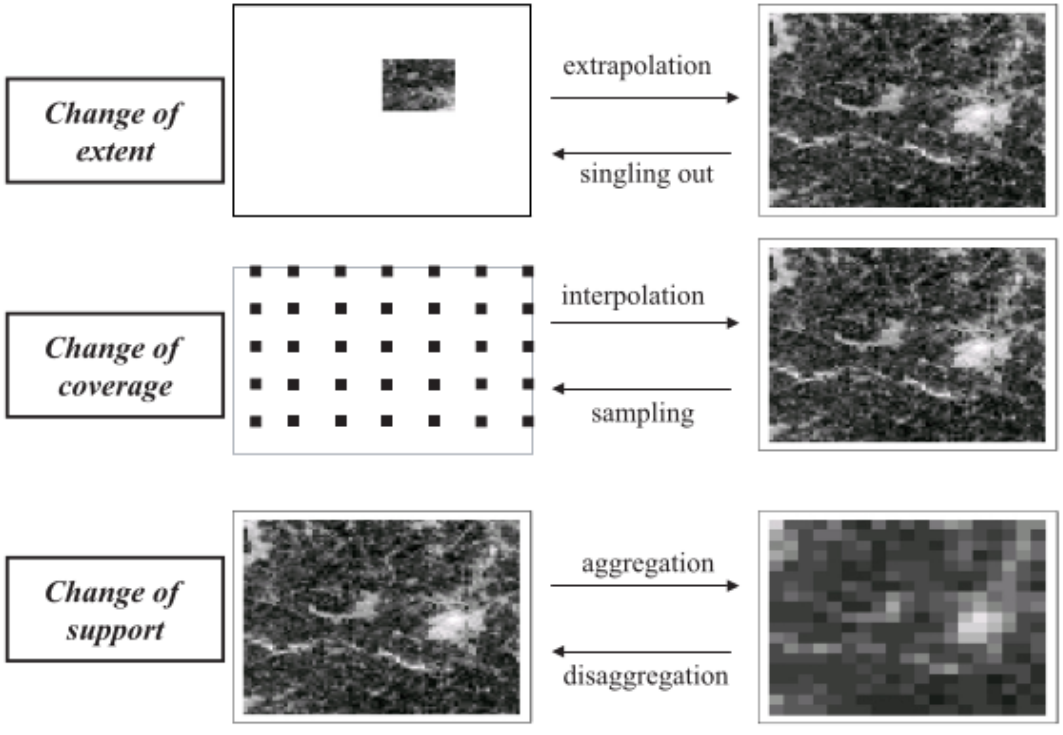


Figure 1. Basic operations involving extent coverage and support (from Bierkens et al., 1997).

Scale Change for Model

Model (cell, plant, crop, ...)

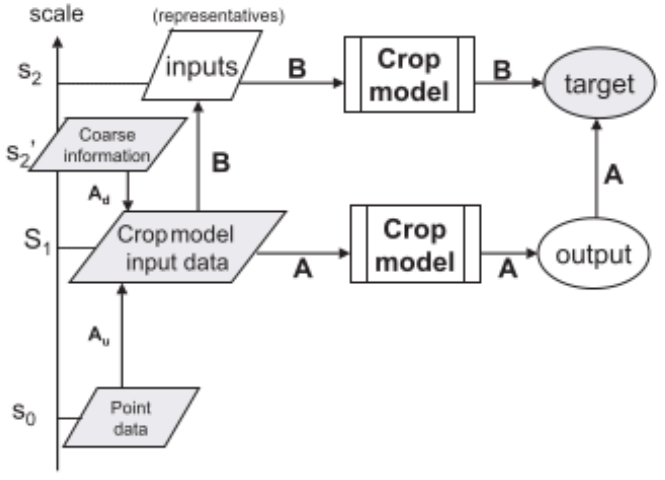
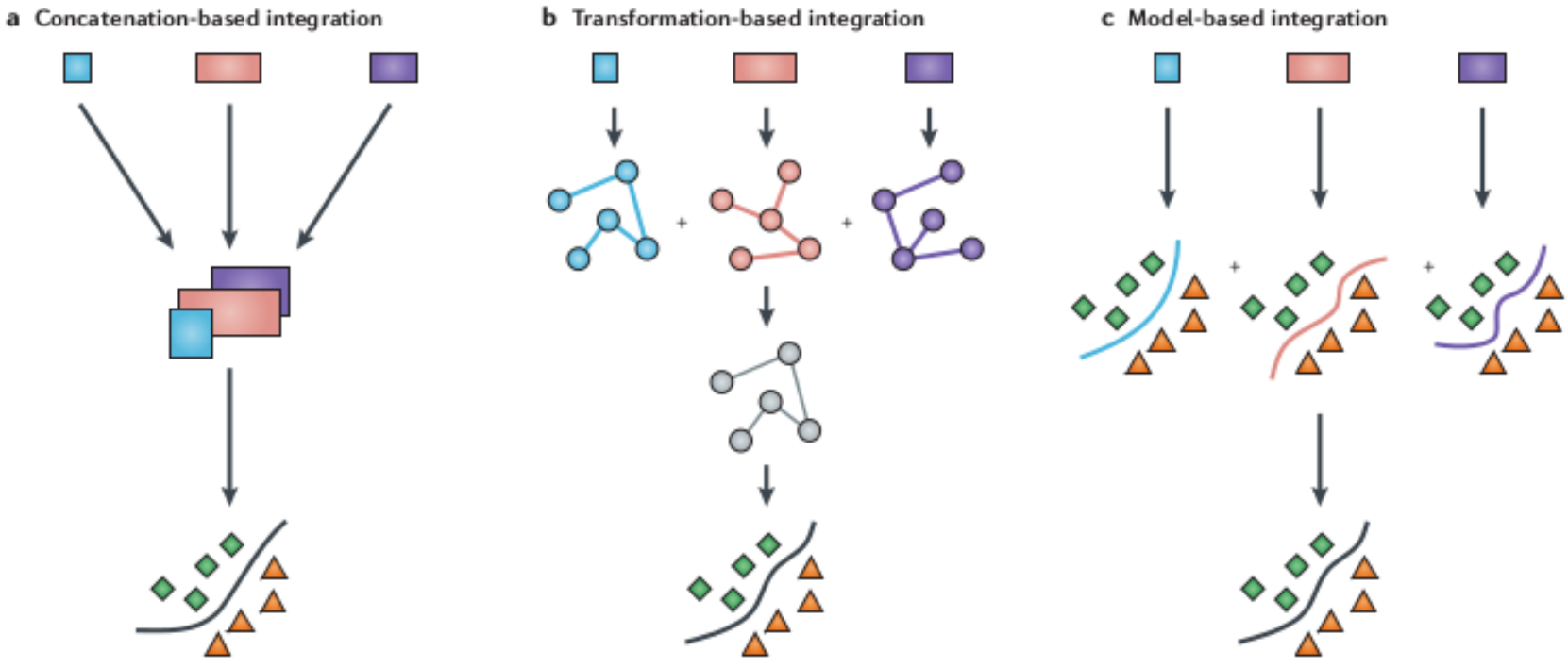


Figure 3. Strategies for upscaling a crop model: upscaling outputs (way A), upscaling inputs first (way B).

Model Change ? metamodel, emulator, surrogate, surface response,
(Mexico research network https ://reseau-mexico.fr)
Cell model to Plant model ?

Multiscale data integration



Proposed points to discuss

- What is the object of the integration or scale change : comprehensive model or predictive model ?
- Is a “huge” model (FSPM-like) able to intregrate all points of view ?
- How to deal with heterogeous environment ?
- How to continue ? An UE network ? An EU consortium or a lighter structure ?