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Evaluating the ecosystem services linked to water in agricultural ecosystems

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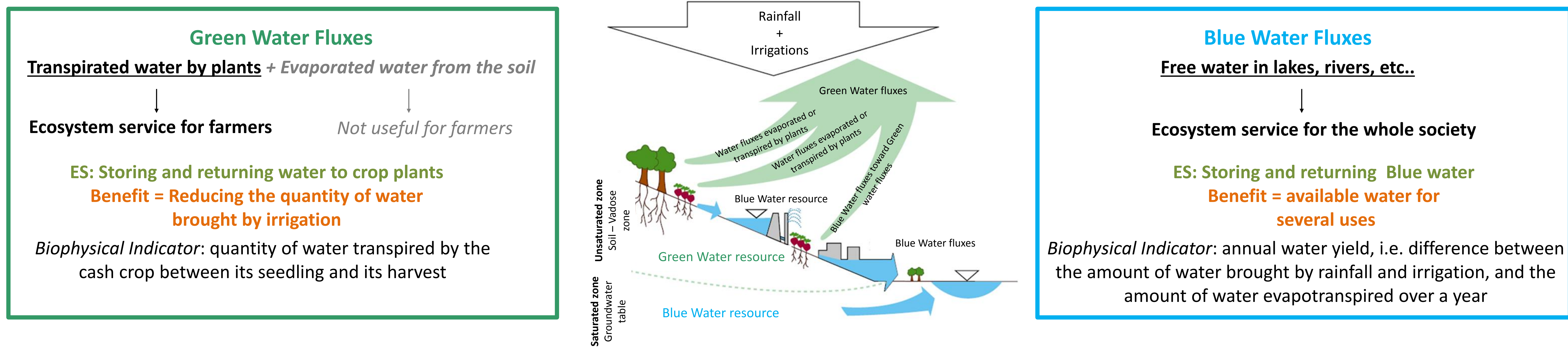
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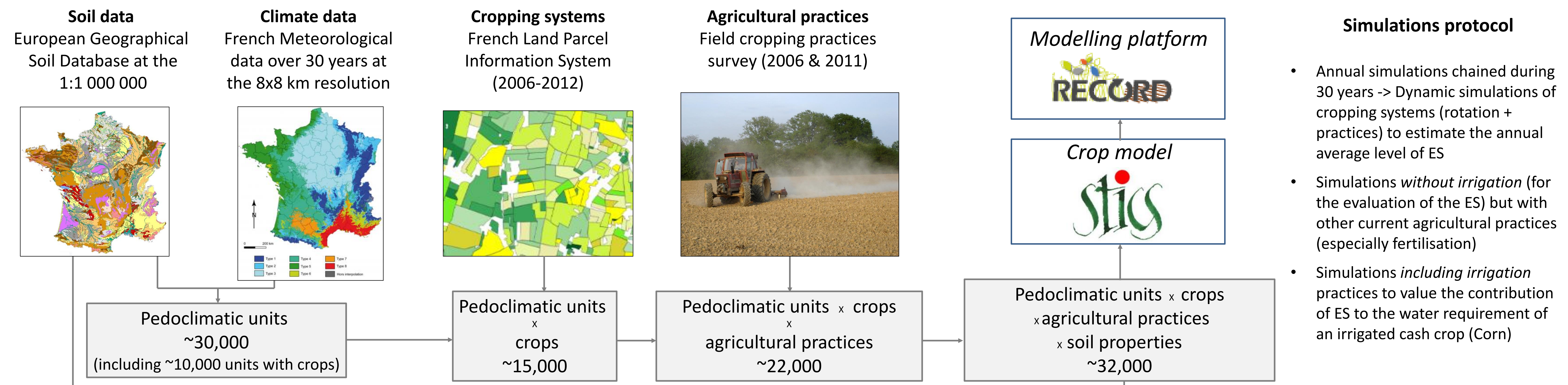
1. Green and Blue water: ecosystem services for farmers and society

Soils contribute significantly to ecosystem services (ES) to the whole society (e.g. global climate regulation, water quality regulation) and to farmers (e.g. biological regulations, nutrients provision to crop plants). As porous media, they especially store water and control its flows, whether these are transpired by plants for their biomass production or evaporated toward the atmosphere (**Green water**), or infiltrated or runoffed to groundwater or surface water (**Blue water**). In agricultural contexts, these processes are linked to both ES "soil capacity to store and return water" to (i) the farmer and (ii) the whole society. Assessing these two ES in an agricultural context is delicate, insofar as the contribution of humans – here the farmer through their agricultural practices including tillage, irrigation, fertilization, etc... – affect their level of provision. In the context of the French National Ecosystem Assessment (the EFES program), we have developed **biophysical indicators to value water flows in soil-plan system for cropped systems over the whole French Territory**.

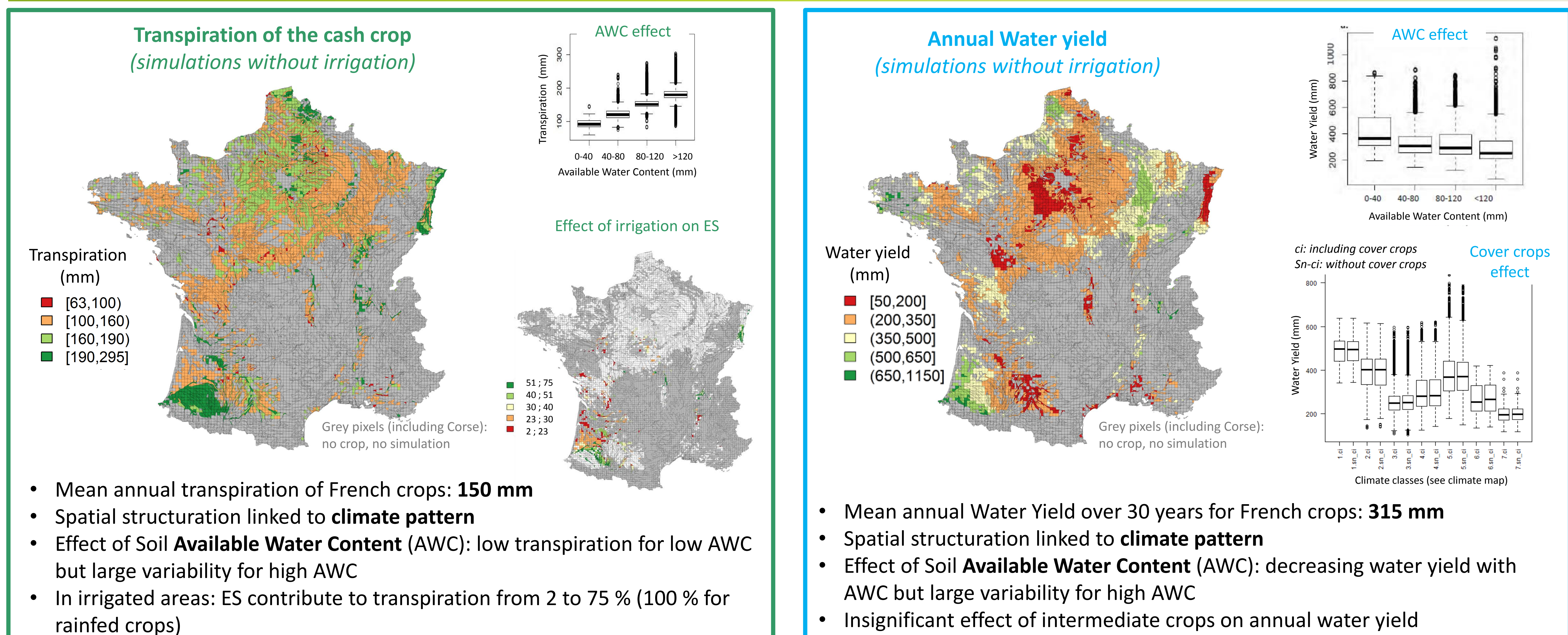
2. Defining ecosystem services and their biophysical indicators



3. Evaluating ES indicators by crop modelling



4. Transpiration and Water yield at the French national scale



For more information

Cousin I., « Stockage et restitution de l'eau » in Therond O. (coord.), Tichit M. (coord.), Tibi A. (coord.) et al., 2017. Volet "écosystèmes agricoles" de l'Evaluation Française des Ecosystèmes et des Services Ecosystémiques. Rapport d'étude, Inra (France), 966 pages. (in French) <http://institut.inra.fr/Missions/Eclairer-les-decisions/Etudes/Toutes-les-actualites/EFES-services-ecosystemiques-rendus-par-les-ecosystemes-agricoles>

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