The CLIMSAVE Project

Climate Change Integrated Assessment Methodology for Cross-Sectoral Adaptation and Vulnerability in Europe

Summary of the specification of the CLIMSAVE Integrated Assessment Platform

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Introduction

The development of the CLIMSAVE Integrated Assessment Platform (IAP) will be iterative, as it undergoes modifications throughout the duration of the project in response to progressive stakeholder feedback. As such the activities described in this summary report represent 'works in progress', rather than being 'set-in-stone'.

The fundamental concept underpinning the specification of the IAP is to deliver rapid interactivity for the user, for which the CLIMSAVE IAP will utilise the world wide web. This technology provides a flexible and familiar interface to stakeholders, which should broaden accessibility and participation and increase impact in research communities. There have been two principle work areas associated with the development of the specification of the web-based IAP: (i) the technological specification of the IAP; and (ii) the design of the IAP.

Technological specification of the IAP

Rapid user interactivity through the web requires efficient communication between the user sitting at their computer and the remote server containing the meta-models and the underlying physical (soils, land-use, etc) and scenario (climate and socio-economic) datasets. The CLIMSAVE IA platform is based on a web Client / Server architecture that uses both server-based (i.e. remote) and client-based (i.e. the user's PC) computing solutions communicating via the web (Figure 1). The meta-models will be developed for use with server-based web technologies, as this avoids the need for input data to be transferred to the user's PC (and hence the requirement for the user to sign data licenses) and maximises access speed. The IAP interface that the User interacts with will be developed using a client-based computing solution as this allows fast replies to user actions and the opportunity to use map services (e.g. Google Earth, Bing Maps) to display spatial data.

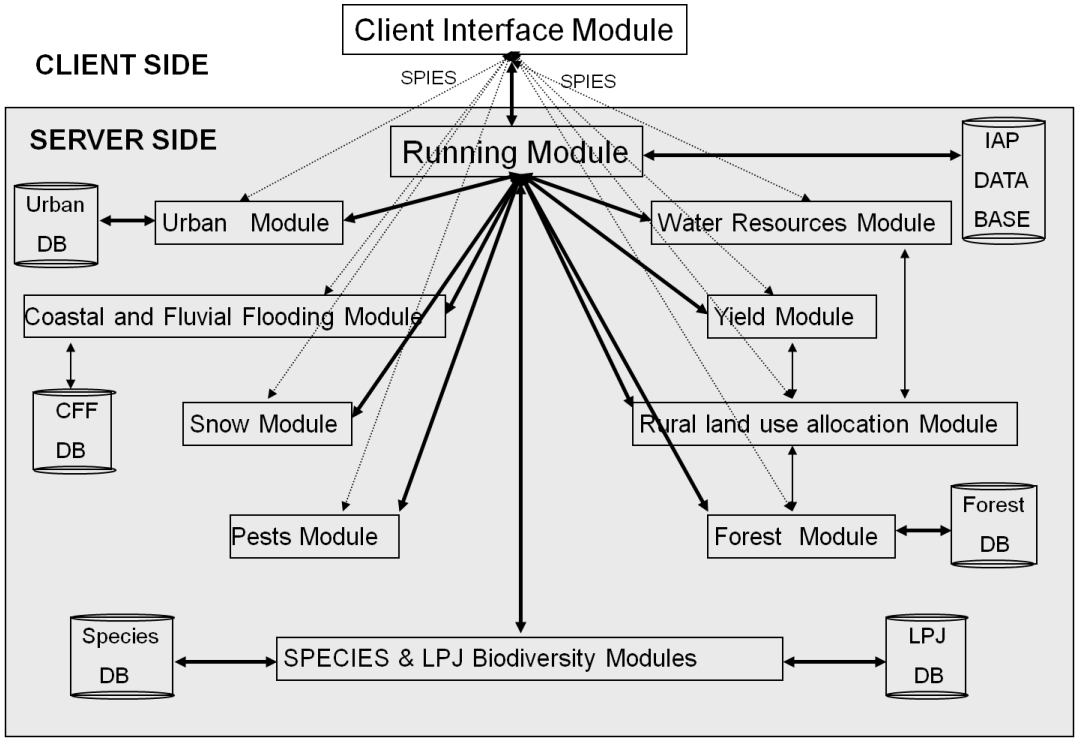

Figure 1: Schematic of the structure of the CLIMSAVE IAP.

Design of the IAP

The CLIMSAVE IAP is designed to facilitate a two-way iterative process of dialogue and exploration of "what if's" through the development of an intuitive interface that should enable an interested individual to use the CLIMSAVE IAP with minimal recourse to help files and, importantly, without need for training. Based upon partner and CLIMSAVE international experts' experience, examination of other participatory model interfaces and potential user requirements, a list of design concepts and design functionality were identified for the user interface. Currently the CLIMSAVE IAP is moving from design 'mock-ups' to a prototype web interface which will be produced for Deliverable 2.3.

Development of the meta-model specifications

For efficient development of the CLIMSAVE IAP, each of the computationally-efficient meta-models are designed to be modular, independent and capable of replacement at any time. A meta-model specification has therefore been developed to ensure successful linkage of the models, irrespective of the final equations inside each of the models. The development of the specification has gone through five distinct stages:

1. Defining the spatial resolution of the data to be transferred between meta-models (10' x 10' grid for Europe and 5km x 5km grid for Scotland);
2. Identifying and prioritising meta-model inputs and outputs, based on relevance for adaptation and for stakeholders;
3. Identifying points of potential data transfer between the meta-models;

4. Specifying the data dictionaries, which define the inputs and outputs, for each meta-model;
5. Standardising the data dictionaries across all of the meta-models so that data can be passed between meta-models (Figure 2).

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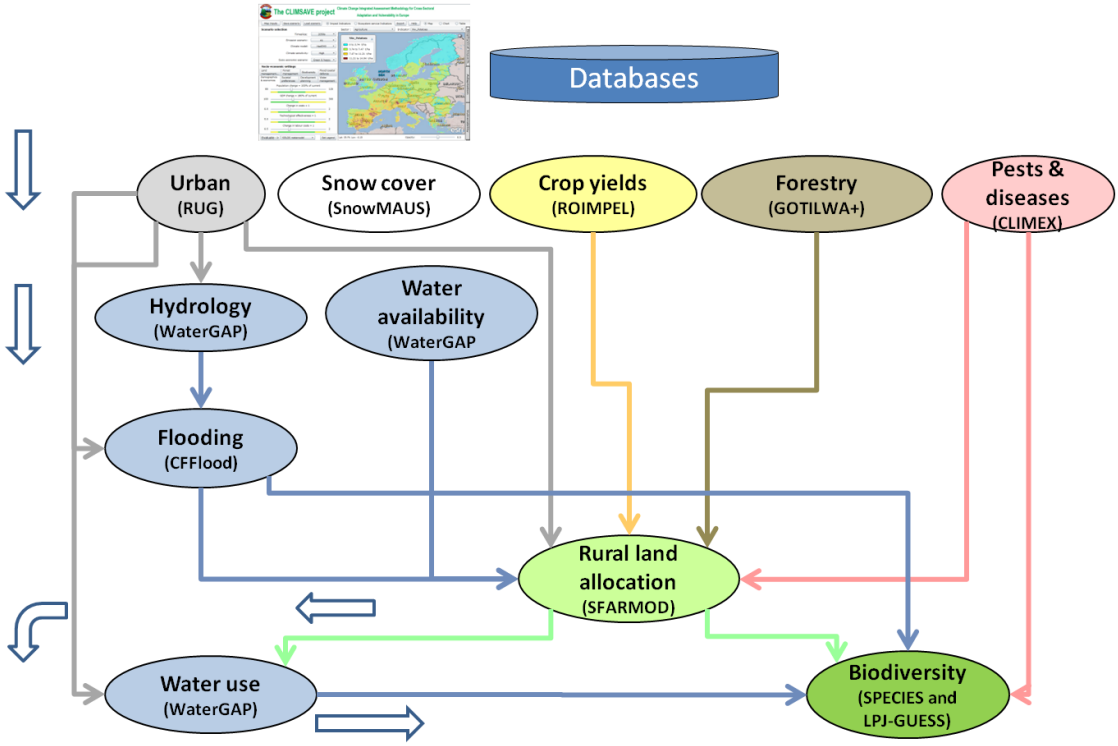

Figure 2: Simplified schematic showing data transfers between meta-models in the CLIMSAVE IAP.

Development of the multi-scale approach to meta-model application

Adaptation decisions are made at multiple scales from household to site/catchment up to the European Community and beyond. Within CLIMSAVE, the IAP will operate at two scales, represented by the EU-26 + 3 (which includes Norway, Switzerland and Liechtenstein, but excludes Cyprus as it is outside the area of the baseline climatology) and by a regional case study (Scotland). Four options for the multi-scale approach to applying meta-models have been identified:

1. Enabling variable viewing scales in the IAP;
2. Enabling statistical downscaling of output data.
3. Enabling variable input data spatial resolutions, or;
4. Enabling variable clustering (grouping based on similarity) of the existing input data.

The initial prototype IAP will include variable viewing scales, variable clustering of the existing input data, and different spatial resolutions of the input data between the European and Scottish case study IAPs. A final decision on the multi-scale approach will be based on stakeholder feedback on the prototype IAP.