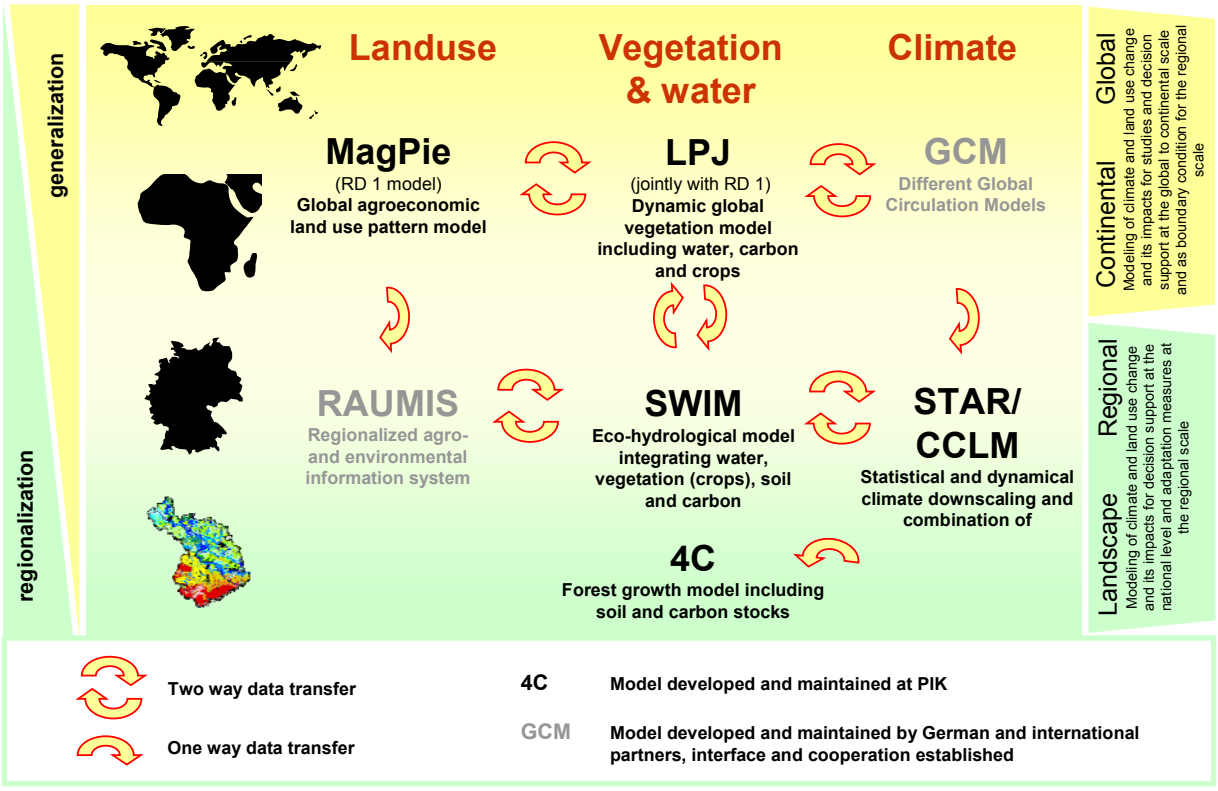
INTERCONNECTION OF RD II MODELS

The most important drivers for global change are located at the global to continental scale, but the impacts manifest themselves at the regional scale, where also measures to counteract undesired developments have to be established. Therefore, both levels have to be integrated in impact and vulnerability research. PIK is in the unique situation of being able to cover both scales with state of the art impact models for water and vegetation dynamics including agriculture, forestry and regional climate. The results of LPJ (taking into account the landuse information of MagPie), for example, are one boundary condition for detailed impacts assessments at the regional scale, while the regional results feed back into the global models to improve their parameter accuracy. The online coupling of SWIM and CCLM allows to investigate feedbacks climate - vegetation - hydrology including large scale water movement and wetland processes, a feature not considered in recent scenario investigations. Additionally, the model groups of RD II enjoy excellent working relations with many other national and international partners and including model cooperations.



STAR was developed to generate regional climate projections for the near future (for the next 50 – 60 years). Since it basically generates a date-to-date mapping by which a date from the observational period is assigned a date of the future projection-period, not only projections of station data but of any kind of meteorological/climatological observation can be obtained.

COSMO-CLM is a unified weather forecast and regional climate model. It outputs a wide range of consistent climate parameters (about 100, scalable) including e.g. all components of the near-surface energy and water balance.

LPJmL converts climatic and land use data into stocks and land-atmosphere exchange flows of carbon and water, and predicts vegetation composition in terms of basic functional traits, for both natural and agricultural lands.

SWIM was specifically developed to investigate climate and land use change impacts at the regional scale, where the impacts are manifested and adaptation measures take place. It combines the relevant eco-hydrological processes at the meso-scale such as runoff generation, nutrient and carbon cycling, river discharge, plant growth and crop yield, and erosion.

4C has been developed to describe long-term forest behaviour under changing environmental conditions (Bugmann et al., 1998). It describes processes on tree and stand level basing on findings from eco-physiological experiments, long term observations and physiological modelling on a intermediate level of complexity.