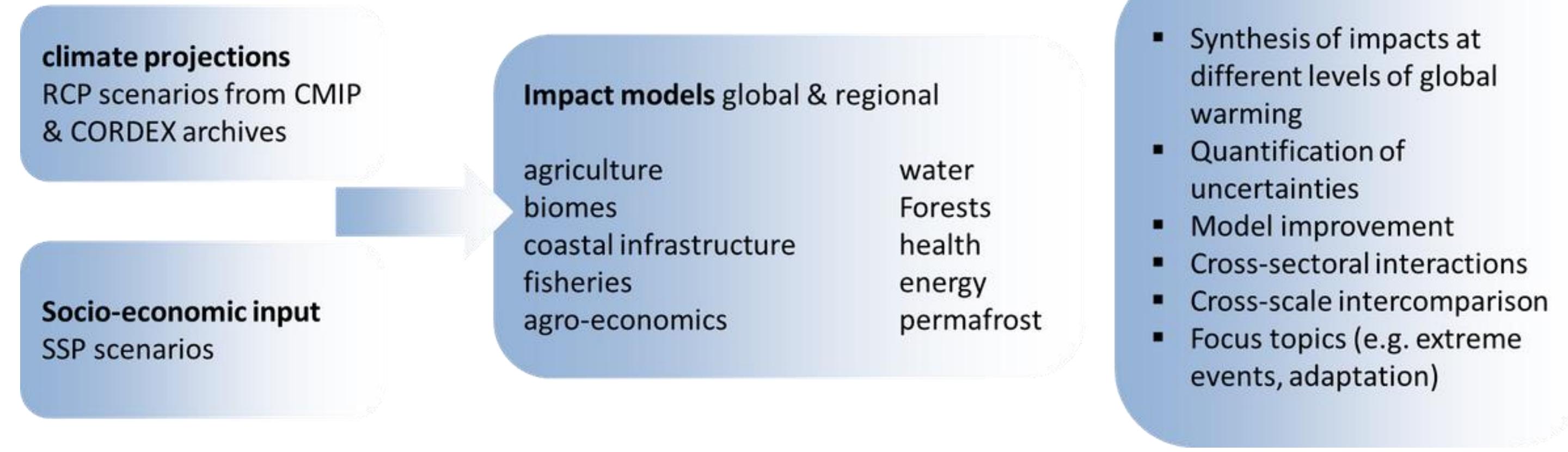


## ISIMIP : The Inter-Sectoral Impact Model Intercomparison Project

The ISIMIP project started with the **ISIMIP Fast Track**, which ran from early 2012. Fast Track simulations were submitted by 35 impact-modelling teams, covering the agriculture, water, global biomes, coastal systems and vector-borne diseases sectors all at the global scale.



- Synthesis of impacts at different levels of global warming
- Quantification of uncertainties
- Model improvement
- Cross-sectoral interactions
- Cross-scale intercomparison
- Focus topics (e.g. extreme events, adaptation)

## Met Office and JULES participation in ISIMIP

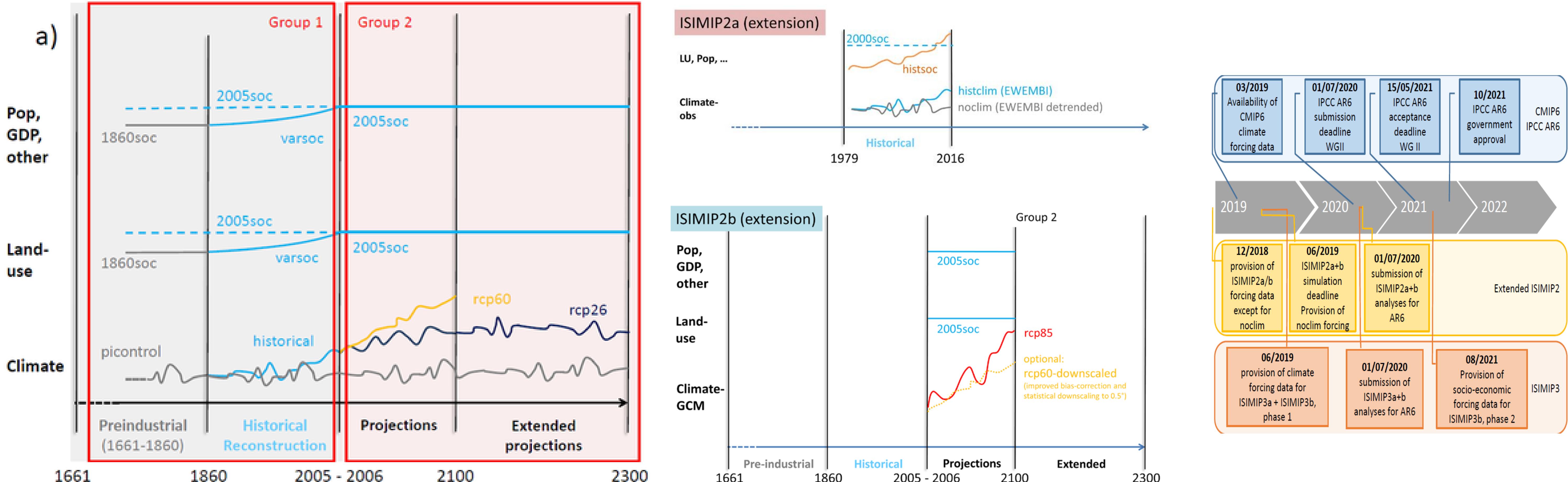
The Met Office and CEH submitted JULES simulations to the fast track phase of ISIMIP for the biomes and water sector, resulting in a large range of publications that were included in the IPCC reports covering water resources, drought, flooding, ecosystem changes and the carbon cycle. The University of Exeter and TUC (Greece) contributed JULES runs to ISIMIP2. The Met Office is now participating in the Biomes and Water sectors in ISIMIP2A and ISIMIP3, using the JULES model along with the Permafrost Sector. There are likely to be lots of people involved including:

**Camilla Mathison, Eleanor Burke, Pete Falloon, Karina Williams, Andy Wiltshire.....**

If you want to know more please drop an email to [camilla.mathison@metoffice.gov.uk](mailto:camilla.mathison@metoffice.gov.uk) and visit <https://www.isimip.org/>

## Current work and plans

The Met Office JULES team are currently setting up two simulations: 0.5° resolution run based on ISIMIP protocol and n96 simulation based on the Earth System JULES configuration.



## Publications and references

### Publications from ISIMIP fast track including JULES results

- Exbrayat, J.-F., Bloom, A. A., Falloon, P., Ito, A., Smallman, T. L., and Williams, M. Reliability ensemble averaging of 21st century projections of terrestrial net primary productivity reduces global and regional uncertainties. *Earth Syst. Dynam.*, 9, 153–165 (2018)
- K. Frieler, A. Levermann, J. Elliott, J. Heinke, A. Arneth, M. F. P. Bierkens, P. Ciais, D. B. Clark, D. Deryng, P. Döll, P. Falloon, B. Fekete, C. Folberth, A. D. Friend, C. Gellhorn, S. N. Gosling, I. Haddeland, N. Khabarov, M. Lomas, Y. Masaki, K. Nishina, K. Neumann, T. Oki, R. Pavlick, A. C. Ruane, E. Schmid, C. Schmitz, T. Stacke, E. Stehfest, Q. Tang, D. Wisser, V. Huber, F. Piontek, L. Warszawski, J. Schewe, H. Lotze-Campen and H. J. Schellnhuber *A framework for the cross-sectoral integration of multi-model impact projections: Land use decisions under climate impacts uncertainties*. *Earth System Dynamics*, 6, 447–460 (2015)
- K. Nishina, A. Ito, P. Falloon, A. D. Friend, D. J. Beerling, P. Ciais, D. B. Clark, R. Kahana, E. Kato, W. Lucht, M. Lomas, R. Pavlick, S. Schaphoff, L. Warszawski, and T. Yokohata *Decomposing uncertainties in the future terrestrial carbon budget associated with emission scenarios, climate projections, and ecosystem simulations using the ISI-MIP results*. *Earth System Dynamics*, 6, 435–445 (2015)
- K. Nishina, A. Ito, D. J. Beerling, P. Cadule, P. Ciais, D. B. Clark, P. Falloon, A. D. Friend, R. Kahana, E. Kato, R. Keribin, W. Lucht, M. Lomas, T. T. Rademacher, R. Pavlick, S. Schaphoff, N. Vuichard, L. Warszawski, and T. Yokohata *Quantifying uncertainties in soil carbon responses to changes in global mean temperature and precipitation*. *Earth Syst. Dyn.*, 5, 197–209 (2014)
- J. C. S. Davie, P. D. Falloon, R. Kahana, R. Dankers, R. Betts, F. T. Portmann, D. Wisser, D. B. Clark, A. Ito, Y. Masaki, K. Nishina, B. Fekete, Z. Tessler, Y. Wada, X. Liu, Q. Tang, S. Hagemann, T. Stacke, R. Pavlick, S. Schaphoff, S. N. Gosling, W. Franssen, and N. Arnell *Comparing projections of future changes in runoff from hydrological and biome models in ISI-MIP*. *Earth Syst. Dyn.*, 4, 359–374 (2013)
- J. Schewe, J. Heinke, D. Gerten, I. Haddeland, N. W. Arnell, D. B. Clark, R. Dankers, S. Eisner, B. M. Fekete, F. J. Colón-González, S. N. Gosling, H. Kim, X. Liu, Y. Masaki, F. T. Portmann, Y. Satoh, T. Stacke, Q. Tang, Y. Wada, D. Wisser, T. Albrecht, K. Frieler, F. Piontek, L. Warszawski, and P. Kabat *Multi-model assessment of water scarcity under climate change*. *PNAS*, 111, 9, 3245–3250 (2013)
- R. Dankers, N. W. Arnell, D. B. Clark, P. D. Falloon, B. M. Fekete, S. N. Gosling, J. Heinke, H. Kim, Y. Masaki, Y. Satoh, T. Stacke, Y. Wada, and D. Wisser *First look at changes in flood hazard in the Inter-Sectoral Impact Model Intercomparison Project ensemble*. *PNAS*, 111, 9, 3257–3261 (2013)
- F. Piontek, C. Müller, T. A. M. Pugh, D. B. Clark, D. Deryng, J. Elliott, F. J. Colón González, M. Flörke, C. Folberth, W. Franssen, K. Frieler, A. D. Friend, S. N. Gosling, D. Hemming, N. Khabarov, H. Kim, M. R. Lomas, Y. Masaki, M. Mengel, A. Morse, K. Neumann, K. Nishina, S. Ostberg, R. Pavlick, A. C. Ruane, J. Schewe, E. Schmid, Tobias Stacke, Q. Tang, Z. D. Tessler, A. M. Tompkins, L. Warszawski, D. Wisser, and Hans Joachim Schellnhuber *Multisectoral climate impact hotspots in a warming world*. *PNAS*, 111, 9, 3233–3238 (2013)
- C. Prudhomme, I. Giuntoli, E. L. Robinson, D. B. Clark, N.W. Arnell, R. Dankers, B. M. Fekete, W. Franssen, D. Gerten, S. N. Gosling, S. Hagemann, D. M. Hannah, H. Kim, Y. Masaki, Y. Satoh, T. Stacke, Y. Wada, and D. Wisser *Hydrological droughts in the 21st century: hotspots and uncertainties from a global multi-model ensemble experiment*. *PNAS*, 111, 9, 3262–3267 (2013)
- A. D. Friend, W. Lucht, T. T. Rademacher, R. Keribin, R. Betts, P. Cadule, P. Ciais, D. B. Clark, R. Dankers, P. D. Falloon, A. Ito, R. Kahana, A. Kleidon, M. R. Lomas, K. Nishina, S. Ostberg, R. Pavlick, P. Peylin, S. Schaphoff, N. Vuichard, L. Warszawski, A. Wiltshire, and F. I. Woodward *Carbon residence time dominates uncertainty in terrestrial vegetation responses to future climate and atmospheric CO<sub>2</sub>*. *PNAS*, 111, 9, 3280–3285 (2013)