



POTSDAM INSTITUTE FOR
CLIMATE IMPACT RESEARCH

Insights from ScenarioMIP

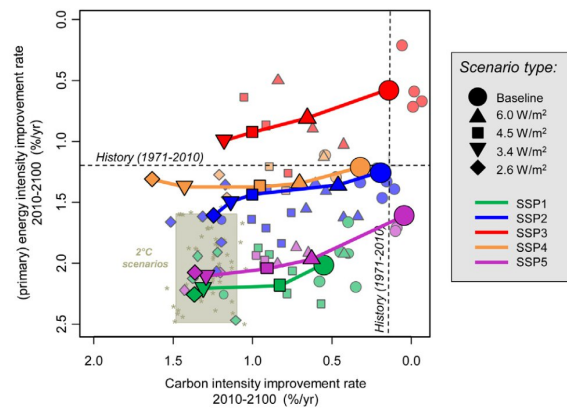
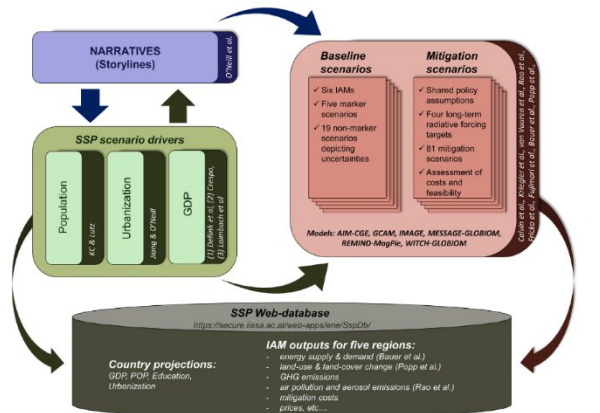
ISIMIP and PROCLIAS meeting
Potsdam, PIK, April 24, 2024

Nico Bauer, Leon Merfort, Laurin Köhler-Schindler, REMIND and MAgPIE teams
Potsdam Institute for Climate Impact Research (PIK), Germany

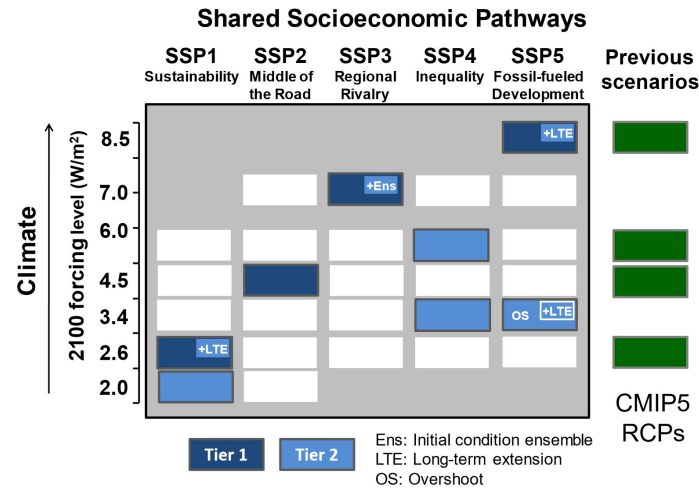


IAM perspective on CMIP6: SSPs and ScenarioMIP

SSP framework

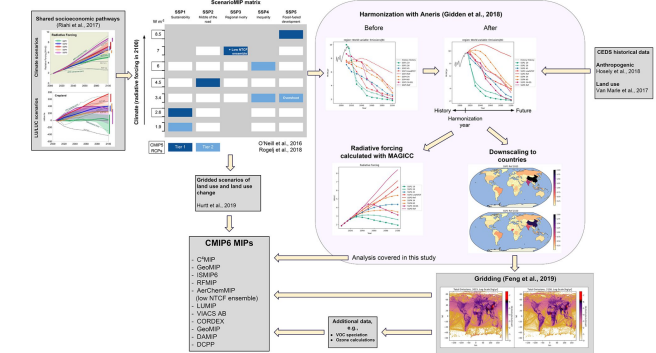


ScenarioMIP



<http://www.geosci-model-dev-discuss.net/gmd-2016-84/>

Harmonization, Gridding, Extensions



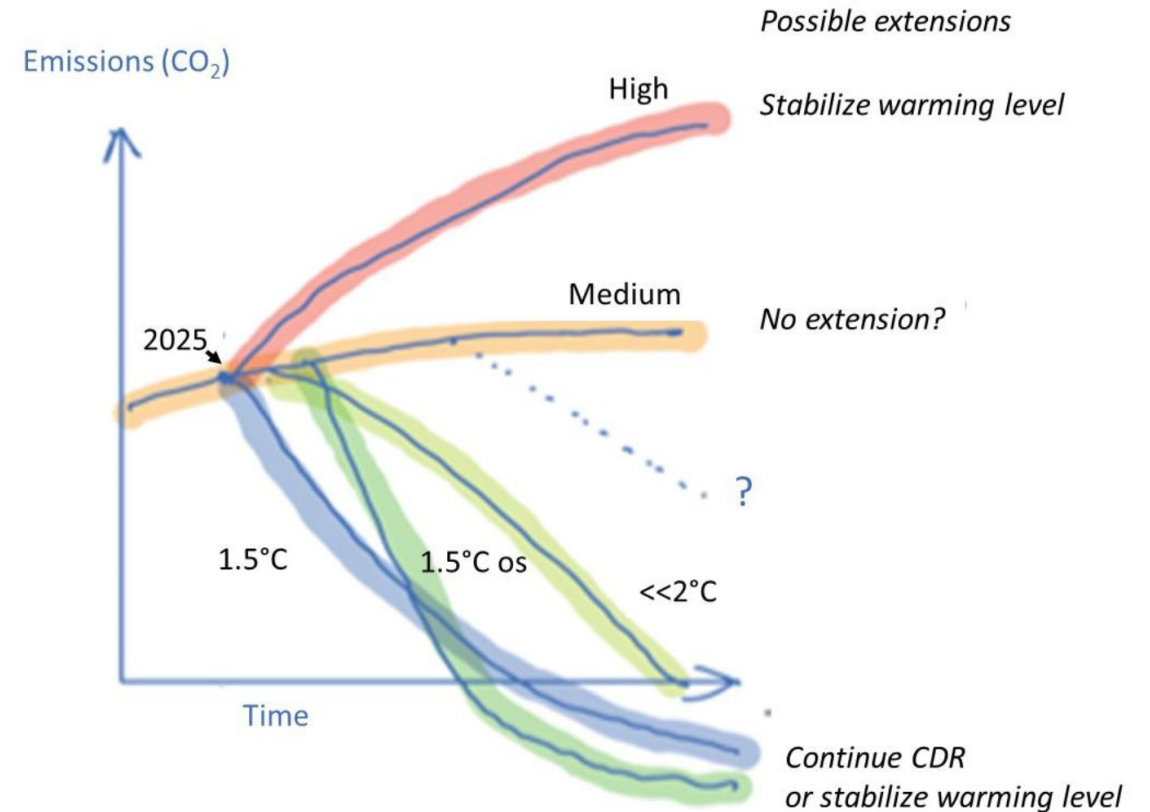
Task 2.1 IAM Scenarios – Overview

1. Core scenarios in RESCUE and OptimESM

- a. 1.5°C w/o overshoot (C1)
- b. 1.5°C w/ overshoot (C2)
- c. Well-below 2°C w/o overshoot (C3)
- d. Well-below 2°C w/ overshoot (C3)
- e. Current ambition scenario ...
- f. ... plus delayed action

2. Sensitivity scenarios

ScenarioMIP workshop July 2023



Vuuren, Tebaldi, O'Neil (2023)
doi:10.5281/zenodo.8186116

IAM Scenarios

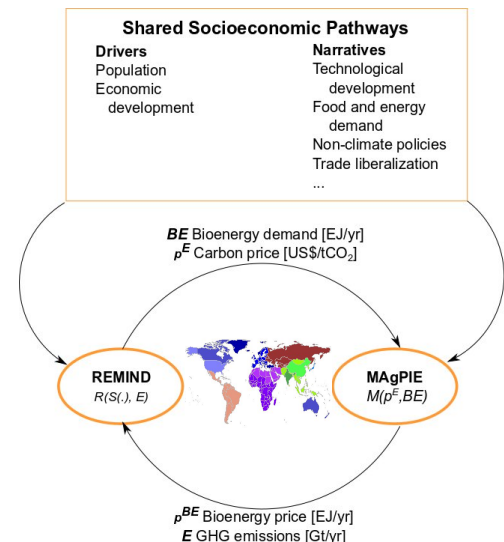
Harmonization Gridding

Extensions 2100 – 2300

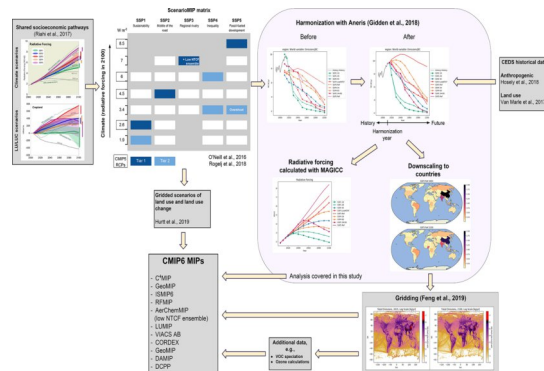
Small Climate Models

Climate forcers

REMIND-MAgPIE

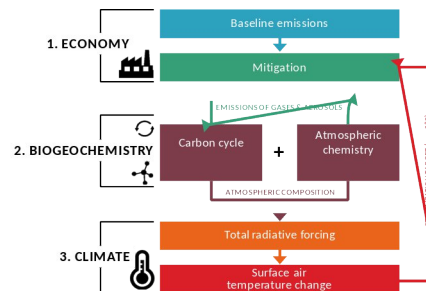


Emissions



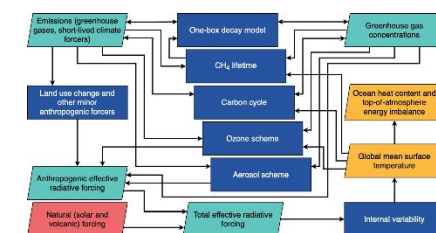
Gidden et al. (2019)
<https://doi.org/10.5194/gmd-12-1443-2019>

ACC2



Tanaka et al. (2022)
[10.1126/sciadv.abf9020](https://doi.org/10.1126/sciadv.abf9020)

FaIR

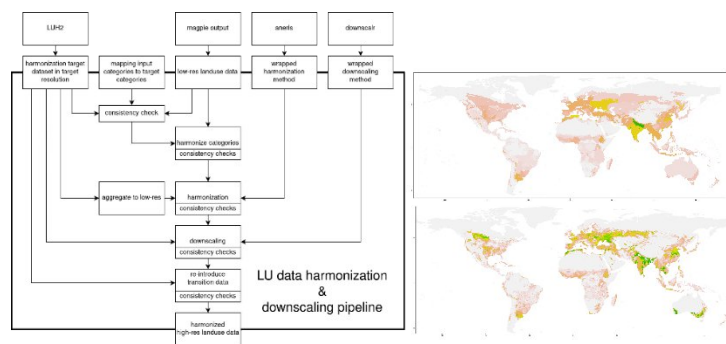


Smith et al. (2018)
<https://doi.org/10.5194/gmd-11-2273-2018>

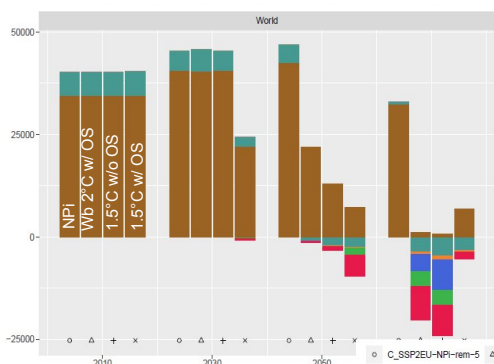
Platforms



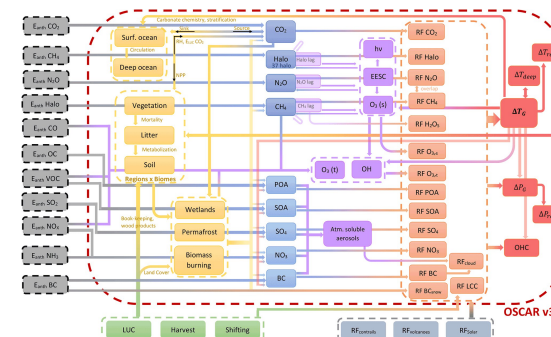
Land-use



Bauer et al. (2020)
[10.1007/s10584-020-02895-z](https://doi.org/10.1007/s10584-020-02895-z)



OSCAR



Quilcaille et al. (2023)
[10.5194/gmd-16-1129-2023](https://doi.org/10.5194/gmd-16-1129-2023)

Formats

input4MIPs
input datasets for Model Intercomparison Projects

IAMC
Integrated Assessment Modeling Consortium
Founded 2007

Huppmann et al. (2018)
[10.1038/s41558-018-0317-4](https://doi.org/10.1038/s41558-018-0317-4)



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Specification of Scenarios

		RESCUE/OptimESM	ScenarioMIP
	Timeline	RESCUE nearly final, OptimESM 12/2024	Pilot 9/2024, Final 8/2025

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	Historic data for harmonization & gridding	CMIP6 until 2014 extension 2014-19	Up-dates for CEDS and LUH
	Test casing and quality check with ESMs	Explicit in work program	
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Outputs	Model time horizon	2100	2100 (2125 for some scenarios)
	Emissions, land use	CEDS, LUH plus additional variables	
	LU management (harmonized & gridded)	Irrigation and fertilizer	Also mentioned for IAV
	CDR options (gross carbon fluxes, not gridded)	BECCS, Re/Afforestation, DACCS, Ocean Alkalinity Enhancement*	BECCS, DACCS, Afforestation (maybe more, LOS high CDR)
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Transformation assumptions & policies	Sustainability transformation (e.g. energy & food demand)	Uniform across scenarios	Variations across scenarios
	Sustainability constraints	Uniform across scenarios	Variations across scenarios