

INTEGRATION Model Overview

Model name <i>Institute</i>	System modelled	Required input variables	Temporal/spatial grid of input	Linkage ¹	Output variables	Temporal/spatial grid of output	Comments
Climber-2 <i>PIK</i>	Atmosphere, ocean, vegetation	CO ₂ equivalent concentrations from MAGICC (M. Meinshausen)	time series	n/a	Ocean: T, S, v; (2D, 3 basins) Atmosphere: T, q; vegetation plus many diagnostic variables	monthly means, yr 1800 - 2300 atmos: 10x51 deg (lat x lon) ocean: 2.5 deg lat	cpu time: 24,000 yr/day
Climber-2 downscaled <i>PIK</i>	land surface climate	Climber-2 output: SAT, SLP, vertical velocity at 700 hPa, specific humidity at 700 hPa	Climber-2 output	n/a	SAT, diurnal SAT range, cloudiness, precipitation, wet-day freq., vapor pressure	monthly means, yr 1800 - 2300 Europe, 0.5 x 0.5 deg	
Climber-3 α <i>PIK</i>	Ocean, Atmosphere Six/Maier-Reimer phytoplankton model	CO ₂ equivalent concentrations from MAGICC (M. Meinshausen)	time series	n/a	Oceanic: T, S, v; (3D) Atmospheric: T, q; plus many diagnostic variables	Atmos.: 7.5x22.5 (lat x lon) Ocean: 3.75x3.75 24 depth levels $\Delta T=1$ day	cpu time: 70 yr/day
Climber-3 α downscaled <i>PIK</i>	land surface climate	Climber-3 α output: SAT, SLP, vertical velocity at 700 hPa, specific humidity at 700 hPa	Climber-3 α output	n/a	SAT, diurnal SAT range, cloudiness, precipitation, wet-day freq., vapor pressure	monthly means, yr 1800 - 2300 Europe, 0.5 x 0.5 deg	
CN-REcoM/ REcoM&Co. <i>AWI</i>	Phytoplankton Calcification Zooplankton only passively ("grazing pressure")	SST, pCO ₂ , MLD, cloudiness	time series for specific stations	SCEN	variables for phytoplankton biomass and succession, forms and ratios of N, P, C	time series	

ROMS <i>IMR</i>	regional OGCM: Norwegian coast, Barents Sea Individual-based model: Arcto- Norwegian Cod larvae and early juveniles	T, S, u, v, sea surface height, heat fluxes (4 kinds), freshwater fluxes, wind stress, cloud cover	Downscaling with climatology + anomalies approach: input from Bergen Climate Model	SLI	T, S, 3D var. U, V, and W; trajectories and sizes of all cod larvae	Hourly means, timeslices of Feb.- Sept. per year Ocean grid: between 5x5km and 8x8km	larvae growth depends on T and transport, not on zooplankton
BEFM <i>ZMAW HH</i>	Bioeconomic model of fish stock and fishery optimization model	input for recruitment function: * shape: from data * SST: from Climber-3 α harvesting strategy	time series $\Delta T=1$ year length: 100 yr	SLI	stock size (cod, capelin), catch rates by species (3 competing fleets)	time series	
LPJ <i>PIK</i>	potential or actual vegetation; functional vegetation types (grasses, shrub, trees, crops,...) terrest. carbon cycle	downscaled Climber-3 α : SAT, precip, CO ₂ , solar radiation land-use change scenarios	downscaled Climber- 3 α : 0.5 x 0.5 deg, monthly means	SCEN	fractional cover for each functional type, 8 crop classes, structure, status of vegetation, litter and soil carbon pools, evapo- transpiration, runoff, light interception, and seasonal cycle	0.5 x 0.5 deg	
AEZ <i>PIK/ IIASA</i>	agricultural yield of 154 crops	downscaled Climber-2	downscaled Climber-2	SCEN	potential yield of crops: wheat, potato, rape, maize, ...	monthly means, yr 2000 - 2300 Europe, 0.5 x 0.5 deg,	
4C <i>PIK</i>	tree vegetation dynamics for single species, soil C/N dynamics; budgets of C, N, water	SAT, precip, CO ₂ , solar radiation	Daily time series: weather generator from LPJ	SCEN	for tree species: stand structure, carbon pools in living trees, litter and soil, harvested wood, evapotranspiration, runoff, light interception, and seasonal cycle	time series for specific stands	initial conditions plausible, but not from observed data

EFISCEN <i>EFI</i>	Forestry, incl. adaptation	SAT, precip plus input from LPJ	monthly time series aggregated from Climber-3a for each region	SCEN	timber classes, their distribution to different economic sectors	various regions covering entire Europe	initial conditions are prescribed by forest inventory statistics no soil run by EFI
TWA/ integrated assessment <i>PIK</i>	impact of emissions on global climate, THC, global GDP	normative guard rails	n/a	n/a	range of allowable CO ₂ emissions ("emission corridors") incl. economic restrictions	time series	coupled to DICE

Legend

Linkage to Climber: COUP: fully coupled; SCEN: driven by climate scenario; SLI: computation of time slices

Table created by Till Kuhlbrodt

(Last modified: Thu 4 Jan 2007)