

### 3D-CMCC-FEM Annual Output varia

#### At class level:

YEAR	Year of simulation
LAYER	Layer of tree class
HEIGHT	Average height of a species (m)
DBH	Average diameter at breast height of a species (cm)
AGE	Age of trees (years)
SPECIES	The species considered
MANAGEMENT	T = Timber
GPP	Gross Primary Productivity ( $\text{gC}/\text{m}^2/\text{year}$ )
GR	Growth respiration ( $\text{gC}/\text{m}^2*\text{year}$ )
MR	Maintenance Respiration ( $\text{gC}/\text{m}^2*\text{year}$ )
RA	Autotrophic respiration ( $\text{gC}/\text{m}^2*\text{year}$ )
NPP	Net Primary Productivity ( $\text{gC}/\text{m}^2*\text{year}$ )
CUE	Carbon Use Efficiency ( $\text{gCNPP}/\text{gCGPP}$ )
Y(PERC)	$\text{RA}/\text{GPP} * 100$
PeakLAI	Peak LAI (maximum attainable LAI) ( $\text{m}^2/\text{m}^2$ )
MaxLAI	Maximum of LAI (maximum reached LAI) ( $\text{m}^2/\text{m}^2$ )
SAPWOOD_AREA	Tree sapwood area ( $\text{cm}^2$ )
CC-Proj	Projected Canopy Cover (frac)
DBHDC	DBH/Crown diameter relationship
CROWN_DIAMETER	Crown Projected Diameter (m)
CROWN_HEIGHT	Crown Height (m)
CROWN_AREA_PROJ	Crown Projected Area (at zenith angle) ( $\text{m}^2$ )
APAR	Absorbed Photosynthetically Active Radiation ( $\text{molPAR}/\text{m}^2/\text{year}$ )
Ntree	Number of trees (n tree /sizecell)
VEG_D	Days of vegetative period for class per Year
FIRST_VEG_DAY	First annual day of vegetative period (DIM)
CTRANSPIR	Canopy Transpiration ( $\text{mm}/\text{m}^2/\text{year}$ )
CINT	Canopy Interception ( $\text{mm}/\text{m}^2/\text{year}$ )
CLE	Canopy Latent Heat ( $\text{W}/\text{m}^2/\text{year}$ )
WUE	Water Use Efficiency (DIM)
MIN_RESERVE_C	Minimum reserve carbon pool ( $\text{tC}/\text{cell}$ )
RESERVE_C	Reserve carbon pool ( $\text{tC}/\text{cell}$ )
STEM_C	Stem carbon pool ( $\text{tC}/\text{cell}$ )
STEM_SAP_C	Stem sapwood carbon pool ( $\text{tC}/\text{cell}$ )
STEM_HEA_C	Stem heartwood carbon pool ( $\text{tC}/\text{cell}$ )
STEM_LIVE_C	Stem livewood carbon pool ( $\text{tC}/\text{cell}$ )
STEM_DEAD_C	Stem deadwood carbon pool ( $\text{tC}/\text{cell}$ )
MAX_LEAF_C	Maximum Current Leaf carbon pool ( $\text{tC}/\text{cell}$ )
MAX_FROOT_C	Maximum Current Fine Root carbon pool ( $\text{tC}/\text{cell}$ )
CROOT_C	Maximum Current Coarse Root carbon pool ( $\text{tC}/\text{cell}$ )
CROOT_LIVE_C	Coarse root livewood carbon pool ( $\text{tC}/\text{cell}$ )
CROOT_DEAD_C	Coarse root deadwood carbon pool ( $\text{tC}/\text{cell}$ )
BRANCH_C	Branch carbon pool ( $\text{tC}/\text{cell}$ )
BRANCH_LIVE_C	Branch livewood carbon pool ( $\text{tC}/\text{cell}$ )
BRANCH_DEAD_C	Branch deadwood carbon pool ( $\text{tC}/\text{cell}$ )
FRUIT_C	Fruit carbon pool ( $\text{tC}/\text{cell}$ )
TREE_CAI	Single Tree Current Annual Volume Increment ( $\text{m}^3/\text{tree}/\text{year}$ )
TREE_MAI	Single Tree Mean Annual Volume Increment ( $\text{m}^3/\text{tree}/\text{year}$ )
VOLUME	Stem volume ( $\text{m}^3$ )
DELTA_TREE_VOL.perc	Tree volume increment (%)
DELTA_AGB	Aboveground biomass increment ( $\text{tC}/\text{cell}/\text{year}$ )
DELTA_BGB	Belowground biomass increment ( $\text{tC}/\text{cell}/\text{year}$ )
AGB	Aboveground Biomass pool ( $\text{tC}/\text{cell}$ )
BGB	Belowground Biomass pool ( $\text{tC}/\text{cell}$ )

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BGB.AGB	BGB/AGB
DELTA_TREE_AGB	Aboveground biomass increment (tC/tree/year)
DELTA_TREE_BGB	Belowground biomass increment (tC/tree/year)
STEM_RA	Stem autotrophic respiration (gC/m <sup>2</sup> /year)
LEAF_RA	Leaf autotrophic respiration (gC/m <sup>2</sup> /year)
FROOT_RA	Fine root autotrophic respiration (gC/m <sup>2</sup> /year)
CROOT_RA	Coarse root autotrophic respiration (gC/m <sup>2</sup> /year)
BRANCH_RA	Branch autotrophic respiration (gC/m <sup>2</sup> /year)

#### At cell level (equals if only one class is modelled):

gpp	Gross Primary Productivity (gC/m <sup>2</sup> /year)
npp	Net Primary Productivity (gC/m <sup>2</sup> /year)
ar	Autotrophic respiration (gC/m <sup>2</sup> /year)
et	Evapotranspiration (mm/m <sup>2</sup> /year)
le	Latent heat (W/m <sup>2</sup> /year)
soil.evapo	Soil evaporation (mm/m <sup>2</sup> /year)
asw	Available soil water (mm/volume)
iWue	intrinsic Water Use Efficiency
vol	Volume (m <sup>3</sup> /cell)
cum_vol	Cumulated Volume (m <sup>3</sup> /cell)
solar_rad	Incoming short wave radiation (MJ/m <sup>2</sup> /year)
tavg	Average air temperature (°C)
tmax	Maximum air temperature (°C)
tmin	Minimum air temperature (°C)
tday	Daylight average air temperature (°C)
tnight	Nighttime average air temperature (°C)
vpd	Vapour Pressure Deficit (hPa-mbar)
prpc	Cumulated Precipitation (mm)
tsoil	Average soil temperature (°C)
rh	Relative Humidity (%)
[co2]	CO2 concentration (ppmv)