CMIP6 Model Documentation

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Note: * indicates a required property

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1 Key Properties

Key properties of the model

1.1 Key Properties

Key properties of the model

1.1.1 Name *

Name of coupled model

Enter TEXT:

1.1.2 Keywords *

Keywords associated with coupled model

Enter COMMA SEPERATED list:

1.1.3 Overview *

 $Top\ level\ overview\ of\ coupled\ model$

Enter TEXT:

1.2 Flux Correction

Flux correction properties of the model

1.2.1 Details *

Describe if/how flux corrections are applied in the model

Enter TEXT:

1.3 Genealogy

Genealogy and history of the model

1.3.1 Year Released *

Year the model was released

Enter TEXT:

1.3.2 CMIP3 Parent

CMIP3 parent if any

Enter TEXT:

1.3.3 CMIP5 Parent

CMIP5 parent if any

1.3.4 CMIP5 Differences

Briefly summarize the differences between this model and its CMIP5 parent, if applicable

Enter TEXT:

1.3.5 Previous Name

Previously known as

Enter TEXT:

1.4 Software Properties

 $Software\ properties\ of\ model$

1.4.1 Repository

Location of code for this component.

Enter TEXT:

1.4.2 Code Version

Code version identifier.

Enter TEXT:

1.4.3 Code Languages

 $Code\ language(s).$

Enter COMMA SEPERATED list:

1.4.4 Components Structure

 $Describe\ how\ model\ realms\ are\ structured\ into\ independent\ software\ components\ (coupled\ via\ a\ coupler)\ and\ internal\ software\ components.$

Enter TEXT:

1.4.5 Coupler

 $Overarching\ coupling\ framework\ for\ model.$

Select	SINGLE	option:
--------	--------	---------

Ш	OASIS - The OASIS coupler - prior to OASIS-MCT
	OASIS3-MCT - The MCT variant of the OASIS coupler
	ESMF - Vanilla Earth System Modelling Framework
	NUOPC - National Unified Operational Prediction Capability variant of ESMF
	Bespoke - Customised coupler developed for this model
	Unknown - It is not known what/if-a coupler is used
	None - No coupler is used

Other - please specify:
1.5 Coupling
1.5.1 Overview
Overview of in toplevel model.
Enter TEXT:
1.5.2 Atmosphere Double Flux *
Is the atmosphere passing a double flux to the ocean and sea ice (as opposed to a single one)?
Select either TRUE or FALSE:
☐ True ☐ False
1.5.3 Atmosphere Fluxes Calculation Grid Where are the air-sea fluxes calculated
Select SINGLE option:
Atmosphere grid
Ocean grid
Specific coupler grid
Other - please specify:
1.5.4 Atmosphere Relative Winds *
Are relative or absolute winds used to compute the flux? I.e. do ocean surface currents enter the wind stress calculation?
Select either TRUE or FALSE:
☐ True ☐ False
1.6 Tuning Applied
Tuning methodology for model
1.6.1 Overview
Overview of tuning methodology for model in toplevel model.
Enter TEXT:

1.6.2 Description *

General overview description of tuning: explain and motivate the main targets and metrics/diagnostics retained. Document the relative weight given to climate performance metrics/diagnostics versus process oriented metrics/diagnostics, and on the possible conflicts with parameterization level tuning. In particular describe any struggle with a parameter value that required pushing it to its limits to solve a particular model deficiency.

Enter TEXT:

1.6.3 Global Mean Metrics Used

List set of metrics/diagnostics of the global mean state used in tuning model

Enter COMMA SEPERATED list:

1.6.4 Regional Metrics Used

List of regional metrics/diagnostics of mean state (e.g THC, AABW, regional means etc) used in tuning model/component

Enter COMMA SEPERATED list:

1.6.5 Trend Metrics Used

 $List\ observed\ trend\ metrics/diagnostics\ used\ in\ tuning\ model/component\ (such\ as\ 20th\ century)$

Enter COMMA SEPERATED list:

1.6.6 Energy Balance *

Describe how energy balance was obtained in the full system: in the various components independently or at the components coupling stage?

Enter TEXT:

1.6.7 Fresh Water Balance *

 $Describe\ how\ fresh_water\ balance\ was\ obtained\ in\ the\ full\ system:\ in\ the\ various\ components\ independently\ or\ at\ the\ components\ coupling\ stage?$

Enter TEXT:

1.7 Conservation

Global convervation properties of the model

1.7.1 Overview

Overview of global convervation properties of the model in toplevel model.

Enter TEXT:

1.8 Heat

Global heat convervation properties of the model

1.8.1 Global *

Describe if/how heat is conserved globally

1.8.2 Atmos Ocean Interface

Describe if/how heat is conserved at the atmosphere/ocean coupling interface

Enter TEXT:

1.8.3 Atmos Land Interface *

Describe if/how heat is conserved at the atmosphere/land coupling interface

Enter TEXT:

1.8.4 Atmos Sea-ice Interface

Describe if/how heat is conserved at the atmosphere/sea-ice coupling interface

Enter TEXT:

1.8.5 Ocean Seaice Interface

Describe if/how heat is conserved at the ocean/sea-ice coupling interface

Enter TEXT:

1.8.6 Land Ocean Interface

Describe if/how heat is conserved at the land/ocean coupling interface

Enter TEXT:

1.9 Fresh Water

Global fresh water convervation properties of the model

1.9.1 Global *

Describe if/how fresh_water is conserved globally

Enter TEXT:

1.9.2 Atmos Ocean Interface

 $Describe\ if/how\ fresh_water\ is\ conserved\ at\ the\ atmosphere/ocean\ coupling\ interface$

Enter TEXT:

1.9.3 Atmos Land Interface *

Describe if/how fresh water is conserved at the atmosphere/land coupling interface

Enter TEXT:

1.9.4 Atmos Sea-ice Interface

Describe if/how fresh water is conserved at the atmosphere/sea-ice coupling interface

1.9.5 Ocean Seaice Interface

Describe if/how fresh water is conserved at the ocean/sea-ice coupling interface

Enter TEXT:

1.9.6 Runoff

Describe how runoff is distributed and conserved

Enter TEXT:

1.9.7 Iceberg Calving

Describe if/how iceberg calving is modeled and conserved

Enter TEXT:

1.9.8 Endoreic Basins

 $Describe\ if/how\ endoreic\ basins\ (no\ ocean\ access)\ are\ treated$

Enter TEXT:

1.9.9 Snow Accumulation

Describe how snow accumulation over land and over sea-ice is treated

Enter TEXT:

1.10 Salt

Global salt convervation properties of the model

1.10.1 Ocean Seaice Interface

Describe if/how salt is conserved at the ocean/sea-ice coupling interface

Enter TEXT:

1.11 Momentum

Global momentum convervation properties of the model

1.11.1 Details

Describe if/how momentum is conserved in the model

2 Radiative Forcings

Radiative forcings of the model for historical and scenario (aka Table 12.1 IPCC AR5)

2.1 Radiative Forcings

Radiative forcings of the model for historical and scenario (aka Table 12.1 IPCC AR5)

2.1.1 Name

Commonly used name for the radiative forcings in toplevel model.

Enter TEXT:

2.1.2 Overview

Overview of radiative forcings of the model for historical and scenario (aka table 12.1 ipcc ar5) in toplevel model.

Enter TEXT:

2.2 Greenhouse Gases

Greenhouse gas forcing agents

2.2.1 Overview

Overview of greenhouse gas forcing agents in toplevel model.

Enter TEXT:

2.3 CO2

Carbon dioxide forcing

2.3.1 Provision *

 $How \ this \ forcing \ agent \ is \ provided \ (e.g. \ via \ concentrations, \ emission \ precursors, \ prognostically \ derived, \ etc.)$

Selec	Select MULTIPLE options:		
	N/A - Not applicable - forcing agent is not included		
	M - Emissions and concentrations determined by the model state rather than externally prescribed		
	Y - Prescribed concentrations, distributions or time series data		
	E - Concentrations calculated interactively driven by prescribed emissions or precursor emissions		
prescribed	ES - Surface emissions (and 3-D concentrations away from the surface) derived via the model from the surface concentration		
	C - Fixed prescribed climatology of concentrations with no year-to-year variability		
	Other - please specify:		

2.3.2 Additional Information

Additional information relating to the provision and implementation of this forcing agent (e.g. citations, use of non-standard datasets, explaining how multiple provisions are used, etc.).

Enter TEXT:

2.4 CH4

Methane forcing

2.4.1 Provision *

prescribed surface concentration

How this	s forcing agent is provided (e.g. via concentrations, emission precursors, prognostically derived, etc.)			
Sele	ect MULTIPLE options:			
	N/A - Not applicable - forcing agent is not included			
	M - Emissions and concentrations determined by the model state rather than externally prescribed			
	Y - Prescribed concentrations, distributions or time series data			
	E - Concentrations calculated interactively driven by prescribed emissions or precursor emissions			
prescribe	ES - Surface emissions (and 3-D concentrations away from the surface) derived via the model from the ed surface concentration			
	C - Fixed prescribed climatology of concentrations with no year-to-year variability			
	Other - please specify:			
	Additional Information and information relating to the provision and implementation of this forcing agent (e.g. citations, use of adard datasets, explaining how multiple provisions are used, etc.).			
Ent	er TEXT:			
2.5	N2O			
Nitrous	s oxide forcing			
2.5.1	Provision *			
How this	s forcing agent is provided (e.g. via concentrations, emission precursors, prognostically derived, etc.)			
Sele	ect MULTIPLE options:			
	N/A - Not applicable - forcing agent is not included			
	M - Emissions and concentrations determined by the model state rather than externally prescribed			
	Y - Prescribed concentrations, distributions or time series data			
	E - Concentrations calculated interactively driven by prescribed emissions or precursor emissions			

ES - Surface emissions (and 3-D concentrations away from the surface) derived via the model from the

	C - Fixed prescribed climatology of concentrations with no year-to-year variability
	Other - please specify:
2.5.2	Additional Information
	nal information relating to the provision and implementation of this forcing agent (e.g. citations, use of adard datasets, explaining how multiple provisions are used, etc.).
Ent	er TEXT:
2.6	Tropospheric O3
Troposi	heric ozone forcing
2.6.1	Provision *
How this	s forcing agent is provided (e.g. via concentrations, emission precursors, prognostically derived, etc.)
Sele	ect MULTIPLE options:
	$\mathrm{N/A}$ - Not applicable - forcing agent is not included
	M - Emissions and concentrations determined by the model state rather than externally prescribed
	Y - Prescribed concentrations, distributions or time series data
	E - Concentrations calculated interactively driven by prescribed emissions or precursor emissions
prescribe	ES - Surface emissions (and 3-D concentrations away from the surface) derived via the model from the ed surface concentration
	C - Fixed prescribed climatology of concentrations with no year-to-year variability
	Other - please specify:
2.6.2	Additional Information
	nal information relating to the provision and implementation of this forcing agent (e.g. citations, use of adard datasets, explaining how multiple provisions are used, etc.).
Ent	er TEXT:
2.7	Stratospheric O3
Stratos	pheric ozone forcing
2.7.1	Provision *
How this	s forcing agent is provided (e.g. via concentrations, emission precursors, prognostically derived, etc.)
Sele	ect MULTIPLE options:
	$\mathrm{N/A}$ - Not applicable - forcing agent is not included
	M - Emissions and concentrations determined by the model state rather than externally prescribed

	Y - Prescribed concentrations, distributions or time series data
	E - Concentrations calculated interactively driven by prescribed emissions or precursor emissions
prescribe	ES - Surface emissions (and 3-D concentrations away from the surface) derived via the model from the d surface concentration
	C - Fixed prescribed climatology of concentrations with no year-to-year variability
	Other - please specify:
2.7.2	Additional Information
	al information relating to the provision and implementation of this forcing agent (e.g. citations, use of dard datasets, explaining how multiple provisions are used, etc.).
Ente	er TEXT:
2.8	CFC
Ozone-	depleting and non-ozone-depleting fluorinated gases forcing
2.8.1	Provision *
How this	forcing agent is provided (e.g. via concentrations, emission precursors, prognostically derived, etc.)
Sele	ct MULTIPLE options:
	$\mathrm{N/A}$ - Not applicable - forcing agent is not included
	M - Emissions and concentrations determined by the model state rather than externally prescribed
	Y - Prescribed concentrations, distributions or time series data
	E - Concentrations calculated interactively driven by prescribed emissions or precursor emissions
prescribe	ES - Surface emissions (and 3-D concentrations away from the surface) derived via the model from the d surface concentration
	C - Fixed prescribed climatology of concentrations with no year-to-year variability
	Other - please specify:
2.8.2	Equivalence Concentration *
Details of	f any equivalence concentrations used
Sele	ct SINGLE option:
state)	$\mathrm{N/A}$ - Not applicabale (CFCs not included or emissions and concentrations determined by the model
	Option 1 - CFCs, including CFC-12, are provided as actual concentrations
alence co	Option 2 - CFC- 12 is provided as actual concentrations and any other gases are provided as an equivancentration of CFC- 11

CFC-12	Option 3 - Ozone depleting gases, including CFC-12, are provided as an equivalence concentration of and all other fluorinated gases are provided as an equivalence concentration of HFC-134a		
	Other - please specify:		
2.8.3	Additional Information		
	al information relating to the provision and implementation of this forcing agent (e.g. citations, use of dard datasets, explaining how multiple provisions are used, etc.).		
Ente	er TEXT:		
2.9	Aerosols		
Aerosol	forcing agents		
2.9.1	Overview		
Overviev	v of aerosol forcing agents in toplevel model.		
Ente	er TEXT:		
2.10	SO4		
SO4 ae	rosol forcing		
2.10.1	Provision *		
How this	forcing agent is provided (e.g. via concentrations, emission precursors, prognostically derived, etc.)		
Sele	ct MULTIPLE options:		
	$\mathrm{N/A}$ - Not applicable - forcing agent is not included		
	M - Emissions and concentrations determined by the model state rather than externally prescribed		
	Y - Prescribed concentrations, distributions or time series data		
	E - Concentrations calculated interactively driven by prescribed emissions or precursor emissions		
 prescribe	ES - Surface emissions (and 3-D concentrations away from the surface) derived via the model from the ed surface concentration		
	C - Fixed prescribed climatology of concentrations with no year-to-year variability		
	Other - please specify:		

2.10.2 Additional Information

Additional information relating to the provision and implementation of this forcing agent (e.g. citations, use of non-standard datasets, explaining how multiple provisions are used, etc.).

Enter TEXT:

2.11 Black Carbon

Black carbon aerosol forcing

2.11.1 Provision * How this forcing agent is provided (e.g. via concentrations, emission precursors, prognostically derived, etc.) Select MULTIPLE options: N/A - Not applicable - forcing agent is not included M - Emissions and concentrations determined by the model state rather than externally prescribed Y - Prescribed concentrations, distributions or time series data E - Concentrations calculated interactively driven by prescribed emissions or precursor emissions ES - Surface emissions (and 3-D concentrations away from the surface) derived via the model from the prescribed surface concentration C - Fixed prescribed climatology of concentrations with no year-to-year variability Other - please specify: **Additional Information** Additional information relating to the provision and implementation of this forcing agent (e.g. citations, use of non-standard datasets, explaining how multiple provisions are used, etc.). Enter TEXT: Organic Carbon Organic carbon aerosol forcing 2.12.1 Provision * How this forcing agent is provided (e.g. via concentrations, emission precursors, prognostically derived, etc.) Select MULTIPLE options: N/A - Not applicable - forcing agent is not included M - Emissions and concentrations determined by the model state rather than externally prescribed

Y - Prescribed concentrations, distributions or time series data

ES - Surface emissions (and 3-D concentrations away from the surface) derived via the model from the

E - Concentrations calculated interactively driven by prescribed emissions or precursor emissions

prescribed surface concentration

C - Fixed prescribed climatology of concentrations with no year-to-year variability

Other - please specify:

Additional Information 2.12.2

Additional information relating to the provision and implementation of this forcing agent (e.g. citations, use of non-standard datasets, explaining how multiple provisions are used, etc.).

2.13 Nitrate

 $Nitrate\ forcing$

		-	ъ	4
2.	13.		Provision	Т

Other - please specify:

2.13.1	Provision *			
How this forcing agent is provided (e.g. via concentrations, emission precursors, prognostically derived, etc.)				
Selec	elect MULTIPLE options:			
	$\mathrm{N/A}$ - Not applicable - forcing agent is not included			
	M - Emissions and concentrations determined by the model state rather than externally prescribed			
	Y - Prescribed concentrations, distributions or time series data			
	E - Concentrations calculated interactively driven by prescribed emissions or precursor emissions			
prescribe	ES - Surface emissions (and 3-D concentrations away from the surface) derived via the model from the d surface concentration			
	C - Fixed prescribed climatology of concentrations with no year-to-year variability			
	Other - please specify:			
2.13.2	Additional Information			
	al information relating to the provision and implementation of this forcing agent (e.g. citations, use of dard datasets, explaining how multiple provisions are used, etc.).			
Ente	r TEXT:			
2.14	Cloud Albedo Effect			
Cloud a	lbedo effect forcing (RFaci)			
2.14.1	Provision *			
How this	forcing agent is provided (e.g. via concentrations, emission precursors, prognostically derived, etc.)			
Selec	et MULTIPLE options:			
	$\mathrm{N/A}$ - Not applicable - forcing agent is not included			
	M - Emissions and concentrations determined by the model state rather than externally prescribed			
	Y - Prescribed concentrations, distributions or time series data			
	E - Concentrations calculated interactively driven by prescribed emissions or precursor emissions			
prescribe	ES - Surface emissions (and 3-D concentrations away from the surface) derived via the model from the d surface concentration			
	C - Fixed prescribed climatology of concentrations with no year-to-year variability			

2.14.2	Aerosol Effect On Ice Clouds *
Radiative	e effects of aerosols on ice clouds are represented?
Selec	ct either TRUE or FALSE:
	True False
2.14.3	Additional Information
	al information relating to the provision and implementation of this forcing agent (e.g. citations, use of dard datasets, explaining how multiple provisions are used, etc.).
Ente	TEXT:
2.15	Cloud Lifetime Effect
Cloud li	ifetime effect forcing (ERFaci)
2.15.1	Provision *
How this	forcing agent is provided (e.g. via concentrations, emission precursors, prognostically derived, etc.)
Selec	et MULTIPLE options:
	$\mathrm{N/A}$ - Not applicable - forcing agent is not included
	M - Emissions and concentrations determined by the model state rather than externally prescribed
	Y - Prescribed concentrations, distributions or time series data
	E - Concentrations calculated interactively driven by prescribed emissions or precursor emissions
prescribe	ES - Surface emissions (and 3-D concentrations away from the surface) derived via the model from the d surface concentration
	C - Fixed prescribed climatology of concentrations with no year-to-year variability
	Other - please specify:
2.15.2	Aerosol Effect On Ice Clouds *
Radiative	e effects of aerosols on ice clouds are represented?
Selec	et either TRUE or FALSE:
	True
2.15.3	RFaci From Sulfate Only *
Radiative	forcing from aerosol cloud interactions from sulfate aerosol only?
Selec	ct either TRUE or FALSE:
	True False

2.15.4 Additional Information

Additional information relating to the provision and implementation of this forcing agent (e.g. citations, use of non-standard datasets, explaining how multiple provisions are used, etc.).

Enter TEXT:

2.16 Dust

Dust forcing

2.16.1 Provision *

How this forcing agent is provided (e.g. via concentrations, emission precursors, prognostically derived, etc.)

	Selec	t MULTIPLE options:
		$\mathrm{N/A}$ - Not applicable - forcing agent is not included
		M - Emissions and concentrations determined by the model state rather than externally prescribed
		Y - Prescribed concentrations, distributions or time series data
		E - Concentrations calculated interactively driven by prescribed emissions or precursor emissions
ore	scribed	ES - Surface emissions (and 3-D concentrations away from the surface) derived via the model from the surface concentration
		C - Fixed prescribed climatology of concentrations with no year-to-year variability
		Other - please specify:

2.16.2 Additional Information

Additional information relating to the provision and implementation of this forcing agent (e.g. citations, use of non-standard datasets, explaining how multiple provisions are used, etc.).

Enter TEXT:

2.17 Tropospheric Volcanic

Tropospheric volcanic forcing

2.17.1 Provision *

How this forcing agent is provided (e.g. via concentrations, emission precursors, prognostically derived, etc.)

Select MULTIPLE options:

Ш	N/A - Not	applicable -	forcing	agent	is no	t included
---	-----------	--------------	---------	-------	-------	------------

- M Emissions and concentrations determined by the model state rather than externally prescribed
- Y Prescribed concentrations, distributions or time series data
- E Concentrations calculated interactively driven by prescribed emissions or precursor emissions
- Li ES Surface emissions (and 3-D concentrations away from the surface) derived via the model from the prescribed surface concentration

	C - Fixed prescribed climatology of concentrations with no year-to-year variability
	Other - please specify:
2.17.2	Historical Explosive Volcanic Aerosol Implementation *
How expl	osive volcanic aerosol is implemented in historical simulations
Selec	et SINGLE option:
	Type A - Explosive volcanic aerosol returns rapidly to zero (or near-zero) background.
	Type B - Explosive volcanic aerosol returns rapidly to constant (average volcano)
backgrou	Type C - Explosive volcanic aerosol returns slowly (over several decades) to constant (average volcano) and.
	Type D - Explosive volcanic aerosol set to zero
	Type E - Explosive volcanic aerosol set to constant (average volcano) background
	Other - please specify:
2.17.3 How expl	Future Explosive Volcanic Aerosol Implementation * Sosive volcanic aerosol is implemented in future simulations
Selec	et SINGLE option:
	Type A - Explosive volcanic aerosol returns rapidly to zero (or near-zero) background.
	Type B - Explosive volcanic aerosol returns rapidly to constant (average volcano)
backgrou	$\label{eq:constant} \mbox{Type C - Explosive volcanic aerosol returns slowly (over several decades) to constant (average volcano) \\ \mbox{nd}.$
	Type D - Explosive volcanic aerosol set to zero
	Type E - Explosive volcanic aerosol set to constant (average volcano) background
	Other - please specify:
2.17.4	Additional Information
	al information relating to the provision and implementation of this forcing agent (e.g. citations, use of dard datasets, explaining how multiple provisions are used, etc.).
Ente	r TEXT:
2.18	Stratospheric Volcanic
Stratosp	pheric volcanic forcing

2.18.1 Provision *

 $How\ this\ forcing\ agent\ is\ provided\ (e.g.\ via\ concentrations,\ emission\ precursors,\ prognostically\ derived,\ etc.)$

Selec	ct MULTIPLE options:		
	$\mathrm{N/A}$ - Not applicable - forcing agent is not included		
	M - Emissions and concentrations determined by the model state rather than externally prescribed		
	Y - Prescribed concentrations, distributions or time series data		
	E - Concentrations calculated interactively driven by prescribed emissions or precursor emissions		
prescribe	ES - Surface emissions (and 3-D concentrations away from the surface) derived via the model from the surface concentration		
	C - Fixed prescribed climatology of concentrations with no year-to-year variability		
	Other - please specify:		
2.18.2	Historical Explosive Volcanic Aerosol Implementation *		
How expl	osive volcanic aerosol is implemented in historical simulations		
Selec	t SINGLE option:		
	Type A - Explosive volcanic aerosol returns rapidly to zero (or near-zero) background.		
	Type B - Explosive volcanic aerosol returns rapidly to constant (average volcano)		
oackgroui	Type C - Explosive volcanic aerosol returns slowly (over several decades) to constant (average volcano) ad.		
	Type D - Explosive volcanic aerosol set to zero		
	Type E - Explosive volcanic aerosol set to constant (average volcano) background		
	Other - please specify:		
2.10.0			
2.18.3	Future Explosive Volcanic Aerosol Implementation *		
How expl	osive volcanic aerosol is implemented in future simulations		
Selec	t SINGLE option:		
	Type A - Explosive volcanic aerosol returns rapidly to zero (or near-zero) background.		
	Type B - Explosive volcanic aerosol returns rapidly to constant (average volcano)		
Dackgroui	Type C - Explosive volcanic aerosol returns slowly (over several decades) to constant (average volcano) ad.		
	Type D - Explosive volcanic aerosol set to zero		
	Type E - Explosive volcanic aerosol set to constant (average volcano) background		
	Other - please specify:		

2.18.4 Additional Information

Additional information relating to the provision and implementation of this forcing agent (e.g. citations, use of non-standard datasets, explaining how multiple provisions are used, etc.).

Enter TEXT:

2.19 Sea Salt

Sea salt forcing

2.19.1 Provision *

How this forcing agent is provided (e.g. via concentrations, emission precursors, prognostically derived, etc.)

	Select	MULTIPLE options:
		${\rm N/A}$ - Not applicable - forcing agent is not included
		M - Emissions and concentrations determined by the model state rather than externally prescribed
		Y - Prescribed concentrations, distributions or time series data
		E - Concentrations calculated interactively driven by prescribed emissions or precursor emissions
ore	scribed	${\it ES}$ - Surface emissions (and 3-D concentrations away from the surface) derived via the model from the surface concentration
		C - Fixed prescribed climatology of concentrations with no year-to-year variability
		Other - please specify:

2.19.2 Additional Information

 $Additional\ information\ relating\ to\ the\ provision\ and\ implementation\ of\ this\ forcing\ agent\ (e.g.\ citations,\ use\ of\ non-standard\ datasets,\ explaining\ how\ multiple\ provisions\ are\ used,\ etc.).$

Enter TEXT:

2.20 Other

Miscellaneous forcing agents

2.20.1 Overview

Overview of miscellaneous forcing agents in toplevel model.

Enter TEXT:

2.21 Land Use

 $Land\ use\ forcing$

2.21.1	Provision *
How this	forcing agent is provided (e.g. via concentrations, emission precursors, prognostically derived, etc.)
Selec	ct MULTIPLE options:
	$\mathrm{N/A}$ - Not applicable - forcing agent is not included
	M - Emissions and concentrations determined by the model state rather than externally prescribed
	Y - Prescribed concentrations, distributions or time series data
	E - Concentrations calculated interactively driven by prescribed emissions or precursor emissions
prescribe	ES - Surface emissions (and 3-D concentrations away from the surface) derived via the model from the d surface concentration
	C - Fixed prescribed climatology of concentrations with no year-to-year variability
	Other - please specify:
2.21.2	Crop Change Only *
Land use	change represented via crop change only?
Selec	ct either TRUE or FALSE:
	True
2.21.3	Additional Information
	al information relating to the provision and implementation of this forcing agent (e.g. citations, use of dard datasets, explaining how multiple provisions are used, etc.).
Ente	or TEXT:
2.22	Solar
Solar fo	preing
2.22.1	Provision *
How sola	r forcing is provided
Selec	ct MULTIPLE options:
	$\mathrm{N/A}$ - Not applicable - solar forcing is not included
	Irradiance - Solar irradiance forcing
	Proton - Proton pathway to solar forcing
	Electron - Electron pathway to solar forcing
	Cosmic ray - Cosmic ray pathway to solar forcing
	Other - please specify:

2.22.2 Additional Information

 $Additional\ information\ relating\ to\ the\ provision\ and\ implementation\ of\ this\ forcing\ agent\ (e.g.\ citations,\ use\ of\ non-standard\ datasets,\ explaining\ how\ multiple\ provisions\ are\ used,\ etc.).$