ECHAM-HAMMOZ (ECHAM6.1-HAM2.1-MOZ0.8) namelist documentation

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Note: this document covers only HAMMOZ specific namelists and interfaces. For a description of ECHAM namelist controls, see documentation by S. Rast, MPI Hamburg. Not all combinations of switches and settings are reasonable and not every reasonable combination has been tested. If you encounter errors we appreciate your feedback.

GENERIC SUBMODEL CONTROLS AND DIAGNOSTICS

submodelctl.inc

This namelist defines general submodel switches which are needed in the interface layer (*mo_submodel_interface* or other parts of the standard ECHAM code). Also included are switches which define the coupling between various submodels (for example in HAMMOZ, which coupled aerosol and gas-phase chemical processes). Other submodel-specific switches should be defined and maintained in extra namelists which carry the name of the submodel itself (e.g. mozctl or hamctl). Definition and handling of these controls is in mo_submodel.f90.

Switches that activate or de-activate individual submodels:

Name	Default value	Description	Comments
lxt	false	Switch for generic tracer module	generic tracer module not implemented
lco2	false	Switch for CO2 cycle (interactive transport) in JSBACH	see JSBACH documentation
lmethox	false	switch for upper atmospheric H2O production from methane	ECHAM; this switch is automatically turned off, if MOZ is active and linterh2o is true.
lhammoz	false	Combined switch for HAM and MOZ submodels including the coupling of oxidant fields, heterogeneous reactions and photolysis frequencies	lhammoz is evaluated before the individual switches lham, lmoz, lhmzhet, lhmzphoto and lhmzoxi – changing these individual switches therefore overrides the setting of lhammoz *Not yet ready for scientific applications.*
lham	false	Switch for HAM aerosol module	
lmoz	false	Switch for MOZART chemistry module	*Not yet ready for scientific applications*

lhammonia	false	Switch for HAMMONIA (upper atmosphere extension of MOZ)	not included in HAMMOZ release echam6.1.0-ham2.1-moz0.8
llght	false	Active module for lightning NOx emissions	Should be turned on when MOZ is active (a warning is printed if MOZ is running without lightning emissions)
lmegan	false	activate MEGAN module for interactive biogenic emissions	this switch is inconsistent with the handling of emissions via the emi_spec control file. lmegan should be controlled solely via setting "BIOGENIC" emissions to EF_MODULE in emi_spec. Only possible use case: if you want to run MEGAN standalone without defining any tracers. In this case, there is no need for the lstandalone switch in meganctl.
losat	false	satellite simulator	ECHAM
lccnclim	false	use CCN climatology (instead of HAM)	ECHAM; this switch is automatically turned off if HAM is active *Not yet ready for scientific applications.*
emi_basepath	''	path to emission files specified in emi_spec.txt	

Switches that control the coupling between submodels or between a submodel and ECHAM:

Name	Default value	Description	Comments
lhmzhet	true if lhammoz==true, false otherwise	activates use of HAM aerosol properties for computing heterogeneous reaction rates in MOZ submodel	requires lhammoz==true; routines that handle het. reactions not yet implemented
lhmzphoto	true if lhammoz==true, false otherwise	activates use of HAM aerosol fields and their optical properties for calculation of photolysis frequencies in MOZ submodel	requires lhammoz==true and fast J photolysis module; not yet implemented
lhmzoxi	true if lhammoz==true, false otherwise	activates use of gas-phase oxidant concentrations (OH, ozone, NO2, NO3) from MOZ for the calculation of gas-to-particle conversion rates in HAM	requires lhammoz==true; without this coupling, HAM uses oxidant fields that are read from file
lchemfeedback	false	Combination switch to activate lchemrad, and	*Not yet ready for scientific applications*

		linterh2o; for HAMMONIA also lchemheat, linteram, and lintercp	
lchemrad	false	activates the feedback of chemical compounds (from MOZ) on ECHAM radiation	not yet tested
linterchem	false	activates the feedback of chemical concentration fields from MOZ with ECHAM's radiation scheme	not yet tested
lchemheat	false	calculates and uses heating rates from chemical reactions (in the upper atmosphere)	HAMMONIA
linteram	false	explicit calculation of the molar air mass from individual tracer concentrations	HAMMONIA
lintercp	false	explicit calculation of specific heat from individual tracer concentrations	HAMMONIA

Switches that control diagnostics:
Note: (some of) these switches should perhaps be moved to the submdiagctl namelist.

Name	Default value	Description	Comments
ltransdiag	false	diagnostic of atmospheric energy transport	ECHAM
loisccp	false	ISCCP cloud diagnostics	ECHAM This switch has no functionality at present
~~**ldiaghrates**~~	~~false~~	~~diagnose heating rates (from chemical reactions)~~	~~HAMMONIA~~
lburden	false	activate burden (column integral) diagnostics for chemical tracers	Needs some cleaning; mo_tracer_processes allows for different types of burden calculations (total mass in atmosphere, stratospheric mass, tropospheric mass, column densities) – this can currently not be controlled via a namelist. The hamctl namelist controls output of (aerosol) burden by tracer, species or mode, and the mozctl namelist allows for the selection of (gas) tracers for which the burden shall be calculated

Switches that control processes:

Note: These switches are primarily meant for debugging. Submodel code should be written in a way that allow these switches to work independently of any specific submodel.

Name	Default value	Description	Comments
lemissions	true if any submodel is active, false otherwise	activate emissions of tracers	
lchemistry	dto.	activate chemistry routines (aerosol chemistry, chemical solvers, …)	
ldrydep	dto.	activate dry deposition routines	
lwetdep	dto.	activate wet deposition (washout, rainout) routines	
lsedimentation	dto.	activate sedimentation routine(s)	
lmicrophysics	dto.	activate routines that handle aerosol microphysics	

submdiagctl.inc

This namelist controls diagnostic output for generic submodel variables and streams:
- vphysc : physical ECHAM variables not contained in standard ECHAM output
- wetdep : variables used in the calculation of wet deposition and extra diagnostics
- drydep : variables used in the calculation of dry deposition and deposition rates
- sedi: diagnostics of sedimentation rates
- emi: diagnostics of emission fluxes

Definition and handling of these controls is in mo_submodel_streams.f90.

The vphysc-stream collects ECHAM (physical) variables that are used in submodels, but not normally stored outside the parallel environment in physc, and it allows saving these variables to file.

Switches that activate or de-activate individual submodels:

Name	Default value	Description	Comments
vphysc_lpost	true	activates file output of the vphysc stream	
vphysc_tinterval	same as ECHAM output (putdata)	time interval for outputting vphysc variables to file	
vphyscnam	– geom1 – geohm1 – aphm1 – grmassm1 – trpwmo – pbl – precipconv – precipstrat – velo10m	names of vphysc variables that shall be saved in the output file. The string “default” will expand to the default list of variables, the string “all” will expand to all variables defined in vphysc. You can combine “default” with additional variables of your choice. However, the “default” or “all” string must always be placed first.	Available variables are: – geom1 – geohm1 – aphm1 – grmassm1 – grvolm1 – grheightm1 – rhoam1 – trpwmo – trpwmop1 – pbl – velo10m – tsw – smelt – precip – precipinsoil – precipconv – precipstrat – sw_flux_surf – sw_flux_toa
wetdep_lpost	true	activates file output of wet deposition diagnostics	wetdep_lpost will automatically be set to false if lwetdep==false
wetdep_tinterval	same as ECHAM output (putdata)	time interval for outputting wetdep diagnostic variables to file.	
wetdepnam	- wdep	names of wetdep diagnostics that shall be saved in the output file. The string “default” will expand to the default list (see left), the string “all”	The wetdep diagnostics will always output all HAM aerosol tracers (if wetdep_lpost==true). Output of gas-phase tracers from MOZ and

		will expand to a complete set of diagnostics (see list to the right). “Detail” will turn on even more diagnostics, which may be useful for debugging purposes or special applications. You can combine “default”, or “all” with additional variables of your choice. However, the “default”, or “all” string must always be placed first.	HAM is controlled with the wetdep_gastrac list. Available wetdep diagnostics are: – precipform – precipevap – uparfrac – wdep – wdep_conv – wdep_strat – wdep_inc – wdep_bc For a list of the detailed wetdep diagnostics see mo_hammoz_wetdep.f90.
wetdep_gastrac	SO2 SO4_gas HNO3	list of gas-phase tracers that shall be included in the wetdep diagnostic output. “Default” will expand to the species listed to the left, “All” will include all gasphase tracers that undergo wet deposition.	
wetdep_keytype	2 (BYSPECIES)	define aggregation of aerosol output in the wetdep diagnostics. Possible values are 1 (BYTRACER), 2 (BYSPECIES), 3 (BYMODE).	
drydep_lpost	true	activates file output of dry deposition diagnostics	drydep_lpost will automatically be set to false if ldrydep==false
drydep_tinterval	same as ECHAM output (putdata)	time interval for outputting drydep diagnostic variables to file.	
drydepnam	– ddep – vddep	names of drydep diagnostics that shall be saved in the output file. The string “default” will expand to the default list of variables, the string “all” will expand to a complete set of diagnostics. You can combine “default” with additional variables of your choice. However, the “default”, or “all” string must always be placed first.	The drydep diagnostics will always output all HAM aerosol tracers (if drydep_lpost==true). Output of gas-phase tracers from MOZ and HAM is controlled with the drydep_gastrac list. Available diagnostics are: – ddep – ddep_stom – vddep
drydep_gastrac	SO2	list of gas-phase tracers	

	SO4_gas HNO3 O3 NO2	that shall be included in the drydep diagnostic output. “Default” will expand to the tracers listed to the left, “All” will include all gas-phase tracers that undergo dry deposition.	
drydep_keytype	2 (BYSPECIES)	define aggregation of aerosol output in the drydep diagnostics. Possible values are 1 (BYTRACER), 2 (BYSPECIES), 3 (BYMODE).	
sedi_lpost	true	activates file output of sedimentation diagnostics	
sedi_tinterval	same as ECHAM output (putdata)	time interval for outputting sedimentation diagnostic variables to file.	
sedinam	– sed – vsedi	names of sedimentation diagnostics that shall be saved in the output file. The string “default” will expand to the default list of variables, the string “all” will expand to a complete set of diagnostics. You can combine “default” with additional variables of your choice. However, the “default”, or “all” string must always be placed first.	The sedimentation diagnostics will always output all HAM aerosol tracers (if sedimentation_lpost==true). Output of gas-phase tracers from MOZ and HAM is controlled with the sedimentation_gastrac list. Available diagnostics are: – sed – vsedi
sedi_keytype	2 (BYSPECIES)	define aggregation of aerosol output in the wetdep diagnostics. Possible values are 1 (BYTRACER), 2 (BYSPECIES), 3 (BYMODE).	
emi_lpost	true	activates file output of emission diagnostics: writes *total* emissions for each species or tracer	Emi_lpost will automatically be set to false if lemissions==false
emi_lpost_sector	false	activates detailed file output of emission fluxes: writes emission fluxes for each emission sector separately.	For a definition of emission sectors, see the emi_spec.txt file. Emi_lpost_sector will automatically be set to false if lemissions==false. Note that emi_lpost and emi_lpost_sector can be activated independently from each other.
emi_tinterval	same as ECHAM	time interval for outputting	

	output (putdata)	emission fluxes to file.	
eminam	emi (sector totals)	names of emission sectors that shall be saved in the output file. The string "default" will expand to the default list of variables, the string "all" will expand to a complete set of diagnostics. You can combine "default" with additional variables of your choice. However, the "default", or "all" string must always be placed first.	The emission diagnostics will always output all HAM aerosol tracers (if emi_lpost ==true or emi_lpost_detail==true). Output of gas-phase tracers from MOZ and HAM is controlled with the emi_gastrac list. Available diagnostics depend on the emi_spec sector definitions. Variable names in the emi output file will be called "emi_SPECIES_SECTOR". Eminam may be useful to specify individual sectors to be output if emi_lpost_sector == True. However, this functionality is currently not implemented. The switch might be renamed after implementation of the appropriate feature.
emi_gastrac	SO2 SO4_gas DMS NO NO2 CO ISOP CH4	list of gas-phase tracers that shall be included in the emission flux output.	The default list may be refined in later releases.
emi_keytype	2 (BYSPECIES)	define aggregation of aerosol output in the emission diagnostics. Possible values are 1 (BYTRACER), 2 (BYSPECIES), 3 (BYMODE).	

SETTINGS FOR HAM AEROSOL MODULE

hamctl.inc

This namelist is used to specify parameter values for the HAM aerosol model. The intention is that these switches control behavior that is independent of the exact representation of the aerosols (i.e. modal scheme versus bin scheme or bulk scheme). However, the present HAMMOZ version still contains a number of hardwiring with respect to the modal (M7) scheme. Note that there is a separate namelist to control the M7 parameters (ham_m7ctl).

Switches to select size representation of aerosols:

Name	Default value	Description	Comments
nham_subm	1	Decide which scheme shall be used for the aerosol size distribution and microphysics package: 0 = HAM_BULK 1 = HAM_M7 2 = HAM_SALSA	nham_subm = 1 is the only working option in release echam6.1.0-ham2.1-moz0.8

Switches to control aerosol processes:

Name	Default value	Description	Comments
nseasalt	2	Choice of seasalt emission scheme: 1 = Monahan (1986) 2 = Schulz et al. (2002) 3 = not used 4 = Monahan (1986); bin scheme 5 = Guelle (2001) 6 = Gong (2003)	Activate/deactivate seasalt emissions via emission matrix; use EF_MODULE as type
npist	3	Choice of the sea-air exchange algorithm for DMS (Piston velocity): 1 =Liss&Merlivat (1986) 2 = Wanninkhof (1992) 3 = Nightingale (2000)	
ndrydep	2	Choice of drydep scheme: 1 = prescribed vd 2 = interactive	Use ldrydep switch in submodelctl to turn drydep off/on
nwetdep	1	Choice of wetdep scheme: 0 = no wet dep. 1 = standard mode-wise prescribed scavenging parameters 2 = standard in-cloud scavenging plus size-dependent below-cloud	Use lwetdep switch in submodelctl to turn wetdep off/on

		scavenging 3 = size-dependent in-cloud and below-cloud scavenging	
naerorad	1	Select how aerosols interact with radiation: 0 = no interaction (requires setting of iaero ≠ 1) 1 = prognostic interaction 2 = only diagnostic interaction	
laerocom_diag	False	Activate extended aerosol diagnostics based on AEROCOM protocol	Not implemented in this version.
nrad	0,1,1,1,1,1,1	Choice of radiation calculation for each mode: 0 = no radiation calculation 1 = SW only 2 = LW only 3 = SW and LW	Tied to M7 scheme – should be re-implemented with generic functionality for all nham_subm configurations
nradmix	1,1,1,1,1,1,1	Mixing scheme for refractive indices per mode: 1 = volume weighted 2 = Maxwell-Garnet 3 = Bruggeman	Tied to M7 scheme – should be re-implemented with generic functionality for all nham_subm configurations
nraddiag	1	Extended radiation diagnostics (mode and wavelength-dependent AOD): 0 = none 1 = 2D diagnostics 2 = 2D and 3D diagnostics	
lhetfreeze	False	Turn heterogeneous freezing below 235 K in cirrus scheme on/off	?
lsoa	False	Turn secondary organic aerosol module on/off	Not fully functional in version (ECHAM 6 – HAM 2.1 – MOZ 0.8)
nsoalumping	0	SOA lumping scheme to apply: 0 = no lumping 1 = lump anthropogenic non-volatile SOA 2 = as above plus mapping onto OC 3 = as above plus lumping of all anthropogenic precursors	Default will be changed.

Switches to control aerosol output:

Name	Default value	Description	Comments
iburden	2	Control the level of detail for aerosol burden output: 0 : no output 1 : by tracer 2 : per species 3 : per mode (default)	Not fully tested

Switches to control aerosol boundary conditions (i.e. oxidant fields):

With these namelist controls, it is easy to change the way how oxidant fields are supplied to the aerosol module. This can be done individually for each species. Via the boundary condition scheme you can also use a constant number, or read the oxidant concentrations from files with different dimensionality (e.g. 2D zonal mean fields). The scheme also handles time information. Thus you can choose if your input file represents a climatology or is part of a time series. Further information on the boundary condition scheme is given in a separate documentation. Per default, HAM uses climatological fields from the MACC reanalysis (http://www.gmes-atmosphere.eu) .

Name	Default value	Description	Comments
bc_oh	(3D) file input from climatology	Control input of oxidant concentrations	see below
bc_o3	- " -	- " -	- " -
bc_h2o2	- " -	- " -	- " -
bc_no2	- " -	- " -	- " -
bc_no3	- " -	- " -	see below; NO3 is used in SOA scheme only

The default bc settings for this are (example for OH):

- bc_oh%bc_domain=BC_EVERYWHERE (i.e. this is a 3D field)
- bc_oh%bc_mode=BC_REPLACE (alternative option: BC_RELAX)
- bc_oh%ef_type = EF_FILE (alternative option: EF_INACTIVE, EF_VALUE; EF_MODULE also possible – this is set automatically via the lhammoz and lhmzoxi switches)
- bc_oh%ef_template = 'ham_oxidants_monthly.nc' (template may contain the following tags: %Y4, %M2, %D2, %H2, %I2, %S2 for year, month, day, hour, minute, second, respectively; %A0 for month short name [3-letters]; %C0 for species; %T0 for horizontal resolution; %L0 for vertical resolution)
- bc_oh%ef_varname = 'OH_VMR_avrg' (variable name of the respective field in the netcdf file specified by ef_template)
- bc_oh%ef_geometry = EF_3D (alternative option for 2D zonal mean fields: EF_LATLEV)
- bc_oh%ef_timedef = EF_IGNOREYEAR (alternative option for time series files: EF_TIMERESOLVED, or EF_CONSTANT if you want to suppress the seasonal cycle)
- bc_oh%%ef_timeoffset = 0. (only used if ef_timedef == EF_CONSTANT)
- bc_oh%ef_timeindex = 1 (only used if ef_timedef == EF_CONSTANT)
- bc_oh%ef_value = 0. (only used if ef_type == EF_VALUE)

- bc_oh%ef_factor = 17/28.97 (converts from volume mixing ratio to mass mixing ratio!)
- bc_oh%ef_units = 'VMR' (this is used to test if the field given by ef_template and ef_varname has indeed the correct units; if you replace the file by one that has for example MMR as unit, you must change this element of the boundary condition structure and adapt the ef_factor value)

If lhammoz is True (submodel ctl), then the default is to use the interactively calculated OH concentration from the MOZ chemistry module. The respective settings would be

- bc_oh%bc_domain=BC_EVERYWHERE (i.e. this is a 3D field)
- bc_oh%bc_mode=BC_REPLACE (alternative option: BC_RELAX)
- bc_oh%ef_type = EF_MODULE

All other settings are ignored in this case. If you don't want to use the interactive oxidant fields in a HAMMOZ simulation, you can either de-activate the lhmzoxi coupling (submodelctl), or force each individual oxidant boundary condition to be read from file.

Ham_m7ctl.inc

This namelist controls settings that are specific to the modal aerosol scheme M7.
Note: from a logical perspective, some of these switches might better be placed in hamctl, because these processes will also be represented in the bulk or bin schemes. This will be realized in a future release of ECHAM-HAMMOZ.

Name	Default value	Description	Comments
lscond	True	Turn condensation of H2SO4 on/off	
lscoag	True	Turn coagulation process on/off	
nwater	1	Select aerosol water uptake scheme: 0 = Jacobson et al., 1996 1 = Petters&Kreidenweis, 2007	
nsnucl	2	Select sulfate aerosol nucleation scheme: 0 = no nucleation 1 = Vehkamaeki et al., 2002 2 = Kazil&Lovejoy, 2007	
nonucl	1	Select organic aerosol nucleation scheme: 0 = no nucleation 1 = activation nucleation (Kulmala et al., 2006) 2 = kinetic nucleation (Laakso et al., 2004)	
lnucl_stat	False	Sample the cloud-free volume as function of T, RH, [H2SO4(g)], H2SO4 condensation sink, and ionization rate	memory intensive

lgcr	True	Turn ionization/nucleation from galactic cosmic rays on/off
nsolact	-99.99	Parameter for solar activity. If outside [-1, 1], the model uses the ECHAM orbital calendar.
lmass_diag	False	Turn specific M7 mass diagnostics on/off

SETTINGS FOR MOZ CHEMISTRY

`mozctl.inc`

`This namelist is used to specify parameter values for the MOZ gas-phase chemistry model.`

Switches that control processes:

Name	Default value	Description	Comments
lchemsolv	True	Turn chemistry solver on/off	
lphotolysis	True	Turn calculation of photolysis frequencies on/off	
lfastj	True if lhammoz==True and lhmzphoto==True, False otherwise	Select fast-j photolysis scheme instead of WACCM scheme for wavelengths >= 200 nm	Shortwave (λ < 200 nm) calculations are always done with WACCM scheme
lstrathet	True	Turn calculation of heterogeneous chemistry in stratosphere (PSC chemistry) on/off	
linterh2o	False	Use water vapor from chemistry in ECHAM (feedback on radiation)	The lmethox switch in submodelctl is de-activated if linterh2o is True (test!)
ndrydep	?	Choice of drydep scheme: 1 = prescribed vd 2 = interactive	Turn dry deposition on/off with ldrydep switch in submodelctl
nwetdep	?	Choice of wetdep scheme: 0 = no wet dep. 1 = standard scheme according to Seinfeld&Pandis (1998), including below-cloud scavenging from MOZ	Turn wet deposition on/off with lwetdep switch in submodelctl

Switches for boundary conditions:

For further explanations on the use of boundary conditions, see comments above (hamctl) and the separate documentation.

Name	Default value	Description	Comments
uvalbedo_file	uv_albedo.nc	file name for UV albedo fields; monthly values of "white" and "green" albedo (see Laepple et al., 2005)	The albedo parameterization uses the boundary condition scheme, i.e. the albedo file can provide values with arbitrary time resolution
bc_sulfate	read field 'sulfate' from file 'moz_sulfate.%T0.nc'	boundary condition for sulfate field (surface area)	only needed if MOZ runs without coupling to HAM; requires further harmonization with HAM!
bc_ch4	inactive	boundary condition to constrain tropospheric methane concentrations	
bc_lbc	read species mixing ratios from file 'moz_lbc.%T0.nc'	boundary condition for species concentrations in the troposphere	
lbc_species	'CO2', 'N2O', 'CFCL3', 'CF2CL2', 'CFC113', 'CCL4', 'CH3CCL3', 'HCFC22', 'CH3CL', 'CH3BR', 'CF2CLBR', 'CF3BR', 'CLOY', 'BROY' (global mean values, time series)	list of species for which a (tropospheric) lower boundary condition shall be applied	Use 'Default' as first entry for the list of species defined as default. You can add additional species behind it.
bc_ubc	inactive	boundary condition for species concentrations in the stratosphere or mesosphere	
ubc_species	''	list of species for which a (stratospheric) upper boundary condition shall be applied	

Other switches:

Name	Default value	Description	Comments
out_species	'O3', 'NO', 'NO2', 'CO', 'HNO3', 'PAN', 'CH2O', 'CLO', 'OCLO', 'HOCL', 'CLONO2', 'BRO', 'HBR', 'HOBR', 'BRONO2'	list of species which shall be included in the tracer output	The strings "Default" and "All" will be expanded to select the appropriate species. Additional species can be added behind "Default"
budget_species	none	list of species for which	

		detailed mass diagnostics is turned on	
burden_species	'O3', 'NO', 'NO2', 'CO'	list of species for which burden diagnostics is turned on	
photovars	TBD	list of photolysis reactions for which photolysis frequencies are stored in photo stream	The strings "Default" and "All" will be expanded to select the appropriate species. Additional species can be added behind "Default"

moz_fastjctl.inc

This namelist is used to specify parameter values for the fastj photolysis scheme

CURRENTLY NOT IN USE!!

```
NAMELIST /moz_fastjctl/ &
lfastj,              & ! true for fastJ photolysis scheme active
lcloud,              & ! include cloud correction (default: true??)
laero                  ! include aerosol scattering and absorption (default:
true)
```

EMISSION-RELATED NAMELISTS

ham_dustctl.inc

This namelist is used to specify parameter values for the dust emission scheme of Tegen et al., ????

Name	Default value	Description	Comments
ndurough	1.e-3	Global surface roughness length parameter	
nduscale	8.6e-1	Threshold wind friction velocity parameter	
ndustE2	3	different version based on BGC dust scheme: 2 = Cheng et al. (2008) 3 = Stier et al. (2005) 4 = Stier et al. (2005) plus extra soil properties for Asia	
r_dust_lai	1.e-10	Threshold LAI value below which dust can be mobilized	
r_dust_umin	21.	Minimum u* for dust mobilization	
r_dust_z0s	1.e-3	Surface roughness length for smooth surfaces	
r_dust_scz0	1.	Scale factor of surface roughness length in cm	
r_dust_z0min	1.e-5	Scale factor of satellite z0	Safety condition if Cheng et al. Scheme is used
k_dust_smst	1	Effect of soil moisture on threshold wind velocity of dust emission: 0 = off 1 = on	
k_dust_easo	1	New soil type for East Asia region 0 = on 1 = off 2 = on, bug removed version 0	strange values of this flag. Standard is to use 0 for off!
r_dust_sf13	1.	Scale factor for dust emissions over Takelimakan desert	
r_dust_sf14	1.	Scale factor for dust emissions over Loess	
r_dust_sf15	1.	Scale factor for dust emissions over Gobi desert	
r_dust_sf16	1.	Scale factor for dust emissions over other mixture soils	
r_dust_sf17	1.	Scale factor for dust	

		emissions over desert and sand land	
r_dust_af13	1.9e-6	Factor of horizontal to vertical dust flux for Takelimakan desert	what is G/F ?
r_dust_af14	1.9e-4	Factor of horizontal to vertical dust flux for Loess	
r_dust_af15	3.9e-5	Factor of horizontal to vertical dust flux for Gobi desert	
r_dust_af16	3.1e-5	Factor of horizontal to vertical dust flux for other mixture soils	
r_dust_af17	2.8e-6	Factor of horizontal to vertical dust flux for desert and sand land	

Meganctl.inc

This namelist is used to specify parameter values for the Model of Emissions of Gases and Aerosols from Nature (Guenther et al., 2006).

Name	Default value	Description	Comments
lstandalone	False	Run MEGAN in standalone mode (i.e. without HAM/SOA or MOZ)	