

Table A1 - Variables

Version 18

long_name	standard_name	units	variable	acronym	AMIP	deprecated	remarks
albedo for diffuse longwave radiation		1	albedo_lw_dif	LUHimuk	N	N	
albedo for direct longwave radiation		1	albedo_lw_dir	LUHimuk	N	N	
surface albedo	surface_albedo	1	albedo_surf	TUBklima	N	N	
albedo for diffuse shortwave radiation		1	albedo_sw_dif	LUHimuk	N	N	
albedo for direct shortwave radiation		1	albedo_sw_dir	LUHimuk	N	N	
albedo type classification		1	albedo_type	LUHimuk	N	N	
basal area density		m <sup>2</sup> m <sup>-3</sup>	bad	LUHimuk	N	N	units was modified in V2 by MOSAIK
building id number		1	building_id	LUHimuk	N	N	
building type classification		1	building_type	LUHimuk	N	N	
building height		m	buildings_2d	LUHimuk	N	N	
building flag		1	buildings_3d	LUHimuk	N	N	
cold air flow		m <sup>3</sup> s <sup>-1</sup>	caf	SenSWB	N	N	
coverage of plants with liquid water		1	cliq	LUHimuk	N	N	
cloud area fraction	cloud_area_fraction	1	clt		Y	N	
coverage of land surface with bare soil		1	csol	LUHimuk	N	N	CF offers an alternative option that will be introduced later
city structure		1	cstr	SenSWB	N	N	
vegetation area fraction	vegetation_area_fraction	1	cveg	LUHimuk	N	N	alter long_name in V1: coverage of land surface with vegetation
divergence of velocity field after pressure solver		s <sup>-1</sup>	divnew	LUHimuk	N	N	
divergence of velocity field before pressure solver		s <sup>-1</sup>	divold	LUHimuk	N	N	
time step		s	dt	LUHimuk	N	N	
emission of anthropogenic heat from buildings		K s <sup>-1</sup>	eahb	LUHimuk	N	N	
absolute atmospheric humidity		kg m <sup>-3</sup>	haa	KITimkro	N	N	
hail duration		s	hdu	FZJiek8	N	N	
downward heat flux at ground level in soil	downward_heat_flux_at_ground_level_in_soil	W m <sup>-2</sup>	hfdg	TUBklima	N	N	
downward heat flux in soil	downward_heat_flux_in_soil	W m <sup>-2</sup>	hfds	UHHmeteo	N	N	
upward latent heat flux in air	upward_latent_heat_flux_in_air	W m <sup>-2</sup>	hfia	TUBklima	N	N	variable was renamed in V2
surface upward latent heat flux	surface_upward_latent_heat_flux	W m <sup>-2</sup>	hfis		Y	N	
surface upward latent heat flux due to condensation evaporation of liquid water on plants		W m <sup>-2</sup>	hfis_liq	LUHimuk	N	N	
surface upward latent heat flux due to precipitation evaporation of liquid water on bare soil		W m <sup>-2</sup>	hfis_soil	LUHimuk	N	N	
surface upward latent heat flux due to transpiration of plants		W m <sup>-2</sup>	hfis_veg	LUHimuk	N	N	
upward sensible heat flux in air	upward_sensible_heat_flux_in_air	W m <sup>-2</sup>	hfisa	TUBklima	N	N	variable was renamed in V2
surface upward sensible heat flux	surface_upward_sensible_heat_flux	W m <sup>-2</sup>	hfss		Y	N	
relative humidity	relative_humidity	1	hur		Y	N	
specific humidity	specific_humidity	g kg <sup>-1</sup>	hus		Y	N	units was modified in V2
photolysis rate of nitrogen dioxide	photolysis_rate_of_nitrogen_dioxide	s <sup>-1</sup>	jno2	FZJiek8	N	N	
specific kinetic energy of air	specific_kinetic_energy_of_air	m <sup>2</sup> s <sup>-2</sup>	ke	LUHimuk	N	N	
atmosphere heat diffusivity	atmosphere_heat_diffusivity	m <sup>2</sup> s <sup>-1</sup>	kh	LUHimuk	N	N	
atmosphere momentum diffusivity	atmosphere_momentum_diffusivity	m <sup>2</sup> s <sup>-1</sup>	km	LUHimuk	N	N	
mixing length		m	l	LUHimuk	N	N	
leaf area density		m <sup>2</sup> m <sup>-3</sup>	lad	LUHimuk	N	N	
leaf area index	leaf_area_index	m <sup>2</sup> m <sup>-2</sup>	lai	LUHimuk	N	N	
mass concentration of liquid water in air	mass_concentration_of_liquid_water_in_air	kg m <sup>-3</sup>	lwc	hdcp2	N	N	
liquid water content of soil layer	liquid_water_content_of_soil_layer	kg m <sup>-2</sup>	lwcs	UHHmeteo, TUBklima	N	N	
liquid water path	atmosphere_mass_content_of_cloud_liquid_water	kg m <sup>-2</sup>	lwp	KITimk, LUHimuk	N	N	path of integrated cloud liquid water; KITimk: clwvi
liquid water level on plants		m	m_liq	LUHimuk	N	N	
soil moisture volumetric		m <sup>3</sup> m <sup>-3</sup>	m_soil	LUHimuk	N	N	
mass concentration of ambient aerosol particles in air		kg m <sup>-3</sup>	mcaa	FZJiek8	N	N	
mass concentration of arsenic dry aerosol particles in air		kg m <sup>-3</sup>	mcasda	SenUVKB	N	N	
mass concentration of black carbon dry aerosol particles in air		kg m <sup>-3</sup>	mcbcda	USIfk	N	N	
mass concentration of benzene in air	mass_concentration_of_benzene_in_air	kg m <sup>-3</sup>	mcbenz	SenUVKB	N	N	
mass concentration of calcium dry aerosol particles in air		kg m <sup>-3</sup>	mccada	SenUVKB	N	N	
mass concentration of elemental carbon dry aerosol particles in air	mass_concentration_of_elemental_carbon_dry_aerosol_particles_in_air	kg m <sup>-3</sup>	mccda	SenUVKB	N	N	
mass concentration of cadmium dry aerosol particles in air		kg m <sup>-3</sup>	mccdda	SenUVKB	N	N	
mass concentration of chloride dry aerosol particles in air		kg m <sup>-3</sup>	mcclda	SenUVKB	N	N	
mass concentration of carbon monoxide in air	mass_concentration_of_carbon_monoxide_in_air	kg m <sup>-3</sup>	mcco	SenUVKB	N	N	
mass concentration of carbon dioxide in air	mass_concentration_of_carbon_dioxide_in_air	kg m <sup>-3</sup>	mcco2	TUBSgeo	N	N	
mass concentration of potassium dry aerosol particles in air		kg m <sup>-3</sup>	mckda	SenUVKB	N	N	
mass concentration of magnesium dry aerosol particles in air		kg m <sup>-3</sup>	mcmgda	SenUVKB	N	N	
mass concentration of sodium dry aerosol particles in air		kg m <sup>-3</sup>	mcnada	SenUVKB	N	N	
mass concentration of ammonium dry aerosol particles in air	mass_concentration_of_ammonium_dry_aerosol_particles_in_air	kg m <sup>-3</sup>	mcnh4da	SenUVKB	N	N	
mass concentration of nickel dry aerosol particles in air		kg m <sup>-3</sup>	mcnida	SenUVKB	N	N	
mass concentration of nitrogen monoxide in air	mass_concentration_of_nitrogen_monoxide_in_air	kg m <sup>-3</sup>	mcno	USIfk	N	N	
mass concentration of nitrogen dioxide in air	mass_concentration_of_nitrogen_dioxide_in_air	kg m <sup>-3</sup>	mcno2	SenUVKB	N	N	





mole fraction of trans-1-3-hexadiene in air		mol mol-1	mftc6en13	FZJiek8	N	N units was modified in V2 for all mole fractions (backward compatibility ensured)
mole fraction of trans-2-hexene in air		mol mol-1	mftc6en2	FZJiek8	N	N units was modified in V2 for all mole fractions (backward compatibility ensured)
mole fraction of terpinolene in air		mol mol-1	mfterpiolene	FZJiek8	N	N units was modified in V2 for all mole fractions (backward compatibility ensured)
mole fraction of trans-3-ethylmethylcyclopentane in air		mol mol-1	mfttetmccyc5	FZJiek8	N	N units was modified in V2 for all mole fractions (backward compatibility ensured)
mole fraction of toluene in air	mole_fraction_of_toluene_in_air	mol mol-1	mftol	FZJiek8	N	N units was modified in V2 for all mole fractions (backward compatibility ensured)
surface upward mole flux of carbon dioxide	surface_upward_mole_flux_of_carbon_dioxide	mol m-2 s-1	mfuoco2s	TUBSgeo	N	N
mole fraction of z-beta-ocimene in air		mol mol-1	mftzocim	FZJiek8	N	N units was modified in V2 for all mole fractions (backward compatibility ensured)
mass concentration of organic carbon dry aerosol particles in air		kg m-3	mocda	SenUVKB	N	N
number concentration of ambient aerosol particles in air	number_concentration_of_ambient_aerosol_particles_in_air	m-3	ncaa	FZJiek8, TUBSgeo	N	N
nocturnal cooling rate		K h-1	ncr	SenSWB	N	N
number concentration of ultrafine ambient aerosol particles in air		m-3	ncufpa	FZJiek8, TUBSgeo, HUBgeo	N	N
rain drop number density		m-3	nr	LUHimuk	N	N
normalized downwelling photon radiance due to backscattering		1	nrrpdb	TUBklima	N	N
obukhov length		m	ol	LUHimuk	N	N
hydrostatic air pressure		Pa	p_h	LUHimuk	N	N
perturbation air pressure		Pa	p_p	LUHimuk	N	N
surface downwelling photosynthetic photon flux in air	surface_downwelling_photosynthetic_photon_flux_in_air	mol m-2 s-1	pard	TUDDmeteo	N	N long_name was adapted in V2 to standard_name
photosynthetic photon flux from left wrt platform		mol m-2 s-2	parl	TUDDmeteo	N	N
photosynthetic photon flux from right wrt platform		mol m-2 s-3	parr	TUDDmeteo	N	N
surface upwelling photosynthetic photon flux in air	surface_upwelling_photosynthetic_photon_flux_in_air	mol m-2 s-1	paru	TUDDmeteo	N	N long_name was adapted in V2 to standard_name
pavement type classification		1	pavement_type	LUHimuk	N	N
plant canopy heating rate		K s-1	pcm_hr	LUHimuk	N	N
aerodynamic particle diameter	aerodynamic_particle_diameter	1e-6 m	pd_ad	TUBklima	N	N
air pressure	air_pressure	hPa	plev	Y	N	N
horizontal orientation of platform		degree	poh	TUDDmeteo	N	N
particle radius		m	pr	LUHimuk	N	N particle/droplet radius
precipitation amount	precipitation_amount	kg m-2	precip	hdcp2	N	N
sea water potential density		kg m-3	prho	LUHimuk	N	N
precipitable water	atmosphere_mass_content_of_water_vapor	kg m-2	prw	Y	N	N alias: path of integrated water vapour
surface air pressure	surface_air_pressure	hPa	ps	Y	N	N
particle surface area		1e-12 m-2	psa	FZJiek8	N	N
platform speed wrt air	platform_speed_wrt_air	m s-1	pswrta	TUBklima	N	N
platform speed wrt ground	platform_speed_wrt_ground	m s-1	pswrtg	FZJiek8	N	N
water vapor partial pressure in air	water_vapor_partial_pressure_in_air	hPa	pwv	TUBklima	N	N
cloud water mixing ratio	cloud_water_mixing_ratio	g kg-1	qc	LUHimuk	N	N
liquid water mixing ratio	liquid_water_mixing_ratio	g kg-1	ql	LUHimuk	N	N
cloud droplets weighting factor		1	qlvp	LUHimuk	N	N
rain water mixing ratio		g kg-1	qr	LUHimuk	N	N
surface layer humidity scale		g kg-1	qs	LUHimuk	N	N domain average
total water mixing ratio		kg kg-1	qt	LUHimuk	N	N LUH: Gesamtwasser zu trockener Luft (nicht identisch mit „mass_fraction_of_water_in_air“ = Verhältnis Wasser zu feuchter Luft)
humidity mixing ratio	humidity_mixing_ratio	g kg-1	qv	LUHimuk	N	N gleichbedeutend mit water vapour mixing ratio
aerodynamic resistance	aerodynamic_resistance	s m-1	r_aero	LUHimuk	N	N
surface resistance		s m-1	r_surf	LUHimuk	N	N
clear sky longwave radiative heating rate		K h-1	rad_lw_cs_hr	LUHimuk	N	N
longwave radiative heating rate		K h-1	rad_lw_hr	LUHimuk	N	N
clear sky shortwave radiative heating rate		K h-1	rad_sw_cs_hr	LUHimuk	N	N
shortwave radiative heating rate		K h-1	rad_sw_hr	LUHimuk	N	N
rainfall duration		s	radu	FZJiek8	N	N
air density	air_density	kg m-3	rho	LUHimuk	N	N
sea water density	sea_water_density	kg m-3	rho_sea_water	LUHimuk	N	N
eastward longwave flux in air		W m-2	rl_east	TUBklima	N	N
northward longwave flux in air		W m-2	rl_north	TUBklima	N	N
southward longwave flux in air		W m-2	rl_south	TUBklima	N	N
westward longwave flux in air		W m-2	rl_west	TUBklima	N	N
downwelling longwave flux in air	downwelling_longwave_flux_in_air	W m-2	rld	TUBklima	N	N
surface downwelling longwave flux in air	surface_downwelling_longwave_flux_in_air	W m-2	rlds	Y	N	N
upwelling longwave flux in air	upwelling_longwave_flux_in_air	W m-2	rlu	TUBklima	N	N
surface upwelling longwave flux in air	surface_upwelling_longwave_flux_in_air	W m-2	rlus	Y	N	N
surface net downward radiative flux	surface_net_downward_radiative_flux	W m-2	rnds	DWD	N	N
root area density of vegetation parameterized		m2 m-3	root_area_dens_par	LUHimuk	N	N
root area density of vegetation resolved		m2 m-3	root_area_dens_res	LUHimuk	N	N
rainfall rate	rainfall_rate	mm s-1	rr	LUHimuk	N	N
eastward shortwave flux in air		W m-2	rs_east	TUBklima	N	N
northward shortwave flux in air		W m-2	rs_north	TUBklima	N	N
southward shortwave flux in air		W m-2	rs_south	TUBklima	N	N
westward shortwave flux in air		W m-2	rs_west	TUBklima	N	N
downwelling shortwave flux in air	downwelling_shortwave_flux_in_air	W m-2	rsd	hdcp2	N	N
diffuse downwelling shortwave flux in air	diffuse_downwelling_shortwave_flux_in_air	W m-2	rsddf	TUBklima	N	N
direct downwelling shortwave flux in air	direct_downwelling_shortwave_flux_in_air	W m-2	rsddir	TUBklima	N	N

surface downwelling shortwave flux in air	surface_downwelling_shortwave_flux_in_air	W m-2	rsds		Y	N
upwelling shortwave flux in air	upwelling_shortwave_flux_in_air	W m-2	rsu	TUBklima	N	N
surface upwelling shortwave flux in air	surface_upwelling_shortwave_flux_in_air	W m-2	rsu		Y	N
radiative flux ultraviolet a		W m-2	ruva	USIfk	N	N
radiative flux ultraviolet b		W m-2	ruvb	USIfk	N	N
absolute salinity	sea_water_absolute_salinity	g kg-1	sa	LUHimuk	N	N
mass fraction of passive scalar in air		kg kg-1	sc	LUHimuk	N	N
soil moisture potential		Pa	smp	UHHmeteo	N	N from pF meter measurements
soil type classification		1	soil_type	LUHimuk	N	Y deprecated; use soil type instead
soil type	soil_type	1	soil_type	LUHimuk, TUBklima	N	N
duration of sunshine	duration_of_sunshine	s	ssdu	TUBklima	N	N
surface scalar flux		kg kg-1 m s-1	ssws	LUHimuk	N	N
surface tile fractions		m2 m-2	surface_fraction	LUHimuk	N	N
indoor temperature		degree_C	t_indoor	LUHimuk	N	N
land water temperature		degree_C	t_lw	FUBmeteo, TUBklima	N	N land_water is water in lakes, rivers, etc.; will probably be included in CF
mean radiant temperature		degree_C	t_mrt	LUHimuk	N	N
perceived temperature		degree_C	t_perceived	LUHimuk	N	N
physiological equivalent temperature		degree_C	t_pet	LUHimuk	N	N
soil temperature	soil_temperature	degree_C	t_soil	TUBklima, LUHimuk	N	N
universal thermal climate index		degree_C	t_utci	LUHimuk	N	N
virtual acoustic temperature		K	t_va	TUBklima	N	N
air temperature	air_temperature	degree_C	ta		Y	N
brightness temperature		K	tb	hdcp2	N	N
dew point temperature	dew_point_temperature	degree_C	tdps	TUBklima	Y	N
tendency of total water mixing ratio due to horizontal large scale advection		kg kg-1 s-1	tend_qt_adv	LUHimuk	N	N
tendency of total water mixing ratio due to nudging		kg kg-1 s-1	tend_qt_nud	LUHimuk	N	N
tendency of total water mixing ratio due to horizontal large scale subsidence		kg kg-1 s-1	tend_qt_sub	LUHimuk	N	N
tendency of liquid water potential temperature due to horizontal large scale advection		K s-1	tend_thetal_adv	LUHimuk	N	N
tendency of liquid water potential temperature due to nudging		K s-1	tend_thetal_nud	LUHimuk	N	N
tendency of liquid water potential temperature due to horizontal large scale subsidence		K s-1	tend_thetal_sub	LUHimuk	N	N
tendency of u wind component due to nudging		m s-2	tend_u_nud	LUHimuk	N	N
tendency of v wind component due to nudging		m s-2	tend_v_nud	LUHimuk	N	N
globe temperature		degree_C	tg	TUBklima	N	N
thickness of hail amount		mm	tha	FZJiek8	N	N
air potential temperature	air_potential_temperature	K	theta		Y	N
liquid water potential temperature		K	thetal	LUHimuk	N	N
surface layer temperature scale		K	thetas	LUHimuk	N	N
virtual air potential temperature	virtual_temperature	K	thetav	LUHimuk	N	N
specific kinetic energy of turbulence parameterized		m2 s-2	tke_par	LUHimuk	N	N
specific kinetic energy of turbulence resolved		m2 s-2	tke_res	LUHimuk	N	N
troposphere mole content of nitrogen dioxide	troposphere_mole_content_of_nitrogen_dioxide	mol m-2	tmcnd	TUBSgeo	N	N
thickness of rainfall amount	thickness_of_rainfall_amount	mm	traa	FZJiek8	N	N
mole fraction of ozone in air	mole_fraction_of_ozone_in_air	mol mol-1	tro3		Y	N
surface temperature	surface_temperature	K	ts		Y	N
surface temperature behind platform		K	tsbp	TUDDmeteo	N	N
surface temperature left of platform		K	tslp	TUDDmeteo	N	N
surface temperature right of platform		K	tsrp	TUDDmeteo	N	N
u wind component		m s-1	u	LUHimuk	N	N specified in rotated coordinate system
eastward wind	eastward_wind	m s-1	ua		Y	N
upward flux of ultrafine ambient aerosol particles in air		m2 s-1	ufluxufp	TUBSgeo	N	N
u wind component geostrophic		m s-1	ug	LUHimuk	N	N specified in rotated coordinate system
eastward kinematic latent heat flux in air		g kg-1 m s-1	uqv	TUBklima	N	N specified in rotated coordinate system; e.g. for eddy-covariance data
friction velocity		m s-1	us	LUHimuk	N	N
eastward kinematic sensible heat flux in air		K m s-1	utheta	TUBklima	N	N specified in rotated coordinate system; e.g. for eddy-covariance data
eastward northward kinematic momentum flux in air		m2 s-2	uv	TUBklima	N	N specified in rotated coordinate system; e.g. for eddy-covariance data
uv index		1	uv_index	LUHimuk	N	N
upward eastward kinematic momentum flux in air		m2 s-2	uw	TUBklima	N	N specified in rotated coordinate system; e.g. for eddy-covariance data
upward eastward kinematic momentum flux in air parameterized		m2 s-2	uw_par	LUHimuk	N	N
upward eastward kinematic momentum flux in air resolved		m2 s-2	uw_res	LUHimuk	N	N
v wind component		m s-1	v	LUHimuk	N	N specified in rotated coordinate system
northward wind	northward_wind	m s-1	va		Y	N
vegetation type classification		1	vegetation_type	LUHimuk	N	N
v wind component geostrophic		m s-1	vg	LUHimuk	N	N specified in rotated coordinate system
vitamin d production rate		1e-9 kg s-1	vitd_rate	LUHimuk	N	N Umrechnung der SI-Einheit: 1 µg = 40 Internationale Einheiten (IE); 1 IE = 0,025 µg; IE = IU (International Unit); Einheit „IU“ nicht UDUNITS konform, wird allerdings in der Wissenschaft verwendet
northward kinematic latent heat flux in air		g kg-1 m s-1	vqv	TUBklima	N	N specified in rotated coordinate system; e.g. for eddy-covariance data

northward kinematic sensible heat flux in air		K m s-1	vtheta	TUBklima	N	N specified in rotated coordinate system; e.g. for eddy-covariance data
upward northward kinematic momentum flux in air		m2 s-2	vw	TUBklima	N	N specified in rotated coordinate system; e.g. for eddy-covariance data
upward northward kinematic momentum flux in air parameterized		m2 s-2	vw_par	LUHimuk	N	N
upward northward kinematic momentum flux in air resolved		m2 s-2	vw_res	LUHimuk	N	N
w wind component	upward_air_velocity	m s-1	w	LUHimuk	N	N
large scale vertical velocity		m s-1	w_subs	LUHimuk	N	N
water type classification		1	water_type	LUHimuk	N	N
wind from direction	wind_from_direction	degree	wdir	hdcp2	N	N
divergence of transport of resolved turbulence kinetic energy due to pressure fluctuations		Pa m s-2	wpdz	LUHimuk	N	N
upward kinematic total water mixing ratio flux in air		kg kg-1 m s-1	wqt	LUHimuk	N	N
upward kinematic total water mixing ratio flux in air parameterized		kg kg-1 m s-1	wqt_par	LUHimuk	N	N
upward kinematic total water mixing ratio flux in air resolved		kg kg-1 m s-1	wqt_res	LUHimuk	N	N
upward kinematic latent heat flux in air		g kg-1 m s-1	wqv	TUBklima	N	N specified in rotated coordinate system; e.g. for eddy-covariance data
upward kinematic latent heat flux in air parameterized		kg kg-1 m s-1	wqv_par	LUHimuk	N	N
upward kinematic latent heat flux in air resolved		kg kg-1 m s-1	wqv_res	LUHimuk	N	N
mixing layer velocity scale		m s-1	ws	LUHimuk	N	N domain average
upward kinematic scalar mass fraction flux in air		kg kg-1 m s-1	wsc	LUHimuk	N	N
upward kinematic scalar mass fraction flux in air parameterized		kg kg-1 m s-1	wsc_par	LUHimuk	N	N
upward kinematic scalar mass fraction flux in air resolved		kg kg-1 m s-1	wsc_res	LUHimuk	N	N
wind speed	wind_speed	m s-1	wspeed	hdcp2	N	N
magnitude of air velocity		m s-1	wspeed_3d	LUHimuk	N	N
upward kinematic sensible heat flux in air		K m s-1	wtheta	TUBklima	N	N specified in rotated coordinate system; e.g. for eddy-covariance data
upward kinematic sensible heat flux in air parameterized		K m s-1	wtheta_par	LUHimuk	N	N
upward kinematic sensible heat flux in air resolved		K m s-1	wtheta_res	LUHimuk	N	N
divergence of transport of resolved turbulence kinetic energy due to turbulence		m2 s-3	wuudz	LUHimuk	N	N
roughness length for momentum	surface_roughness_length_for_momentum_in_air	m	z0	LUHimuk	N	N
roughness length for heat	surface_roughness_length_for_heat_in_air	m	z0h	LUHimuk	N	N
cloud base altitude	cloud_base_altitude	m	zcb	hdcp2	N	N
convective boundary layer height based on maximum temperature gradient		m	zi_theta	LUHimuk	N	N
convective boundary layer height based on minimum sensible heat flux		m	zi_wtheta	LUHimuk	N	N
atmosphere boundary layer thickness	atmosphere_boundary_layer_thickness	m	zmia		Y	N
ground level altitude	ground_level_altitude	m	zt	LUHimuk, TUBklima	N	N