CAFE60v1: A 60-year large ensemble climate reanalysis: Supplemental information.

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ABSTRACT

We detail the available variables and their temporal resolution..

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TABLE 1: Atmospheric variables

Variable	abbreviation	units	temporal resolution
evap	evaporation rate	kg/m2/s	daily, monthly
lwflx	net (down-up) longwave flux	w/m2	daily, monthly
shflx	sensible heat flux	w/m2	daily, monthly
tau_x	zonal wind stress	pa	daily, monthly
tau_y	meridional wind stress	pa	daily, monthly
t_ref	temperature at 2 m	deg_k	daily, monthly
q_ref	specific humidity at 2 m	kg/kg	daily, monthly
u_ref	zonal wind component at 10 m	m/s	daily, monthly
v_ref	meridional wind component at 10 m	m/s	daily, monthly
t_surf	surface temperature	deg_k	daily, monthly
t_ref_min	min temperature at 2 m	deg_k	daily, monthly
t_ref_max	max temperature at 2 m	deg_k	daily, monthly
ps	surface pressure	Pa	daily, monthly
slp	sea-level pressure	Pa	daily, monthly
h500	500-mb hght	m	daily, monthly
hght	geopotential height	m	daily, monthly
sphum	specific humidity	kg/kg	daily, monthly
temp	temperature	deg_K	daily, monthly
ucomp	zonal wind	m/sec	daily, monthly
vcomp	meridional wind	m/sec	daily, monthly
omega	omega	pa/sec	daily, monthly

TABLE 2: Atmospheric variables cont.

Variable	abbreviation	units	temporal resolution
DELP	delp field	pa	daily, monthly
wvp	Column integrated water vapor	kg/m2	daily, monthly
awp	Column integrated cloud mass	kg/m2	daily, monthly
precip	Total precipitation rate	kg/m2/s	daily, monthly
prec_conv	Precipitation rate from convection	kg(h2o)/m2/s	daily, monthly
rh	relative humidity	percent	daily, monthly
lwdn_sfc	LW flux down at surface	watts/m^2	daily, monthly
lwup_sfc	LW flux up at surface	watts/m^2	daily, monthly
olr	outgoing longwave radiation	watts/m^2	daily, monthly
qo3	ozone mixing ratio	kg/kg	daily, monthly
qo3_col	ozone column	DU	daily, monthly
swdn_sfc	SW flux down at surface	watts/m^2	daily, monthly
swup_sfc	SW flux up at surface	watts/m^2	daily, monthly
swdn_toa	SW flux down at TOA	watts/m^2	daily, monthly
swup_toa	SW flux up at TOA	watts/m^2	daily, monthly
vis_exopd_vl_c	visband column volcanic extopdep	dimensionless	daily, monthly
tot_cld_amt	total cloud amount	percent	daily, monthly

Note: some banding can be noticed about the Antarctic for certain mean atmospheric diagnostics. This is a diagnostic artefact and does not impact model dynamics.

TABLE 3: Ocean variables

Variable	abbreviation	units	temporal resolution
eta_t	surface height on T cells [Boussinesq (volume conserving) model]	m	daily, monthly
sss	Practical Sea Surface Salinity	psu	daily
sst	Potential Temperature at surface	°C	daily, monthly
mld	mixed layer depth determined by density criteria	m	daily
temp_vdiff_impl	implicit vert diffusion of heat	watts/m^2	monthly
salt_vdiff_impl	implicit vert diffusion of Practical Salinity	kg/(sec*m^2)	monthly
neutral_diffusion_temp	rho*dzt*cp*explicit neutral diffusion tendency (heating)	watts/m^2	monthly
neutral_diffusion_salt	rho*dzt*explicit neutral diffusion tendency for salt	kg/(sec*m^2)	monthly
neutral_gm_temp	rho*dzt*cp*GM stirring (heating)	watts/m^2	monthly
neutral_gm_salt	rho*dzt*GM stirring tendency for salt	kg/(sec*m^2)	monthly
age_global	Age (global)	yr	monthly
salt_sponge_tend	rho*dzt*tendency due to sponge	kg/(sec*m^2)	monthly
temp_sponge_tend	rho*dzt*cp*heating due to sponge	watts/m^2	monthly
salt	Practical Salinity	psu	monthly
temp	Potential temperature	°C	monthly
u	i-current	m/s	monthly
v	j-current	m/s	monthly
wt	dia-surface velocity T-points	m/s	monthly
tx_trans	T-cell i-mass transport	Sv (10-9 kg/s)	monthly
ty_trans	T-cell j-mass transport	Sv (10-9 kg/s)	monthly
tx_trans_gm	T-cell mass i-transport from GM	Sv (10-9 kg/s)	monthly
ty_trans_gm(	T-cell mass j-transport from GM	Sv (10-9 kg/s)	monthly
cfc_11	CFC-11	mol/kg	monthly
cfc_12	CFC-12	mol/kg	monthly

TABLE 4: Ocean forcing variables

Variable	abbreviation	units	temporal resolution
pme_net	precip-evap into ocean (total w/ restore + normalize)	(kg/m^3)*(m/sec)	monthly
river	mass flux of river (runoff + calving) entering ocean	(kg/m^3)*(m/sec)	monthly
evap	mass flux from evaporation/condensation (> 0 enters ocean)	(kg/m^3)*(m/sec)	monthly
fprec	snow falling onto ocean (> 0 enters ocean)	(kg/m^3)*(m/sec)	monthly
lprec	liquid precip (including ice melt/form) into ocean (> 0 enters ocean)	(kg/m^3)*(m/sec)	monthly
swflx	shortwave flux into ocean (> 0 heats ocean)	W/m^2	monthly
lw_heat	longwave flux into ocean (< 0 cools ocean)	W/m^2	monthly
sens_heat	sensible heat into ocean (< 0 cools ocean)	W/m^2	monthly
sfc_hflux_total	surface heat flux from coupler plus restore (omits mass transfer heating)	W/m^2	monthly
tau_x	i-directed wind stress forcing u-velocity	N/m^2	monthly
tau_y	j-directed wind stress forcing v-velocity	N/m^2	monthly

TABLE 5: Ocean scalar variables

Variable	abbreviation	units	temporal resolution
total_ocean_river	total liquid river water and calving ice entering ocean	kg/sec/1e15	monthly
total_ocean_evap	total evaporative ocean mass flux (> 0 enters ocean)	(kg/sec)/1e15	monthly
total_ocean_pme_sbc	total ocean precip-evap via sbc (liquid, frozen, evaporation)	kg/sec/1e15	monthly
total_ocean_fprec	total snow falling onto ocean (> 0 enters ocean)	(kg/sec)/1e15	monthly
total_ocean_lprec	total liquid precip into ocean (> 0 enters ocean)	(kg/sec)/1e15	monthly
total_ocean_calving	total water entering ocean from calving land ice	(kg/sec)/1e15	monthly
total_ocean_runoff	total liquid river runoff (> 0 water enters ocean)	(kg/sec)/1e15	monthly
salt_total	total mass of salt in liquid seawater	kg/1e18	monthly
temp_total	Total heat in the liquid ocean referenced to 0 °C	Joule/1e25	monthly
total_ocean_hflux_pme	total ocean heat flux from pme transferring water across surface	Watts/1e15	monthly
ke_tot	Globally integrated ocean kinetic energy	10^{15} Joules	monthly
pe_tot	Globally integrated ocean potential energy	10^{15} Joules	monthly
eta_nonbouss_globa	global average surface height nonboussinesq	m	monthly

TABLE 6: Ocean biogeochemical variables

Variable	abbreviation	units	temporal resolution
no3†	NO_3	mmol/m^3	monthly, daily for surface no3
phy†	phytoplankton	mmol/m^3	monthly, daily for surface phy
o2†	O_2	mmol/m^3	monthly
det†	detritus	mmol/m^3	monthly
zoo†	zooplankton	mmol/m^3	monthly
caco3†	Calcium Carbonate	mmol/m^3	monthly
dic†	Dissolved Inorganic Carbon	mmol/m^3	monthly
alk†	alkalinity	mmol/m^3	monthly
adic†	anthropogenic DIC	mmol/m^3	monthly
fe†	iron	mmol/m^3	monthly, daily for surface fe
stf03	Flux into ocean - oxygen	mmol/m^2/s	daily, monthly
stf07	Flux into ocean - DIC, PI	mmol/m^2/s	daily, monthly
stf10	Flux into ocean - DIC, inc. ADIC	mmol/m^2/s	daily, monthly
pco2	pCO_2		daily, monthly
paco2	anthropogenic pCO_2		daily, monthly
pprod_gross_2d	Vertically integrated Gross PHY production	mmolN/m^2/s	daily, monthly
pprod_gross	Gross PHY production	mmolN/m^3/s	monthly
det_sediment	Accumulated DET in sediment at base of water column	mmolN/m^2	monthly
caco3_sediment	Accumulated CaCO3 in sediment at base of water column	mmolN/m^2	monthly
total_co2_flux	Total surface flux of inorganic C (natural) into ocean"	Pg/yr	monthly
total_aco2_flux	Total surface flux of inorganic C (natural + anthropogenic) into ocean	Pg/yr	monthly

† indicates surface only variable is also avaialbe

TABLE 7: Land surface variables

Variable	abbreviation	units	temporal resolution
`cover_type`	Land surface cover type	dimensionless	monthly
`albedo`	albedo	dimensionless	monthly
`groundwater`	mass of water below bucket	kg/m^2	monthly
`latent`	latent heat flux	W/m^2	monthly
`precip`	total precipitation rate	$kg/(m^2\ s)$	monthly
`sens`	sensible heat flux	W/m^2	monthly
`smelt`	snow melt rate	$kg/(m^2\ s)$	monthly
`snow`	mass of snow on ground	kg/m^2	monthly
`snowfall`	snowfall rate	$kg/(m^2\ s)$	monthly
`water`	mass of water in bucket	kg/m^2	monthly
`sroff`	surface runoff of snow	$kg/(m^2\ s)$	monthly
`wroff`	surface runoff of water	$kg/(m^2\ s)$	monthly