

FLT\_HAZ

Generated by Doxygen 1.8.10

Wed Jul 11 2018 09:37:24



# Contents

<b>1</b>	<b>Modules Index</b>	<b>1</b>
1.1	Modules List . . . . .	1
<b>2</b>	<b>File Index</b>	<b>3</b>
2.1	File List . . . . .	3
<b>3</b>	<b>Module Documentation</b>	<b>5</b>
3.1	const_module Module Reference . . . . .	5
3.1.1	Variable Documentation . . . . .	5
3.1.1.1	ceus . . . . .	5
3.1.1.2	characteristic . . . . .	5
3.1.1.3	cy14 . . . . .	5
3.1.1.4	deg . . . . .	6
3.1.1.5	deg2rad . . . . .	6
3.1.1.6	delta . . . . .	6
3.1.1.7	earth_r . . . . .	6
3.1.1.8	exponential . . . . .	6
3.1.1.9	heaviside . . . . .	6
3.1.1.10	km . . . . .	6
3.1.1.11	na . . . . .	6
3.1.1.12	nm . . . . .	6
3.1.1.13	normal . . . . .	6
3.1.1.14	peer . . . . .	6
3.1.1.15	pi . . . . .	6
3.1.1.16	point . . . . .	6
3.1.1.17	rad2deg . . . . .	6
3.1.1.18	rv . . . . .	6
3.1.1.19	sadigh97 . . . . .	6
3.1.1.20	sqrt2_inv . . . . .	6
3.1.1.21	ss . . . . .	6
3.1.1.22	triangular . . . . .	6
3.1.1.23	trunc_normal . . . . .	6

3.1.1.24	uniform	6
3.1.1.25	wc94	6
3.2	flt_module Module Reference	6
3.2.1	Function/Subroutine Documentation	8
3.2.1.1	align_model()	8
3.2.1.2	cal_coor_d()	8
3.2.1.3	cal_p_locd_arr()	8
3.2.1.4	caldepthprob()	8
3.2.1.5	deg2km_model()	8
3.2.1.6	flt_ini()	9
3.2.1.7	locate_rupture(S1_local, S2_local, rup_coor)	9
3.2.1.8	mag_freq_distribution()	9
3.2.1.9	mw2arup()	9
3.2.1.10	rupture_location()	9
3.2.1.11	unit_conversion()	10
3.2.2	Variable Documentation	10
3.2.2.1	coor_d	10
3.2.2.2	flt_area	10
3.2.2.3	flt_az_seg	10
3.2.2.4	flt_coor	10
3.2.2.5	flt_len	10
3.2.2.6	flt_len_seg	10
3.2.2.7	flt_s_corner	10
3.2.2.8	flt_strike_deg	10
3.2.2.9	flt_strike_rad	10
3.2.2.10	flt_wid	10
3.2.2.11	ftop	10
3.2.2.12	i_dist_bin	10
3.2.2.13	i_eps_bin	10
3.2.2.14	i_freq	10
3.2.2.15	i_inten	10
3.2.2.16	i_locd	10
3.2.2.17	i_locs	10
3.2.2.18	i_mag	10
3.2.2.19	i_mag_bin	10
3.2.2.20	i_seg	10
3.2.2.21	mag_inc	11
3.2.2.22	mag_inc_0	11
3.2.2.23	mw	11
3.2.2.24	n_cor	11

3.2.2.25	n_locd	11
3.2.2.26	n_locs	11
3.2.2.27	n_mag	11
3.2.2.28	p_locd	11
3.2.2.29	p_locd_arr	11
3.2.2.30	p_locs	11
3.2.2.31	rate	11
3.2.2.32	rate_inc	11
3.2.2.33	rate_inc_0	11
3.2.2.34	rjb	11
3.2.2.35	rrup	11
3.2.2.36	rup_area	11
3.2.2.37	rup_area_trial	11
3.2.2.38	rup_coor	11
3.2.2.39	rup_len	11
3.2.2.40	rup_len_trial	11
3.2.2.41	rup_top	11
3.2.2.42	rup_wid	11
3.2.2.43	rup_wid_trial	11
3.2.2.44	rx	11
3.2.2.45	s1	11
3.2.2.46	s2	11
3.2.2.47	site_coor	11
3.2.2.48	step_d	11
3.2.2.49	step_d_h	12
3.2.2.50	step_d_hc	12
3.2.2.51	step_d_hs	12
3.2.2.52	step_d_trial	12
3.2.2.53	step_d_v	12
3.2.2.54	step_s	12
3.2.2.55	step_s_trial	12
3.2.2.56	tin	12
3.3	gmpe_module Module Reference	12
3.3.1	Function/Subroutine Documentation	12
3.3.1.1	cy_2014_sub(M, ip, R_RUP, R_JB, Rx, Ztor, delta, F_RV, F_NM, HW, Z10, Vs30, FVS30, region, d_DPP, lnSa, sigma)	12
3.3.1.2	gmpe_cy14(M, T, Rrup, Rjb, Rx, Ztor, dip, m_SOF, Z10, Vs30, gmpe_params, gmpe_opts, lnSa, sigma)	12
3.3.1.3	gmpe_interface(m_gmpe_name, Tin, Mw, m_sof, Rrup, Rjb, Rx, Ztor, dip, Vs30, Z10, gmpe_params, gmpe_opts, lnSa, Sigma)	13
3.3.1.4	gmpe_sadigh97(lnSa, Sigma, M, Rrup, Tin, m_SOF)	13

3.3.1.5	per_indx_cy14(per, per_indx)	13
3.4	input_module Module Reference	13
3.4.1	Function/Subroutine Documentation	15
3.4.1.1	close_file()	15
3.4.1.2	print_haz(haz)	15
3.4.1.3	print_haz_bin(haz_bin)	15
3.4.1.4	read_aleatory_distribution()	15
3.4.1.5	read_aspect_ratio()	15
3.4.1.6	read_b_value()	15
3.4.1.7	read_depth_distribution()	15
3.4.1.8	read_depth_param()	16
3.4.1.9	read_dip()	16
3.4.1.10	read_dist_bin()	16
3.4.1.11	read_eps_bin()	16
3.4.1.12	read_fault_trace()	16
3.4.1.13	read_frequency()	16
3.4.1.14	read_gmpe_name()	16
3.4.1.15	read_gmpe_opts()	16
3.4.1.16	read_gmpe_params()	16
3.4.1.17	read_input()	17
3.4.1.18	read_intensity()	17
3.4.1.19	read_mag_bin()	17
3.4.1.20	read_mag_range()	18
3.4.1.21	read_mag_step()	18
3.4.1.22	read_rec_relation()	18
3.4.1.23	read_scaling_model	18
3.4.1.24	read_seismogenic_depth()	18
3.4.1.25	read_site()	18
3.4.1.26	read_slip_rate()	18
3.4.1.27	read_sof()	18
3.4.1.28	read_strike_dip_step()	18
3.4.1.29	read_trunc_level()	18
3.4.1.30	read_unit()	18
3.4.1.31	read_vs30()	18
3.4.1.32	read_z10()	18
3.4.1.33	read_z25()	18
3.4.2	Variable Documentation	18
3.4.2.1	arg	18
3.4.2.2	aspect_ratio	18
3.4.2.3	b_value	18

3.4.2.4	depth_param	18
3.4.2.5	dip_step	18
3.4.2.6	dist_bin	18
3.4.2.7	eastat	18
3.4.2.8	eps_bin	18
3.4.2.9	ext_dag	18
3.4.2.10	ext_haz	18
3.4.2.11	ext_log	18
3.4.2.12	ext_rup	18
3.4.2.13	flt_dip_deg	18
3.4.2.14	flt_dip_rad	19
3.4.2.15	flt_n_corner	19
3.4.2.16	flt_n_seg	19
3.4.2.17	flt_trace	19
3.4.2.18	fnm_dag	19
3.4.2.19	fnm_haz	19
3.4.2.20	fnm_inp	19
3.4.2.21	fnm_log	19
3.4.2.22	fnm_rup	19
3.4.2.23	fp_dag	19
3.4.2.24	fp_haz	19
3.4.2.25	fp_inp	19
3.4.2.26	fp_log	19
3.4.2.27	fp_rup	19
3.4.2.28	frequency	19
3.4.2.29	gmpe_name	19
3.4.2.30	gmpe_opts	19
3.4.2.31	gmpe_params	19
3.4.2.32	inp_exist	19
3.4.2.33	intensity	19
3.4.2.34	iost	19
3.4.2.35	line	19
3.4.2.36	m_aleatory_distribution	19
3.4.2.37	m_depth_distribution	19
3.4.2.38	m_gmpe_name	19
3.4.2.39	m_rec_relation	19
3.4.2.40	m_scaling	19
3.4.2.41	m_sigma_trunc	19
3.4.2.42	m_sof	20
3.4.2.43	m_unit	20

3.4.2.44	mag_bin	20
3.4.2.45	mag_step	20
3.4.2.46	mmax	20
3.4.2.47	mmin	20
3.4.2.48	n_dist_bin	20
3.4.2.49	n_eps_bin	20
3.4.2.50	n_freq	20
3.4.2.51	n_inten	20
3.4.2.52	n_mag_bin	20
3.4.2.53	numvalues	20
3.4.2.54	ppos	20
3.4.2.55	site	20
3.4.2.56	slip_rate	20
3.4.2.57	smax	20
3.4.2.58	smin	20
3.4.2.59	str_tmp	20
3.4.2.60	strike_step	20
3.4.2.61	temp1	20
3.4.2.62	temp2	20
3.4.2.63	temp_int	20
3.4.2.64	tmp1	20
3.4.2.65	tmp2	20
3.4.2.66	tmp_int	20
3.4.2.67	trunc_level	20
3.4.2.68	vs30	20
3.4.2.69	wrt_fmt	20
3.4.2.70	z10	21
3.4.2.71	z25	21
3.5	utils Module Reference	21
3.5.1	Function/Subroutine Documentation	21
3.5.1.1	cal_rx(coor)	21
3.5.1.2	deg2km_simple(vn, ve, alat_sta, alon_sta, alat_ref, alon_ref)	21
3.5.1.3	delaz2_km(y1, x1, y2, x2, delta, az)	21
3.5.1.4	deltacdf(x)	21
3.5.1.5	dist_rup_seg(Rrup, Rjb, Rx, coor, Ztor, strike, dip, rup_wid)	22
3.5.1.6	dist_rup_set(Rrup, Rjb, Rx, coor, Ztor, strike, dip, rup_wid)	22
3.5.1.7	dot3(x, y)	22
3.5.1.8	interp_coeff(x1, x2, y1, y2, x, y, iflag)	22
3.5.1.9	locate(ibin, edge, x)	22
3.5.1.10	m22det(A)	22



3.5.1.11	<a href="#">m33det(A)</a>	22
3.5.1.12	<a href="#">normcdf(x)</a>	22
3.5.1.13	<a href="#">pointlinesegdistance(a, b, x, dist)</a>	23
3.5.1.14	<a href="#">pointtriangledistance(TRI1, TRI2, TRI3, P, dist)</a>	23
3.5.1.15	<a href="#">prob_exceed(p_exceed, m_eps, m_aleatory_distribution, trunclevel)</a>	23
3.5.1.16	<a href="#">truncnormcdf(x, a, b, z)</a>	24
<b>4</b>	<b>File Documentation</b>	<b>25</b>
4.1	<a href="#">const_module.f90 File Reference</a>	25
4.2	<a href="#">flt_module.f90 File Reference</a>	25
4.2.1	<a href="#">Function/Subroutine Documentation</a>	27
4.2.1.1	<a href="#">mfd_char()</a>	27
4.2.1.2	<a href="#">mfd_delta()</a>	27
4.2.1.3	<a href="#">mfd_exp()</a>	27
4.3	<a href="#">GMPE_module.f90 File Reference</a>	27
4.4	<a href="#">input_module.f90 File Reference</a>	27
4.5	<a href="#">main_flt_haz.f90 File Reference</a>	30
4.5.1	<a href="#">Function/Subroutine Documentation</a>	30
4.5.1.1	<a href="#">flt_haz</a>	31
4.6	<a href="#">utils.f90 File Reference</a>	31
<b>Index</b>		<b>33</b>



# Chapter 1

## Modules Index

### 1.1 Modules List

Here is a list of all modules with brief descriptions:

<a href="#">const_module</a>	5
<a href="#">flt_module</a>	6
<a href="#">gmpe_module</a>	12
<a href="#">input_module</a>	13
<a href="#">utils</a>	21



## Chapter 2

# File Index

### 2.1 File List

Here is a list of all files with brief descriptions:

<a href="#">const_module.f90</a>	25
<a href="#">flt_module.f90</a>	25
<a href="#">GMPE_module.f90</a>	27
<a href="#">input_module.f90</a>	27
<a href="#">main_flt_haz.f90</a>	30
<a href="#">utils.f90</a>	31



## Chapter 3

# Module Documentation

### 3.1 const\_module Module Reference

#### Variables

- real(8), parameter `pi` = 3.14159265358979
- real(8), parameter `deg2rad` = 0.0174532925199433
- real(8), parameter `rad2deg` = 57.2957795130823
- real(8), parameter `sqrt2_inv` = 0.707106781186547
- real(8), parameter `earth_r` = 6371.0
- integer, parameter `ss` = 1
- integer, parameter `rv` = 2
- integer, parameter `nm` = 3
- integer, parameter `na` = 4
- integer, parameter `wc94` = 1
- integer, parameter `peer` = 2
- integer, parameter `ceus` = 3
- integer, parameter `point` = 4
- integer, parameter `exponential` = 1
- integer, parameter `characteristic` = 2
- integer, parameter `delta` = 3
- integer, parameter `deg` = 1
- integer, parameter `km` = 2
- integer, parameter `sadigh97` = 1
- integer, parameter `cy14` = 2
- integer, parameter `uniform` = 1
- integer, parameter `triangular` = 2
- integer, parameter `normal` = 1
- integer, parameter `trunc_normal` = 2
- integer, parameter `heaviside` = 3

#### 3.1.1 Variable Documentation

3.1.1.1 integer, parameter `const_module::ceus` = 3

3.1.1.2 integer, parameter `const_module::characteristic` = 2

3.1.1.3 integer, parameter `const_module::cy14` = 2

- 3.1.1.4 integer, parameter `const_module::deg` = 1
- 3.1.1.5 real(8), parameter `const_module::deg2rad` = 0.0174532925199433
- 3.1.1.6 integer, parameter `const_module::delta` = 3
- 3.1.1.7 real(8), parameter `const_module::earth_r` = 6371.0
- 3.1.1.8 integer, parameter `const_module::exponential` = 1
- 3.1.1.9 integer, parameter `const_module::heaviside` = 3
- 3.1.1.10 integer, parameter `const_module::km` = 2
- 3.1.1.11 integer, parameter `const_module::na` = 4
- 3.1.1.12 integer, parameter `const_module::nm` = 3
- 3.1.1.13 integer, parameter `const_module::normal` = 1
- 3.1.1.14 integer, parameter `const_module::peer` = 2
- 3.1.1.15 real(8), parameter `const_module::pi` = 3.14159265358979
- 3.1.1.16 integer, parameter `const_module::point` = 4
- 3.1.1.17 real(8), parameter `const_module::rad2deg` = 57.2957795130823
- 3.1.1.18 integer, parameter `const_module::rv` = 2
- 3.1.1.19 integer, parameter `const_module::sadigh97` = 1
- 3.1.1.20 real(8), parameter `const_module::sqrt2_inv` = 0.707106781186547
- 3.1.1.21 integer, parameter `const_module::ss` = 1
- 3.1.1.22 integer, parameter `const_module::triangular` = 2
- 3.1.1.23 integer, parameter `const_module::trunc_normal` = 2
- 3.1.1.24 integer, parameter `const_module::uniform` = 1
- 3.1.1.25 integer, parameter `const_module::wc94` = 1

## 3.2 `flt_module` Module Reference

### Functions/Subroutines

- subroutine [mag\\_freq\\_distribution](#) ()
- subroutine [unit\\_conversion](#) ()
- subroutine [caldepthprob](#) ()
- subroutine [deg2km\\_model](#) ()
- subroutine [align\\_model](#) ()
- subroutine [flt\\_ini](#) ()
- subroutine [cal\\_p\\_locd\\_arr](#) ()
- subroutine [cal\\_coord](#) ()



- subroutine [rupture\\_location](#) ()
- subroutine [locate\\_rupture](#) (S1\_local, S2\_local, [rup\\_coor](#))
- subroutine [mw2arup](#) ()

## Variables

- real(8), dimension(:), allocatable [flt\\_len\\_seg](#)
- real(8), dimension(:), allocatable [flt\\_az\\_seg](#)
- real(8), dimension(:, :), allocatable [flt\\_coor](#)
- real(8), dimension(:), allocatable [flt\\_s\\_corner](#)
- real(8), dimension(2) [site\\_coor](#)
- real(8), dimension(:), allocatable [rup\\_top](#)
- real(8), dimension(:, :), allocatable [rup\\_coor](#)
- real(8), dimension(:, :), allocatable [coor\\_d](#)
- real(8), dimension(:), allocatable [s1](#)
- real(8), dimension(:), allocatable [s2](#)
- real(8), dimension(:), allocatable [p\\_locd\\_arr](#)
- real(8), dimension(:), allocatable [mag\\_inc\\_0](#)
- real(8), dimension(:), allocatable [rate\\_inc\\_0](#)
- real(8), dimension(:), allocatable [mag\\_inc](#)
- real(8), dimension(:), allocatable [rate\\_inc](#)
- real(8) [flt\\_area](#)
- real(8) [flt\\_len](#)
- real(8) [flt\\_wid](#)
- real(8) [flt\\_strike\\_deg](#)
- real(8) [flt\\_strike\\_rad](#)
- real(8) [step\\_d](#)
- real(8) [step\\_s](#)
- real(8) [step\\_d\\_trial](#)
- real(8) [step\\_s\\_trial](#)
- real(8) [rup\\_len](#)
- real(8) [rup\\_wid](#)
- real(8) [rup\\_area](#)
- real(8) [rup\\_len\\_trial](#)
- real(8) [rup\\_wid\\_trial](#)
- real(8) [rup\\_area\\_trial](#)
- integer [n\\_locd](#)
- integer [i\\_locd](#)
- integer [n\\_locs](#)
- integer [i\\_locs](#)
- integer [n\\_cor](#)
- integer [i\\_seg](#)
- real(8) [step\\_d\\_v](#)
- real(8) [step\\_d\\_h](#)
- real(8) [step\\_d\\_hc](#)
- real(8) [step\\_d\\_hs](#)
- real(8) [p\\_locs](#)
- real(8) [p\\_locd](#)
- real(8) [f\\_top](#)
- real(8) [mw](#)
- real(8) [rate](#)
- real(8) [rrup](#)
- real(8) [rjb](#)
- real(8) [rx](#)

- integer [i\\_mag](#)
- integer [n\\_mag](#)
- integer [i\\_mag\\_bin](#)
- integer [i\\_dist\\_bin](#)
- integer [i\\_eps\\_bin](#)
- integer [i\\_freq](#)
- integer [i\\_inten](#)
- real(8) [tin](#)

### 3.2.1 Function/Subroutine Documentation

3.2.1.1 subroutine `flt_module::align_model ( )`

3.2.1.2 subroutine `flt_module::cal_coord ( )`

3.2.1.3 subroutine `flt_module::cal_p_locd_arr ( )`

Here is the call graph for this function:



3.2.1.4 subroutine `flt_module::caldepthprob ( )`

3.2.1.5 subroutine `flt_module::deg2km_model ( )`

Here is the call graph for this function:



### 3.2.1.6 subroutine flt\_module::flt\_ini ( )

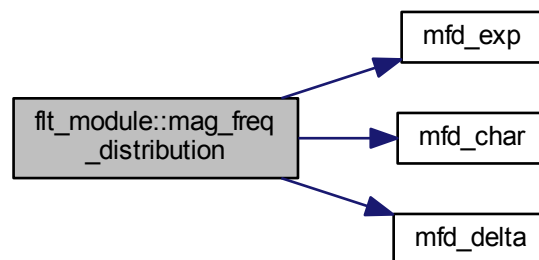
Here is the call graph for this function:



### 3.2.1.7 subroutine flt\_module::locate\_rupture ( real(8), intent(in) S1\_local, real(8), intent(in) S2\_local, real(8), dimension(:,:), intent(out), allocatable rup\_coor )

### 3.2.1.8 subroutine flt\_module::mag\_freq\_distribution ( )

Here is the call graph for this function:



### 3.2.1.9 subroutine flt\_module::mw2arup ( )

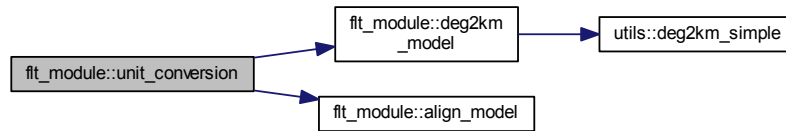
### 3.2.1.10 subroutine flt\_module::rupture\_location ( )

Here is the call graph for this function:



### 3.2.1.11 subroutine `flt_module::unit_conversion ( )`

Here is the call graph for this function:



## 3.2.2 Variable Documentation

3.2.2.1 `real(8), dimension(:, :), allocatable flt_module::coor_d`

3.2.2.2 `real(8) flt_module::flt_area`

3.2.2.3 `real(8), dimension(:), allocatable flt_module::flt_az_seg`

3.2.2.4 `real(8), dimension(:, :), allocatable flt_module::flt_coor`

3.2.2.5 `real(8) flt_module::flt_len`

3.2.2.6 `real(8), dimension(:), allocatable flt_module::flt_len_seg`

3.2.2.7 `real(8), dimension(:), allocatable flt_module::flt_s_corner`

3.2.2.8 `real(8) flt_module::flt_strike_deg`

3.2.2.9 `real(8) flt_module::flt_strike_rad`

3.2.2.10 `real(8) flt_module::flt_wid`

3.2.2.11 `real(8) flt_module::ftop`

3.2.2.12 `integer flt_module::i_dist_bin`

3.2.2.13 `integer flt_module::i_eps_bin`

3.2.2.14 `integer flt_module::i_freq`

3.2.2.15 `integer flt_module::i_inten`

3.2.2.16 `integer flt_module::i_locd`

3.2.2.17 `integer flt_module::i_locs`

3.2.2.18 `integer flt_module::i_mag`

3.2.2.19 `integer flt_module::i_mag_bin`

3.2.2.20 `integer flt_module::i_seg`

- 3.2.2.21 real(8), dimension(:), allocatable flt\_module::mag\_inc
- 3.2.2.22 real(8), dimension(:), allocatable flt\_module::mag\_inc\_0
- 3.2.2.23 real(8) flt\_module::mw
- 3.2.2.24 integer flt\_module::n\_cor
- 3.2.2.25 integer flt\_module::n\_locd
- 3.2.2.26 integer flt\_module::n\_locs
- 3.2.2.27 integer flt\_module::n\_mag
- 3.2.2.28 real(8) flt\_module::p\_locd
- 3.2.2.29 real(8), dimension(:), allocatable flt\_module::p\_locd\_arr
- 3.2.2.30 real(8) flt\_module::p\_locs
- 3.2.2.31 real(8) flt\_module::rate
- 3.2.2.32 real(8), dimension(:), allocatable flt\_module::rate\_inc
- 3.2.2.33 real(8), dimension(:), allocatable flt\_module::rate\_inc\_0
- 3.2.2.34 real(8) flt\_module::rjb
- 3.2.2.35 real(8) flt\_module::rrup
- 3.2.2.36 real(8) flt\_module::rup\_area
- 3.2.2.37 real(8) flt\_module::rup\_area\_trial
- 3.2.2.38 real(8), dimension(:, :), allocatable flt\_module::rup\_coor
- 3.2.2.39 real(8) flt\_module::rup\_len
- 3.2.2.40 real(8) flt\_module::rup\_len\_trial
- 3.2.2.41 real(8), dimension(:), allocatable flt\_module::rup\_top
- 3.2.2.42 real(8) flt\_module::rup\_wid
- 3.2.2.43 real(8) flt\_module::rup\_wid\_trial
- 3.2.2.44 real(8) flt\_module::rx
- 3.2.2.45 real(8), dimension(:), allocatable flt\_module::s1
- 3.2.2.46 real(8), dimension(:), allocatable flt\_module::s2
- 3.2.2.47 real(8), dimension(2) flt\_module::site\_coor
- 3.2.2.48 real(8) flt\_module::step\_d

3.2.2.49 `real(8) flt_module::step_d_h`

3.2.2.50 `real(8) flt_module::step_d_hc`

3.2.2.51 `real(8) flt_module::step_d_hs`

3.2.2.52 `real(8) flt_module::step_d_trial`

3.2.2.53 `real(8) flt_module::step_d_v`

3.2.2.54 `real(8) flt_module::step_s`

3.2.2.55 `real(8) flt_module::step_s_trial`

3.2.2.56 `real(8) flt_module::tin`

### 3.3 gmpe\_module Module Reference

#### Functions/Subroutines

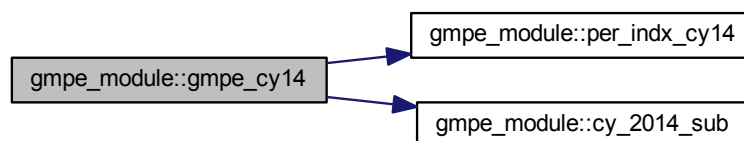
- subroutine [gmpe\\_interface](#) (`m_gmpe_name`, `Tin`, `Mw`, `m_sof`, `Rrup`, `Rjb`, `Rx`, `Ztor`, `dip`, `Vs30`, `Z10`, `gmpe_params`, `gmpe_opts`, `InSa`, `Sigma`)
- subroutine [gmpe\\_sadigh97](#) (`InSa`, `Sigma`, `M`, `Rrup`, `Tin`, `m_SOF`)
- subroutine [gmpe\\_cy14](#) (`M`, `T`, `Rrup`, `Rjb`, `Rx`, `Ztor`, `dip`, `m_SOF`, `Z10`, `Vs30`, `gmpe_params`, `gmpe_opts`, `InSa`, `sigma`)
- subroutine [cy\\_2014\\_sub](#) (`M`, `ip`, `R_RUP`, `R_JB`, `Rx`, `Ztor`, `delta`, `F_RV`, `F_NM`, `HW`, `Z10`, `Vs30`, `FVS30`, `region`, `d_DPP`, `InSa`, `sigma`)
- subroutine [per\\_indx\\_cy14](#) (`per`, `per_indx`)

#### 3.3.1 Function/Subroutine Documentation

3.3.1.1 subroutine `gmpe_module::cy_2014_sub` ( `real(8) M`, `integer ip`, `real(8) R_RUP`, `real(8) R_JB`, `real(8) Rx`, `real(8) Ztor`, `real(8) delta`, `integer F_RV`, `integer F_NM`, `real(8) HW`, `real(8) Z10`, `real(8) Vs30`, `integer FVS30`, `integer region`, `real(8) d_DPP`, `real(8) InSa`, `real(8) sigma` )

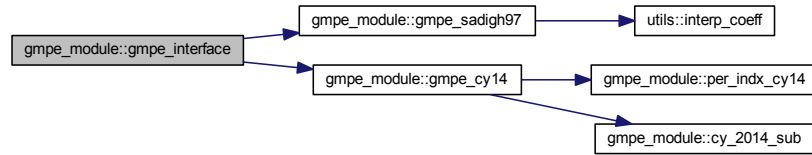
3.3.1.2 subroutine `gmpe_module::gmpe_cy14` ( `real(8) M`, `real(8) T`, `real(8) Rrup`, `real(8) Rjb`, `real(8) Rx`, `real(8) Ztor`, `real(8) dip`, `integer m_SOF`, `real(8) Z10`, `real(8) Vs30`, `real(8)`, `dimension(:) gmpe_params`, `integer`, `dimension(:) gmpe_opts`, `real(8) InSa`, `real(8) sigma` )

Here is the call graph for this function:



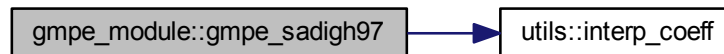
3.3.1.3 subroutine gmpe\_module::gmpe\_interface ( integer *m\_gmpe\_name*, real(8) *Tin*, real(8) *Mw*, integer *m\_sof*, real(8) *Rrup*, real(8) *Rjb*, real(8) *Rx*, real(8) *Ztor*, real(8) *dip*, real(8) *Vs30*, real(8) *Z10*, real(8), dimension(:), allocatable *gmpe\_params*, integer, dimension(:), allocatable *gmpe\_opts*, real(8) *InSa*, real(8) *Sigma* )

Here is the call graph for this function:



3.3.1.4 subroutine gmpe\_module::gmpe\_sadigh97 ( real(8) *InSa*, real(8) *Sigma*, real(8) *M*, real(8) *Rrup*, real(8) *Tin*, integer *m\_SOF* )

Here is the call graph for this function:



3.3.1.5 subroutine gmpe\_module::per\_indx\_cy14 ( real(8) *per*, integer *per\_indx* )

## 3.4 input\_module Module Reference

### Functions/Subroutines

- subroutine [read\\_input](#) ()
- subroutine [read\\_site](#) ()
- subroutine [read\\_frequency](#) ()
- subroutine [read\\_fault\\_trace](#) ()
- subroutine [read\\_rec\\_relation](#) ()
- subroutine [read\\_slip\\_rate](#) ()
- subroutine [read\\_b\\_value](#) ()
- subroutine [read\\_sof](#) ()
- subroutine [read\\_unit](#) ()
- subroutine [read\\_aleatory\\_distribution](#) ()
- subroutine [read\\_trunc\\_level](#) ()
- subroutine [read\\_scaling\\_model](#)
- subroutine [read\\_dip](#) ()
- subroutine [read\\_gmpe\\_name](#) ()
- subroutine [read\\_vs30](#) ()

- subroutine `read_z10` ()
- subroutine `read_z25` ()
- subroutine `read_seismogenic_depth` ()
- subroutine `read_depth_distribution` ()
- subroutine `read_aspect_ratio` ()
- subroutine `read_strike_dip_step` ()
- subroutine `read_mag_range` ()
- subroutine `read_depth_param` ()
- subroutine `read_mag_step` ()
- subroutine `read_intensity` ()
- subroutine `read_mag_bin` ()
- subroutine `read_dist_bin` ()
- subroutine `read_eps_bin` ()
- subroutine `read_gmpe_params` ()
- subroutine `read_gmpe_opts` ()
- subroutine `close_file` ()
- subroutine `print_haz_bin` (haz\_bin)
- subroutine `print_haz` (haz)

## Variables

- integer `fp_inp`
- integer `fp_log`
- integer `fp_haz`
- integer `fp_dag`
- integer `fp_rup`
- integer `ppos`
- logical `inp_exist`
- character(130) `fnm_inp`
- character(130) `arg`
- character(130) `fnm_log`
- character(130) `fnm_haz`
- character(130) `fnm_dag`
- character(130) `fnm_rup`
- integer `eastat`
- integer `iost`
- character(130) `line`
- character(130) `wrt_fmt`
- character(130) `str_tmp`
- character(130) `gmpe_name`
- character(3) `ext_log` = 'log'
- character(3) `ext_haz` = 'haz'
- character(3) `ext_dag` = 'dag'
- character(3) `ext_rup` = 'rup'
- real(8), dimension(2) `site`
- real(8), dimension(:), allocatable `frequency`
- real(8), dimension(:), allocatable `intensity`
- real(8), dimension(:), allocatable `mag_bin`
- real(8), dimension(:), allocatable `dist_bin`
- real(8), dimension(:), allocatable `eps_bin`
- real(8), dimension(:, :), allocatable `flt_trace`
- real(8), dimension(:), allocatable `gmpe_params`
- integer, dimension(:), allocatable `gmpe_opts`
- real(8), dimension(500, 2) `temp2`



- real(8), dimension(500) [temp1](#)
- integer, dimension(500) [temp\\_int](#)
- integer [tmp\\_int](#)
- real(8) [tmp1](#)
- real(8) [tmp2](#)
- integer [numvalues](#)
- real(8) [slip\\_rate](#)
- real(8) [b\\_value](#)
- real(8) [trunc\\_level](#)
- real(8) [vs30](#)
- real(8) [smin](#)
- real(8) [smax](#)
- real(8) [flt\\_dip\\_deg](#)
- real(8) [flt\\_dip\\_rad](#)
- real(8) [aspect\\_ratio](#)
- real(8) [z10](#)
- real(8) [z25](#)
- real(8) [strike\\_step](#)
- real(8) [dip\\_step](#)
- real(8) [depth\\_param](#)
- real(8) [mag\\_step](#)
- real(8) [mmin](#)
- real(8) [mmax](#)
- integer [m\\_sof](#)
- integer [m\\_scaling](#)
- integer [m\\_rec\\_relation](#)
- integer [m\\_unit](#)
- integer [m\\_sigma\\_trunc](#)
- integer [m\\_gmpe\\_name](#)
- integer [m\\_depth\\_distribution](#)
- integer [m\\_aleatory\\_distribution](#)
- integer [n\\_freq](#)
- integer [n\\_inten](#)
- integer [n\\_mag\\_bin](#)
- integer [n\\_dist\\_bin](#)
- integer [n\\_eps\\_bin](#)
- integer [flt\\_n\\_corner](#)
- integer [flt\\_n\\_seg](#)

### 3.4.1 Function/Subroutine Documentation

3.4.1.1 subroutine `input_module::close_file` ( )

3.4.1.2 subroutine `input_module::print_haz` ( real(8), dimension(:, :) *haz* )

3.4.1.3 subroutine `input_module::print_haz_bin` ( real(8), dimension(:, :, :, :;) *haz\_bin* )

3.4.1.4 subroutine `input_module::read_aleatory_distribution` ( )

3.4.1.5 subroutine `input_module::read_aspect_ratio` ( )

3.4.1.6 subroutine `input_module::read_b_value` ( )

3.4.1.7 subroutine `input_module::read_depth_distribution` ( )

3.4.1.8 subroutine input\_module::read\_depth\_param ( )

3.4.1.9 subroutine input\_module::read\_dip ( )

3.4.1.10 subroutine input\_module::read\_dist\_bin ( )

3.4.1.11 subroutine input\_module::read\_eps\_bin ( )

3.4.1.12 subroutine input\_module::read\_fault\_trace ( )

3.4.1.13 subroutine input\_module::read\_frequency ( )

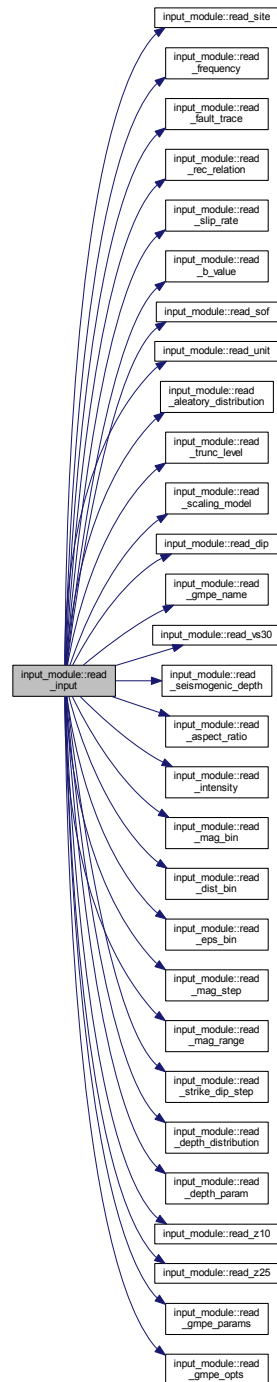
3.4.1.14 subroutine input\_module::read\_gmpe\_name ( )

3.4.1.15 subroutine input\_module::read\_gmpe\_opts ( )

3.4.1.16 subroutine input\_module::read\_gmpe\_params ( )

## 3.4.1.17 subroutine input\_module::read\_input ( )

Here is the call graph for this function:



## 3.4.1.18 subroutine input\_module::read\_intensity ( )

## 3.4.1.19 subroutine input\_module::read\_mag\_bin ( )

- 3.4.1.20 subroutine input\_module::read\_mag\_range ( )
- 3.4.1.21 subroutine input\_module::read\_mag\_step ( )
- 3.4.1.22 subroutine input\_module::read\_rec\_relation ( )
- 3.4.1.23 subroutine input\_module::read\_scaling\_model ( )
- 3.4.1.24 subroutine input\_module::read\_seismogenic\_depth ( )
- 3.4.1.25 subroutine input\_module::read\_site ( )
- 3.4.1.26 subroutine input\_module::read\_slip\_rate ( )
- 3.4.1.27 subroutine input\_module::read\_sof ( )
- 3.4.1.28 subroutine input\_module::read\_strike\_dip\_step ( )
- 3.4.1.29 subroutine input\_module::read\_trunc\_level ( )
- 3.4.1.30 subroutine input\_module::read\_unit ( )
- 3.4.1.31 subroutine input\_module::read\_vs30 ( )
- 3.4.1.32 subroutine input\_module::read\_z10 ( )
- 3.4.1.33 subroutine input\_module::read\_z25 ( )

## 3.4.2 Variable Documentation

- 3.4.2.1 character(130) input\_module::arg
- 3.4.2.2 real(8) input\_module::aspect\_ratio
- 3.4.2.3 real(8) input\_module::b\_value
- 3.4.2.4 real(8) input\_module::depth\_param
- 3.4.2.5 real(8) input\_module::dip\_step
- 3.4.2.6 real(8), dimension(:), allocatable input\_module::dist\_bin
- 3.4.2.7 integer input\_module::eastat
- 3.4.2.8 real(8), dimension(:), allocatable input\_module::eps\_bin
- 3.4.2.9 character(3) input\_module::ext\_dag = 'dag'
- 3.4.2.10 character(3) input\_module::ext\_haz = 'haz'
- 3.4.2.11 character(3) input\_module::ext\_log = 'log'
- 3.4.2.12 character(3) input\_module::ext\_rup = 'rup'
- 3.4.2.13 real(8) input\_module::flt\_dip\_deg

- 3.4.2.14 real(8) input\_module::flt\_dip\_rad
- 3.4.2.15 integer input\_module::flt\_n\_corner
- 3.4.2.16 integer input\_module::flt\_n\_seg
- 3.4.2.17 real(8), dimension(:,:), allocatable input\_module::flt\_trace
- 3.4.2.18 character(130) input\_module::fnm\_dag
- 3.4.2.19 character(130) input\_module::fnm\_haz
- 3.4.2.20 character(130) input\_module::fnm\_inp
- 3.4.2.21 character(130) input\_module::fnm\_log
- 3.4.2.22 character(130) input\_module::fnm\_rup
- 3.4.2.23 integer input\_module::fp\_dag
- 3.4.2.24 integer input\_module::fp\_haz
- 3.4.2.25 integer input\_module::fp\_inp
- 3.4.2.26 integer input\_module::fp\_log
- 3.4.2.27 integer input\_module::fp\_rup
- 3.4.2.28 real(8), dimension(:), allocatable input\_module::frequency
- 3.4.2.29 character(130) input\_module::gmpe\_name
- 3.4.2.30 integer, dimension(:), allocatable input\_module::gmpe\_opts
- 3.4.2.31 real(8), dimension(:), allocatable input\_module::gmpe\_params
- 3.4.2.32 logical input\_module::inp\_exist
- 3.4.2.33 real(8), dimension(:), allocatable input\_module::intensity
- 3.4.2.34 integer input\_module::iost
- 3.4.2.35 character(130) input\_module::line
- 3.4.2.36 integer input\_module::m\_aleatory\_distribution
- 3.4.2.37 integer input\_module::m\_depth\_distribution
- 3.4.2.38 integer input\_module::m\_gmpe\_name
- 3.4.2.39 integer input\_module::m\_rec\_relation
- 3.4.2.40 integer input\_module::m\_scaling
- 3.4.2.41 integer input\_module::m\_sigma\_trunc

- 3.4.2.42 integer input\_module::m\_sof
- 3.4.2.43 integer input\_module::m\_unit
- 3.4.2.44 real(8), dimension(:), allocatable input\_module::mag\_bin
- 3.4.2.45 real(8) input\_module::mag\_step
- 3.4.2.46 real(8) input\_module::mmax
- 3.4.2.47 real(8) input\_module::mmin
- 3.4.2.48 integer input\_module::n\_dist\_bin
- 3.4.2.49 integer input\_module::n\_eps\_bin
- 3.4.2.50 integer input\_module::n\_freq
- 3.4.2.51 integer input\_module::n\_inten
- 3.4.2.52 integer input\_module::n\_mag\_bin
- 3.4.2.53 integer input\_module::numvalues
- 3.4.2.54 integer input\_module::ppos
- 3.4.2.55 real(8), dimension(2) input\_module::site
- 3.4.2.56 real(8) input\_module::slip\_rate
- 3.4.2.57 real(8) input\_module::smax
- 3.4.2.58 real(8) input\_module::smin
- 3.4.2.59 character(130) input\_module::str\_tmp
- 3.4.2.60 real(8) input\_module::strike\_step
- 3.4.2.61 real(8), dimension(500) input\_module::temp1
- 3.4.2.62 real(8), dimension(500,2) input\_module::temp2
- 3.4.2.63 integer, dimension(500) input\_module::temp\_int
- 3.4.2.64 real(8) input\_module::tmp1
- 3.4.2.65 real(8) input\_module::tmp2
- 3.4.2.66 integer input\_module::tmp\_int
- 3.4.2.67 real(8) input\_module::trunc\_level
- 3.4.2.68 real(8) input\_module::vs30
- 3.4.2.69 character(130) input\_module::wrt\_fmt

3.4.2.70 `real(8) input_module::z10`

3.4.2.71 `real(8) input_module::z25`

## 3.5 utils Module Reference

### Functions/Subroutines

- subroutine `locate` (`ibin`, `edge`, `x`)
- subroutine `deg2km_simple` (`vn`, `ve`, `alat_sta`, `alon_sta`, `alat_ref`, `alon_ref`)
- subroutine `delaz2_km` (`y1`, `x1`, `y2`, `x2`, `delta`, `az`)
- elemental `real(8)` function `normcdf` (`x`)
- elemental `real(8)` function `deltacdf` (`x`)
- subroutine `truncnormcdf` (`x`, `a`, `b`, `z`)
- double precision function `m22det` (`A`)
- double precision function `m33det` (`A`)
- subroutine `pointlinesegdistance` (`a`, `b`, `x`, `dist`)
- subroutine `pointtriangledistance` (`TRI1`, `TRI2`, `TRI3`, `P`, `dist`)
- `real(8)` function `dot3` (`x`, `y`)
- subroutine `dist_rup_seg` (`Rrup`, `Rjb`, `Rx`, `coor`, `Ztor`, `strike`, `dip`, `rup_wid`)
- `real(8)` function `cal_rx` (`coor`)
- subroutine `dist_rup_set` (`Rrup`, `Rjb`, `Rx`, `coor`, `Ztor`, `strike`, `dip`, `rup_wid`)
- subroutine `interp_coeff` (`x1`, `x2`, `y1`, `y2`, `x`, `y`, `iflag`)
- subroutine `prob_exceed` (`p_exceed`, `m_eps`, `m_aleatory_distribution`, `trunclevel`)

### 3.5.1 Function/Subroutine Documentation

3.5.1.1 `real(8)` function `utils::cal_rx` ( `real(8)`, `dimension(2,2)`, `intent(in)` `coor` )

Here is the call graph for this function:



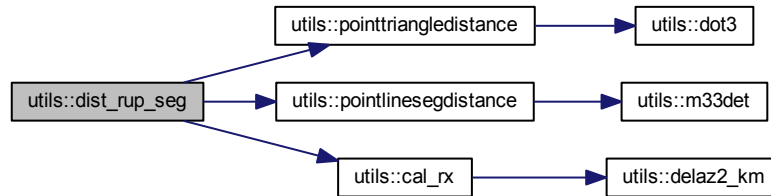
3.5.1.2 subroutine `utils::deg2km_simple` ( `real(8)` `vn`, `real(8)` `ve`, `real(8)` `alat_sta`, `real(8)` `alon_sta`, `real(8)` `alat_ref`, `real(8)` `alon_ref` )

3.5.1.3 subroutine `utils::delaz2_km` ( `real(8)`, `intent(in)` `y1`, `real(8)`, `intent(in)` `x1`, `real(8)`, `intent(in)` `y2`, `real(8)`, `intent(in)` `x2`, `real(8)`, `intent(out)` `delta`, `real(8)`, `intent(out)` `az` )

3.5.1.4 elemental `real(8)` function `utils::deltacdf` ( `real(8)`, `intent(in)` `x` )

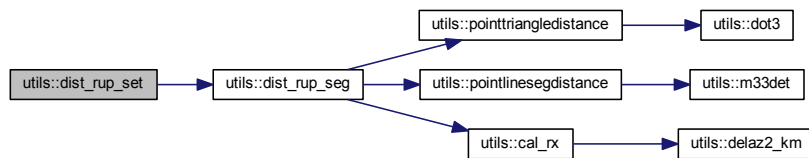
3.5.1.5 subroutine `utils::dist_rup_seg` ( `real(8) Rrup`, `real(8) Rjb`, `real(8) Rx`, `real(8)`, `dimension(2,2) coor`, `real(8) Ztor`, `real(8) strike`, `real(8) dip`, `real(8) rup_wid` )

Here is the call graph for this function:



3.5.1.6 subroutine `utils::dist_rup_set` ( `real(8) Rrup`, `real(8) Rjb`, `real(8) Rx`, `real(8)`, `dimension(:,)`, `allocatable coor`, `real(8) Ztor`, `real(8) strike`, `real(8) dip`, `real(8) rup_wid` )

Here is the call graph for this function:



3.5.1.7 `real(8)` function `utils::dot3` ( `real(8)`, `dimension(3)` `x`, `real(8)`, `dimension(3)` `y` )

3.5.1.8 subroutine `utils::interp_coeff` ( `real(8) x1`, `real(8) x2`, `real(8) y1`, `real(8) y2`, `real(8) x`, `real(8) y`, `integer iflag` )

3.5.1.9 subroutine `utils::locate` ( `integer ibin`, `real(8)`, `dimension(:)`, `allocatable edge`, `real(8) x` )

3.5.1.10 double precision function `utils::m22det` ( `double precision`, `dimension(2,2)`, `intent(in) A` )

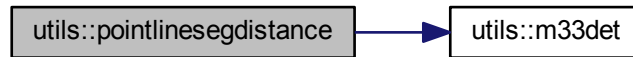
3.5.1.11 double precision function `utils::m33det` ( `double precision`, `dimension(3,3)`, `intent(in) A` )

3.5.1.12 elemental `real(8)` function `utils::normcdf` ( `real(8)`, `intent(in) x` )



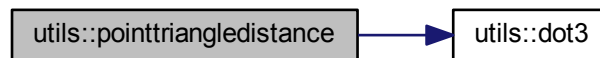
3.5.1.13 subroutine `utils::pointlinesegdistance` ( `real(8)`, `dimension(2)` *a*, `real(8)`, `dimension(2)` *b*, `real(8)`, `dimension(2)`, `intent(in)` *x*, `real(8)`, `intent(out)` *dist* )

Here is the call graph for this function:



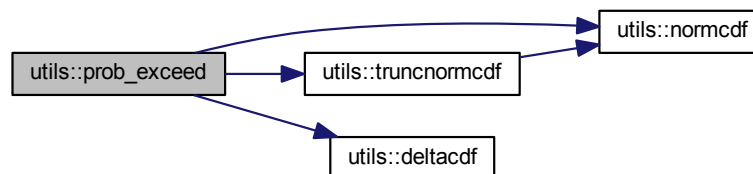
3.5.1.14 subroutine `utils::pointtriangledistance` ( `real(8)`, `dimension(3)`, `intent(in)` *TRI1*, `real(8)`, `dimension(3)`, `intent(in)` *TRI2*, `real(8)`, `dimension(3)`, `intent(in)` *TRI3*, `real(8)`, `dimension(3)`, `intent(in)` *P*, `real(8)`, `intent(out)` *dist* )

Here is the call graph for this function:



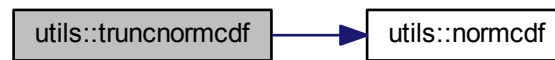
3.5.1.15 subroutine `utils::prob_exceed` ( `real(8)` *p\_exceed*, `real(8)` *m\_eps*, `integer` *m\_aleatory\_distribution*, `real(8)` *trunclevel* )

Here is the call graph for this function:



3.5.1.16 subroutine `utils::truncnormcdf` ( `real(8)`, `intent(in)` *x*, `real(8)`, `intent(in)` *a*, `real(8)`, `intent(in)` *b*, `real(8)`, `intent(out)` *z* )

Here is the call graph for this function:



## Chapter 4

# File Documentation

### 4.1 `const_module.f90` File Reference

#### Modules

- module [const\\_module](#)

#### Variables

- real(8), parameter [const\\_module::pi](#) = 3.14159265358979
- real(8), parameter [const\\_module::deg2rad](#) = 0.0174532925199433
- real(8), parameter [const\\_module::rad2deg](#) = 57.2957795130823
- real(8), parameter [const\\_module::sqrt2\\_inv](#) = 0.707106781186547
- real(8), parameter [const\\_module::earth\\_r](#) = 6371.0
- integer, parameter [const\\_module::ss](#) = 1
- integer, parameter [const\\_module::rv](#) = 2
- integer, parameter [const\\_module::nm](#) = 3
- integer, parameter [const\\_module::na](#) = 4
- integer, parameter [const\\_module::wc94](#) = 1
- integer, parameter [const\\_module::peer](#) = 2
- integer, parameter [const\\_module::ceus](#) = 3
- integer, parameter [const\\_module::point](#) = 4
- integer, parameter [const\\_module::exponential](#) = 1
- integer, parameter [const\\_module::characteristic](#) = 2
- integer, parameter [const\\_module::delta](#) = 3
- integer, parameter [const\\_module::deg](#) = 1
- integer, parameter [const\\_module::km](#) = 2
- integer, parameter [const\\_module::sadigh97](#) = 1
- integer, parameter [const\\_module::cy14](#) = 2
- integer, parameter [const\\_module::uniform](#) = 1
- integer, parameter [const\\_module::triangular](#) = 2
- integer, parameter [const\\_module::normal](#) = 1
- integer, parameter [const\\_module::trunc\\_normal](#) = 2
- integer, parameter [const\\_module::heaviside](#) = 3

### 4.2 `flt_module.f90` File Reference

#### Modules

- module [flt\\_module](#)

## Functions/Subroutines

- subroutine [flt\\_module::mag\\_freq\\_distribution](#) ()
- subroutine [mfd\\_delta](#) ()
- subroutine [mfd\\_exp](#) ()
- subroutine [mfd\\_char](#) ()
- subroutine [flt\\_module::unit\\_conversion](#) ()
- subroutine [flt\\_module::caldepthprob](#) ()
- subroutine [flt\\_module::deg2km\\_model](#) ()
- subroutine [flt\\_module::align\\_model](#) ()
- subroutine [flt\\_module::flt\\_ini](#) ()
- subroutine [flt\\_module::cal\\_p\\_locd\\_arr](#) ()
- subroutine [flt\\_module::cal\\_coord](#) ()
- subroutine [flt\\_module::rupture\\_location](#) ()
- subroutine [flt\\_module::locate\\_rupture](#) (S1\_local, S2\_local, rup\_coor)
- subroutine [flt\\_module::mw2arup](#) ()

## Variables

- real(8), dimension(:), allocatable [flt\\_module::flt\\_len\\_seg](#)
- real(8), dimension(:), allocatable [flt\\_module::flt\\_az\\_seg](#)
- real(8), dimension(:, :), allocatable [flt\\_module::flt\\_coor](#)
- real(8), dimension(:), allocatable [flt\\_module::flt\\_s\\_corner](#)
- real(8), dimension(2) [flt\\_module::site\\_coor](#)
- real(8), dimension(:), allocatable [flt\\_module::rup\\_top](#)
- real(8), dimension(:, :), allocatable [flt\\_module::rup\\_coor](#)
- real(8), dimension(:, :), allocatable [flt\\_module::coord](#)
- real(8), dimension(:), allocatable [flt\\_module::s1](#)
- real(8), dimension(:), allocatable [flt\\_module::s2](#)
- real(8), dimension(:), allocatable [flt\\_module::p\\_locd\\_arr](#)
- real(8), dimension(:), allocatable [flt\\_module::mag\\_inc\\_0](#)
- real(8), dimension(:), allocatable [flt\\_module::rate\\_inc\\_0](#)
- real(8), dimension(:), allocatable [flt\\_module::mag\\_inc](#)
- real(8), dimension(:), allocatable [flt\\_module::rate\\_inc](#)
- real(8) [flt\\_module::flt\\_area](#)
- real(8) [flt\\_module::flt\\_len](#)
- real(8) [flt\\_module::flt\\_wid](#)
- real(8) [flt\\_module::flt\\_strike\\_deg](#)
- real(8) [flt\\_module::flt\\_strike\\_rad](#)
- real(8) [flt\\_module::step\\_d](#)
- real(8) [flt\\_module::step\\_s](#)
- real(8) [flt\\_module::step\\_d\\_trial](#)
- real(8) [flt\\_module::step\\_s\\_trial](#)
- real(8) [flt\\_module::rup\\_len](#)
- real(8) [flt\\_module::rup\\_wid](#)
- real(8) [flt\\_module::rup\\_area](#)
- real(8) [flt\\_module::rup\\_len\\_trial](#)
- real(8) [flt\\_module::rup\\_wid\\_trial](#)
- real(8) [flt\\_module::rup\\_area\\_trial](#)
- integer [flt\\_module::n\\_locd](#)
- integer [flt\\_module::i\\_locd](#)
- integer [flt\\_module::n\\_locs](#)
- integer [flt\\_module::i\\_locs](#)
- integer [flt\\_module::n\\_cor](#)

- integer [flt\\_module::i\\_seg](#)
- real(8) [flt\\_module::step\\_d\\_v](#)
- real(8) [flt\\_module::step\\_d\\_h](#)
- real(8) [flt\\_module::step\\_d\\_hc](#)
- real(8) [flt\\_module::step\\_d\\_hs](#)
- real(8) [flt\\_module::p\\_locs](#)
- real(8) [flt\\_module::p\\_locd](#)
- real(8) [flt\\_module::ftop](#)
- real(8) [flt\\_module::mw](#)
- real(8) [flt\\_module::rate](#)
- real(8) [flt\\_module::rrup](#)
- real(8) [flt\\_module::rjb](#)
- real(8) [flt\\_module::rx](#)
- integer [flt\\_module::i\\_mag](#)
- integer [flt\\_module::n\\_mag](#)
- integer [flt\\_module::i\\_mag\\_bin](#)
- integer [flt\\_module::i\\_dist\\_bin](#)
- integer [flt\\_module::i\\_eps\\_bin](#)
- integer [flt\\_module::i\\_freq](#)
- integer [flt\\_module::i\\_inten](#)
- real(8) [flt\\_module::tin](#)

#### 4.2.1 Function/Subroutine Documentation

4.2.1.1 subroutine [mag\\_freq\\_distribution::mfd\\_char](#) ( )

4.2.1.2 subroutine [mag\\_freq\\_distribution::mfd\\_delta](#) ( )

4.2.1.3 subroutine [mag\\_freq\\_distribution::mfd\\_exp](#) ( )

### 4.3 GMPE\_module.f90 File Reference

#### Modules

- module [gmpe\\_module](#)

#### Functions/Subroutines

- subroutine [gmpe\\_module::gmpe\\_interface](#) (m\_gmpe\_name, Tin, Mw, m\_sof, Rrup, Rjb, Rx, Ztor, dip, Vs30, Z10, gmpe\_params, gmpe\_opts, lnSa, Sigma)
- subroutine [gmpe\\_module::gmpe\\_sadigh97](#) (lnSa, Sigma, M, Rrup, Tin, m\_SOF)
- subroutine [gmpe\\_module::gmpe\\_cy14](#) (M, T, Rrup, Rjb, Rx, Ztor, dip, m\_SOF, Z10, Vs30, gmpe\_params, gmpe\_opts, lnSa, sigma)
- subroutine [gmpe\\_module::cy\\_2014\\_sub](#) (M, ip, R\_RUP, R\_JB, Rx, Ztor, delta, F\_RV, F\_NM, HW, Z10, Vs30, FVS30, region, d\_DPP, lnSa, sigma)
- subroutine [gmpe\\_module::per\\_indx\\_cy14](#) (per, per\_indx)

### 4.4 input\_module.f90 File Reference

#### Modules

- module [input\\_module](#)

## Functions/Subroutines

- subroutine `input_module::read_input ()`
- subroutine `input_module::read_site ()`
- subroutine `input_module::read_frequency ()`
- subroutine `input_module::read_fault_trace ()`
- subroutine `input_module::read_rec_relation ()`
- subroutine `input_module::read_slip_rate ()`
- subroutine `input_module::read_b_value ()`
- subroutine `input_module::read_sof ()`
- subroutine `input_module::read_unit ()`
- subroutine `input_module::read_aleatory_distribution ()`
- subroutine `input_module::read_trunc_level ()`
- subroutine `input_module::read_scaling_model`
- subroutine `input_module::read_dip ()`
- subroutine `input_module::read_gmpe_name ()`
- subroutine `input_module::read_vs30 ()`
- subroutine `input_module::read_z10 ()`
- subroutine `input_module::read_z25 ()`
- subroutine `input_module::read_seismogenic_depth ()`
- subroutine `input_module::read_depth_distribution ()`
- subroutine `input_module::read_aspect_ratio ()`
- subroutine `input_module::read_strike_dip_step ()`
- subroutine `input_module::read_mag_range ()`
- subroutine `input_module::read_depth_param ()`
- subroutine `input_module::read_mag_step ()`
- subroutine `input_module::read_intensity ()`
- subroutine `input_module::read_mag_bin ()`
- subroutine `input_module::read_dist_bin ()`
- subroutine `input_module::read_eps_bin ()`
- subroutine `input_module::read_gmpe_params ()`
- subroutine `input_module::read_gmpe_opts ()`
- subroutine `input_module::close_file ()`
- subroutine `input_module::print_haz_bin (haz_bin)`
- subroutine `input_module::print_haz (haz)`

## Variables

- integer `input_module::fp_inp`
- integer `input_module::fp_log`
- integer `input_module::fp_haz`
- integer `input_module::fp_dag`
- integer `input_module::fp_rup`
- integer `input_module::ppos`
- logical `input_module::inp_exist`
- character(130) `input_module::fnm_inp`
- character(130) `input_module::arg`
- character(130) `input_module::fnm_log`
- character(130) `input_module::fnm_haz`
- character(130) `input_module::fnm_dag`
- character(130) `input_module::fnm_rup`
- integer `input_module::eastat`
- integer `input_module::iost`
- character(130) `input_module::line`

- character(130) [input\\_module::wrt\\_fmt](#)
- character(130) [input\\_module::str\\_tmp](#)
- character(130) [input\\_module::gmpe\\_name](#)
- character(3) [input\\_module::ext\\_log](#) = 'log'
- character(3) [input\\_module::ext\\_haz](#) = 'haz'
- character(3) [input\\_module::ext\\_dag](#) = 'dag'
- character(3) [input\\_module::ext\\_rup](#) = 'rup'
- real(8), dimension(2) [input\\_module::site](#)
- real(8), dimension(:), allocatable [input\\_module::frequency](#)
- real(8), dimension(:), allocatable [input\\_module::intensity](#)
- real(8), dimension(:), allocatable [input\\_module::mag\\_bin](#)
- real(8), dimension(:), allocatable [input\\_module::dist\\_bin](#)
- real(8), dimension(:), allocatable [input\\_module::eps\\_bin](#)
- real(8), dimension(:, :), allocatable [input\\_module::flt\\_trace](#)
- real(8), dimension(:), allocatable [input\\_module::gmpe\\_params](#)
- integer, dimension(:), allocatable [input\\_module::gmpe\\_opts](#)
- real(8), dimension(500, 2) [input\\_module::temp2](#)
- real(8), dimension(500) [input\\_module::temp1](#)
- integer, dimension(500) [input\\_module::temp\\_int](#)
- integer [input\\_module::tmp\\_int](#)
- real(8) [input\\_module::tmp1](#)
- real(8) [input\\_module::tmp2](#)
- integer [input\\_module::numvalues](#)
- real(8) [input\\_module::slip\\_rate](#)
- real(8) [input\\_module::b\\_value](#)
- real(8) [input\\_module::trunc\\_level](#)
- real(8) [input\\_module::vs30](#)
- real(8) [input\\_module::smin](#)
- real(8) [input\\_module::smax](#)
- real(8) [input\\_module::flt\\_dip\\_deg](#)
- real(8) [input\\_module::flt\\_dip\\_rad](#)
- real(8) [input\\_module::aspect\\_ratio](#)
- real(8) [input\\_module::z10](#)
- real(8) [input\\_module::z25](#)
- real(8) [input\\_module::strike\\_step](#)
- real(8) [input\\_module::dip\\_step](#)
- real(8) [input\\_module::depth\\_param](#)
- real(8) [input\\_module::mag\\_step](#)
- real(8) [input\\_module::mmin](#)
- real(8) [input\\_module::mmax](#)
- integer [input\\_module::m\\_sof](#)
- integer [input\\_module::m\\_scaling](#)
- integer [input\\_module::m\\_rec\\_relation](#)
- integer [input\\_module::m\\_unit](#)
- integer [input\\_module::m\\_sigma\\_trunc](#)
- integer [input\\_module::m\\_gmpe\\_name](#)
- integer [input\\_module::m\\_depth\\_distribution](#)
- integer [input\\_module::m\\_aleatory\\_distribution](#)
- integer [input\\_module::n\\_freq](#)
- integer [input\\_module::n\\_inten](#)
- integer [input\\_module::n\\_mag\\_bin](#)
- integer [input\\_module::n\\_dist\\_bin](#)
- integer [input\\_module::n\\_eps\\_bin](#)
- integer [input\\_module::flt\\_n\\_corner](#)
- integer [input\\_module::flt\\_n\\_seg](#)

## 4.5 main\_flt\_haz.f90 File Reference

### Functions/Subroutines

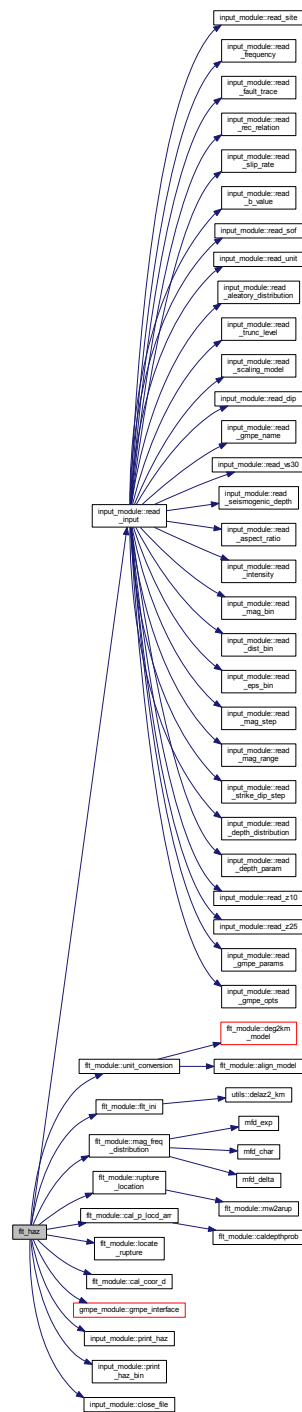
- program [flt\\_haz](#)

### 4.5.1 Function/Subroutine Documentation



## 4.5.1.1 program flt\_haz ( )

Here is the call graph for this function:



## 4.6 utils.f90 File Reference

## Modules

- module [utils](#)

## Functions/Subroutines

- subroutine [utils::locate](#) (ibin, edge, x)
- subroutine [utils::deg2km\\_simple](#) (vn, ve, alat\_sta, alon\_sta, alat\_ref, alon\_ref)
- subroutine [utils::delaz2\\_km](#) (y1, x1, y2, x2, delta, az)
- elemental real(8) function [utils::normcdf](#) (x)
- elemental real(8) function [utils::deltacdf](#) (x)
- subroutine [utils::truncnormcdf](#) (x, a, b, z)
- double precision function [utils::m22det](#) (A)
- double precision function [utils::m33det](#) (A)
- subroutine [utils::pointlinesegdistance](#) (a, b, x, dist)
- subroutine [utils::pointtriangledistance](#) (TRI1, TRI2, TRI3, P, dist)
- real(8) function [utils::dot3](#) (x, y)
- subroutine [utils::dist\\_rup\\_seg](#) (Rrup, Rjb, Rx, coor, Ztor, strike, dip, rup\_wid)
- real(8) function [utils::cal\\_rx](#) (coor)
- subroutine [utils::dist\\_rup\\_set](#) (Rrup, Rjb, Rx, coor, Ztor, strike, dip, rup\_wid)
- subroutine [utils::interp\\_coeff](#) (x1, x2, y1, y2, x, y, iflag)
- subroutine [utils::prob\\_exceed](#) (p\_exceed, m\_eps, m\_aleatory\_distribution, trunclevel)

# Index

align\_model  
    flt\_module, 8

arg  
    input\_module, 18

aspect\_ratio  
    input\_module, 18

b\_value  
    input\_module, 18

cal\_coor\_d  
    flt\_module, 8

cal\_p\_locd\_arr  
    flt\_module, 8

cal\_rx  
    utils, 21

caldepthprob  
    flt\_module, 8

ceus  
    const\_module, 5

characteristic  
    const\_module, 5

close\_file  
    input\_module, 15

const\_module, 5  
    ceus, 5  
    characteristic, 5  
    cy14, 5  
    deg, 5  
    deg2rad, 6  
    delta, 6  
    earth\_r, 6  
    exponential, 6  
    heaviside, 6  
    km, 6  
    na, 6  
    nm, 6  
    normal, 6  
    peer, 6  
    pi, 6  
    point, 6  
    rad2deg, 6  
    rv, 6  
    sadigh97, 6  
    sqrt2\_inv, 6  
    ss, 6  
    triangular, 6  
    trunc\_normal, 6  
    uniform, 6  
    wc94, 6  
    const\_module.f90, 25

coor\_d  
    flt\_module, 10

cy14  
    const\_module, 5

cy\_2014\_sub  
    gmpe\_module, 12

deg  
    const\_module, 5

deg2km\_model  
    flt\_module, 8

deg2km\_simple  
    utils, 21

deg2rad  
    const\_module, 6

delaz2\_km  
    utils, 21

delta  
    const\_module, 6

deltacdf  
    utils, 21

depth\_param  
    input\_module, 18

dip\_step  
    input\_module, 18

dist\_bin  
    input\_module, 18

dist\_rup\_seg  
    utils, 21

dist\_rup\_set  
    utils, 22

dot3  
    utils, 22

earth\_r  
    const\_module, 6

eastat  
    input\_module, 18

eps\_bin  
    input\_module, 18

exponential  
    const\_module, 6

ext\_dag  
    input\_module, 18

ext\_haz  
    input\_module, 18

ext\_log  
    input\_module, 18

ext\_rup

- input\_module, 18
- flt\_area
  - flt\_module, 10
- flt\_az\_seg
  - flt\_module, 10
- flt\_coor
  - flt\_module, 10
- flt\_dip\_deg
  - input\_module, 18
- flt\_dip\_rad
  - input\_module, 18
- flt\_haz
  - main\_flt\_haz.f90, 30
- flt\_ini
  - flt\_module, 8
- flt\_len
  - flt\_module, 10
- flt\_len\_seg
  - flt\_module, 10
- flt\_module, 6
  - align\_model, 8
  - cal\_coor\_d, 8
  - cal\_p\_locd\_arr, 8
  - caldepthprob, 8
  - coor\_d, 10
  - deg2km\_model, 8
  - flt\_area, 10
  - flt\_az\_seg, 10
  - flt\_coor, 10
  - flt\_ini, 8
  - flt\_len, 10
  - flt\_len\_seg, 10
  - flt\_s\_corner, 10
  - flt\_strike\_deg, 10
  - flt\_strike\_rad, 10
  - flt\_wid, 10
  - ftop, 10
  - i\_dist\_bin, 10
  - i\_eps\_bin, 10
  - i\_freq, 10
  - i\_inten, 10
  - i\_locd, 10
  - i\_locs, 10
  - i\_mag, 10
  - i\_mag\_bin, 10
  - i\_seg, 10
  - locate\_rupture, 9
  - mag\_freq\_distribution, 9
  - mag\_inc, 10
  - mag\_inc\_0, 11
  - mw, 11
  - mw2arup, 9
  - n\_cor, 11
  - n\_locd, 11
  - n\_locs, 11
  - n\_mag, 11
  - p\_locd, 11
  - p\_locd\_arr, 11
  - p\_locs, 11
  - rate, 11
  - rate\_inc, 11
  - rate\_inc\_0, 11
  - rjb, 11
  - rrup, 11
  - rup\_area, 11
  - rup\_area\_trial, 11
  - rup\_coor, 11
  - rup\_len, 11
  - rup\_len\_trial, 11
  - rup\_top, 11
  - rup\_wid, 11
  - rup\_wid\_trial, 11
  - rupture\_location, 9
  - rx, 11
  - s1, 11
  - s2, 11
  - site\_coor, 11
  - step\_d, 11
  - step\_d\_h, 11
  - step\_d\_hc, 12
  - step\_d\_hs, 12
  - step\_d\_trial, 12
  - step\_d\_v, 12
  - step\_s, 12
  - step\_s\_trial, 12
  - tin, 12
  - unit\_conversion, 9
- flt\_module.f90, 25
  - mfd\_char, 27
  - mfd\_delta, 27
  - mfd\_exp, 27
- flt\_n\_corner
  - input\_module, 19
- flt\_n\_seg
  - input\_module, 19
- flt\_s\_corner
  - flt\_module, 10
- flt\_strike\_deg
  - flt\_module, 10
- flt\_strike\_rad
  - flt\_module, 10
- flt\_trace
  - input\_module, 19
- flt\_wid
  - flt\_module, 10
- fnm\_dag
  - input\_module, 19
- fnm\_haz
  - input\_module, 19
- fnm\_inp
  - input\_module, 19
- fnm\_log
  - input\_module, 19
- fnm\_rup
  - input\_module, 19
- fp\_dag

- input\_module, 19
- fp\_haz
  - input\_module, 19
- fp\_inp
  - input\_module, 19
- fp\_log
  - input\_module, 19
- fp\_rup
  - input\_module, 19
- frequency
  - input\_module, 19
- ftop
  - flt\_module, 10
- GMPE\_module.f90, 27
- gmpe\_cy14
  - gmpe\_module, 12
- gmpe\_interface
  - gmpe\_module, 12
- gmpe\_module, 12
  - cy\_2014\_sub, 12
  - gmpe\_cy14, 12
  - gmpe\_interface, 12
  - gmpe\_sadigh97, 13
  - per\_indx\_cy14, 13
- gmpe\_name
  - input\_module, 19
- gmpe\_opts
  - input\_module, 19
- gmpe\_params
  - input\_module, 19
- gmpe\_sadigh97
  - gmpe\_module, 13
- heaviside
  - const\_module, 6
- i\_dist\_bin
  - flt\_module, 10
- i\_eps\_bin
  - flt\_module, 10
- i\_freq
  - flt\_module, 10
- i\_inten
  - flt\_module, 10
- i\_locd
  - flt\_module, 10
- i\_locs
  - flt\_module, 10
- i\_mag
  - flt\_module, 10
- i\_mag\_bin
  - flt\_module, 10
- i\_seg
  - flt\_module, 10
- inp\_exist
  - input\_module, 19
- input\_module, 13
  - arg, 18
- aspect\_ratio, 18
- b\_value, 18
- close\_file, 15
- depth\_param, 18
- dip\_step, 18
- dist\_bin, 18
- eastat, 18
- eps\_bin, 18
- ext\_dag, 18
- ext\_haz, 18
- ext\_log, 18
- ext\_rup, 18
- flt\_dip\_deg, 18
- flt\_dip\_rad, 18
- flt\_n\_corner, 19
- flt\_n\_seg, 19
- flt\_trace, 19
- fnm\_dag, 19
- fnm\_haz, 19
- fnm\_inp, 19
- fnm\_log, 19
- fnm\_rup, 19
- fp\_dag, 19
- fp\_haz, 19
- fp\_inp, 19
- fp\_log, 19
- fp\_rup, 19
- frequency, 19
- gmpe\_name, 19
- gmpe\_opts, 19
- gmpe\_params, 19
- inp\_exist, 19
- intensity, 19
- iost, 19
- line, 19
- m\_aleatory\_distribution, 19
- m\_depth\_distribution, 19
- m\_gmpe\_name, 19
- m\_rec\_relation, 19
- m\_scaling, 19
- m\_sigma\_trunc, 19
- m\_sof, 19
- m\_unit, 20
- mag\_bin, 20
- mag\_step, 20
- mmax, 20
- mmin, 20
- n\_dist\_bin, 20
- n\_eps\_bin, 20
- n\_freq, 20
- n\_inten, 20
- n\_mag\_bin, 20
- numvalues, 20
- ppos, 20
- print\_haz, 15
- print\_haz\_bin, 15
- read\_aleatory\_distribution, 15
- read\_aspect\_ratio, 15

- read\_b\_value, 15
- read\_depth\_distribution, 15
- read\_depth\_param, 15
- read\_dip, 16
- read\_dist\_bin, 16
- read\_eps\_bin, 16
- read\_fault\_trace, 16
- read\_frequency, 16
- read\_gmpe\_name, 16
- read\_gmpe\_opts, 16
- read\_gmpe\_params, 16
- read\_input, 16
- read\_intensity, 17
- read\_mag\_bin, 17
- read\_mag\_range, 17
- read\_mag\_step, 18
- read\_rec\_relation, 18
- read\_scaling\_model, 18
- read\_seismogenic\_depth, 18
- read\_site, 18
- read\_slip\_rate, 18
- read\_sof, 18
- read\_strike\_dip\_step, 18
- read\_trunc\_level, 18
- read\_unit, 18
- read\_vs30, 18
- read\_z10, 18
- read\_z25, 18
- site, 20
- slip\_rate, 20
- smax, 20
- smin, 20
- str\_tmp, 20
- strike\_step, 20
- temp1, 20
- temp2, 20
- temp\_int, 20
- tmp1, 20
- tmp2, 20
- tmp\_int, 20
- trunc\_level, 20
- vs30, 20
- wrt\_fmt, 20
- z10, 20
- z25, 21
- input\_module.f90, 27
- intensity
  - input\_module, 19
- interp\_coeff
  - utils, 22
- iost
  - input\_module, 19
- km
  - const\_module, 6
- line
  - input\_module, 19
- locate
  - utils, 22
- locate\_rupture
  - flt\_module, 9
- m22det
  - utils, 22
- m33det
  - utils, 22
- m\_aleatory\_distribution
  - input\_module, 19
- m\_depth\_distribution
  - input\_module, 19
- m\_gmpe\_name
  - input\_module, 19
- m\_rec\_relation
  - input\_module, 19
- m\_scaling
  - input\_module, 19
- m\_sigma\_trunc
  - input\_module, 19
- m\_sof
  - input\_module, 19
- m\_unit
  - input\_module, 20
- mag\_bin
  - input\_module, 20
- mag\_freq\_distribution
  - flt\_module, 9
- mag\_inc
  - flt\_module, 10
- mag\_inc\_0
  - flt\_module, 11
- mag\_step
  - input\_module, 20
- main\_flt\_haz.f90, 30
  - flt\_haz, 30
- mfd\_char
  - flt\_module.f90, 27
- mfd\_delta
  - flt\_module.f90, 27
- mfd\_exp
  - flt\_module.f90, 27
- mmax
  - input\_module, 20
- mmin
  - input\_module, 20
- mw
  - flt\_module, 11
- mw2arup
  - flt\_module, 9
- n\_cor
  - flt\_module, 11
- n\_dist\_bin
  - input\_module, 20
- n\_eps\_bin
  - input\_module, 20
- n\_freq
  - input\_module, 20

- n\_inten
  - input\_module, 20
- n\_locd
  - flt\_module, 11
- n\_locs
  - flt\_module, 11
- n\_mag
  - flt\_module, 11
- n\_mag\_bin
  - input\_module, 20
- na
  - const\_module, 6
- nm
  - const\_module, 6
- normal
  - const\_module, 6
- normcdf
  - utils, 22
- numvalues
  - input\_module, 20
- p\_locd
  - flt\_module, 11
- p\_locd\_arr
  - flt\_module, 11
- p\_locs
  - flt\_module, 11
- peer
  - const\_module, 6
- per\_indx\_cy14
  - gmpe\_module, 13
- pi
  - const\_module, 6
- point
  - const\_module, 6
- pointlinesegdistance
  - utils, 22
- pointtriangledistance
  - utils, 23
- ppos
  - input\_module, 20
- print\_haz
  - input\_module, 15
- print\_haz\_bin
  - input\_module, 15
- prob\_exceed
  - utils, 23
- rad2deg
  - const\_module, 6
- rate
  - flt\_module, 11
- rate\_inc
  - flt\_module, 11
- rate\_inc\_0
  - flt\_module, 11
- read\_aleatory\_distribution
  - input\_module, 15
- read\_aspect\_ratio
  - input\_module, 15
- read\_b\_value
  - input\_module, 15
- read\_depth\_distribution
  - input\_module, 15
- read\_depth\_param
  - input\_module, 15
- read\_dip
  - input\_module, 16
- read\_dist\_bin
  - input\_module, 16
- read\_eps\_bin
  - input\_module, 16
- read\_fault\_trace
  - input\_module, 16
- read\_frequency
  - input\_module, 16
- read\_gmpe\_name
  - input\_module, 16
- read\_gmpe\_opts
  - input\_module, 16
- read\_gmpe\_params
  - input\_module, 16
- read\_input
  - input\_module, 16
- read\_intensity
  - input\_module, 17
- read\_mag\_bin
  - input\_module, 17
- read\_mag\_range
  - input\_module, 17
- read\_mag\_step
  - input\_module, 18
- read\_rec\_relation
  - input\_module, 18
- read\_scaling\_model
  - input\_module, 18
- read\_seismogenic\_depth
  - input\_module, 18
- read\_site
  - input\_module, 18
- read\_slip\_rate
  - input\_module, 18
- read\_sof
  - input\_module, 18
- read\_strike\_dip\_step
  - input\_module, 18
- read\_trunc\_level
  - input\_module, 18
- read\_unit
  - input\_module, 18
- read\_vs30
  - input\_module, 18
- read\_z10
  - input\_module, 18
- read\_z25
  - input\_module, 18
- rjb

- flt\_module, 11
- rrup
  - flt\_module, 11
- rup\_area
  - flt\_module, 11
- rup\_area\_trial
  - flt\_module, 11
- rup\_coor
  - flt\_module, 11
- rup\_len
  - flt\_module, 11
- rup\_len\_trial
  - flt\_module, 11
- rup\_top
  - flt\_module, 11
- rup\_wid
  - flt\_module, 11
- rup\_wid\_trial
  - flt\_module, 11
- rupture\_location
  - flt\_module, 9
- rv
  - const\_module, 6
- rx
  - flt\_module, 11
- s1
  - flt\_module, 11
- s2
  - flt\_module, 11
- sadigh97
  - const\_module, 6
- site
  - input\_module, 20
- site\_coor
  - flt\_module, 11
- slip\_rate
  - input\_module, 20
- smax
  - input\_module, 20
- smin
  - input\_module, 20
- sqrt2\_inv
  - const\_module, 6
- ss
  - const\_module, 6
- step\_d
  - flt\_module, 11
- step\_d\_h
  - flt\_module, 11
- step\_d\_hc
  - flt\_module, 12
- step\_d\_hs
  - flt\_module, 12
- step\_d\_trial
  - flt\_module, 12
- step\_d\_v
  - flt\_module, 12
- step\_s
  - flt\_module, 12
- step\_s\_trial
  - flt\_module, 12
- str\_tmp
  - input\_module, 20
- strike\_step
  - input\_module, 20
- temp1
  - input\_module, 20
- temp2
  - input\_module, 20
- temp\_int
  - input\_module, 20
- tin
  - flt\_module, 12
- tmp1
  - input\_module, 20
- tmp2
  - input\_module, 20
- tmp\_int
  - input\_module, 20
- triangular
  - const\_module, 6
- trunc\_level
  - input\_module, 20
- trunc\_normal
  - const\_module, 6
- truncnormcdf
  - utils, 23
- uniform
  - const\_module, 6
- unit\_conversion
  - flt\_module, 9
- utils, 21
  - cal\_rx, 21
  - deg2km\_simple, 21
  - delaz2\_km, 21
  - deltacdf, 21
  - dist\_rup\_seg, 21
  - dist\_rup\_set, 22
  - dot3, 22
  - interp\_coeff, 22
  - locate, 22
  - m22det, 22
  - m33det, 22
  - normcdf, 22
  - pointlinesegdistance, 22
  - pointtriangledistance, 23
  - prob\_exceed, 23
  - truncnormcdf, 23
- utils.f90, 31
- vs30
  - input\_module, 20
- wc94
  - const\_module, 6



wrt\_fmt  
    input\_module, [20](#)

z10  
    input\_module, [20](#)

z25  
    input\_module, [21](#)