Ash3D_PostProc.F90

Call Set_OS_Env
Call NC_Read_Output_Products
Call help_postproc
Call Set_OutVar_Specs
Call OpenFile_KML
Call Write_2D_KML
Call Close_KML
Call output_results
Call Write_PointData_Airports_KML
Call Write_PointData_Airports_ASCII
Call vprofileopener
Call vprofilewriter
Call vprofilecloser
Call write_2d_ASCII
Call write_2Dprof_PNG_dislin
Call write_2Dprof_PNG_plplot
Call write_2Dprof_PNG_gnuplot
Call write_2Dprof_PNG_GMT
Call write_2Dmap_PNG_dislin
Call write_2Dmap_PNG_plplot
Call write_2Dmap_PNG_gnuplot
Call write_2Dmap_PNG_GMT
Call write_3D_Binary
Call write_2D_Binary
Call write_ShapeFile_Polyline
Call dealloc_arrays

Setup / Initialization

Input_Data.f90
MODULE Ash3d_Program_Control
Parse_Command_line
Call NC_RestartFile_ReadTimes
Call help_general
Call help_make
Call help_run
Call help_input
Set_OS_Env
Call check_endian
Call getlog
Call hostnm
Call getcwd
check_endian
Read_Control_File
Call get_ESP
Call PJ_Set_Proj
Call LatLonChecker
Call xyChecker
Call Allocate_Source_eruption
Call MR_Allocate_FullMetFileList
Call MR_Set_Gen_Index_GRIB
Call MR_Read_Met_DimVars
Call Allocate_Tephra
Call Calculate_Tephra_Shape
Call Sort_Tephra_Size
Call vprofchecker
LatLonChecker
xyChecker
vprofchecker

Ash3d_VariableModules.f90
MODULE precis_param
MODULE io_units
MODULE global_param
MODULE io_data
Deallocate_io_data
MODULE mesh
Allocate_mesh
Deallocate_mesh
MODULE solution
Allocate_solution
Deallocate_solution
MODULE time_data
MODULE wind_grid
Allocate_wind_grid
Deallocate_wind_grid

Help.f90
MODULE Help
help_general
Call help_run
help_make
help_run
help_input
Call help_inputfile
help_inputfile
help_postproc

Atmosphere.f90
MODULE Atmosphere
Allocate_Atmosphere_Met
Deallocate_Atmosphere_Met
Set_Atmosphere_Meso
Call MR_Read_3d_MetP_Variable
Dens_IdealGasLaw
Visc_Sutherland
lambda_MeanFreePath

Tephra.f90
MODULE Tephra
Allocate_Tephra
Allocate_Tephra_Met
Deallocate_Tephra
Deallocate_Tephra_Met
Set_Vf_Meso
Call Regrid_MetP_to_CompH
Calculate_Tephra_Shape
Sort_Tephra_Size
Call partition_gsbins
partition_gsbins
Prune_GS
vset_WH
vset_WH_slip
vset_WH_PCM
vset_Gans
vset_Stokes
vset_Stokesslip

VotW.f90
MODULE VotW_ESP
get_ESP
Call VotW_v12
VotW_v12

/opt/USGS/Ash3d/share/VotW_ESP_v12_csv.txt

Airports.f90
MODULE Airports
Allocate_Airports
Deallocate_Airports
ReadAirports
Call Read_GlobalAirports
Call ReadExtAirports
Call PJ_proj_for
Call Allocate_Airports
Call PJ_proj_for
bilinear_thickness
ReadExtAipports
Read_GlobalAirports

/opt/USGS/Ash3d/share/GlobalAirports_ewert.txt

Alloc_Arrays.f90
alloc_arrays
Call Allocate_mesh
Call Allocate_solution
Call Allocate_wind_grid
Call Allocate_Output_Vars
Call Allocate_Source_grid
Call Allocate_Diff
dealloc_arrays
Call Deallocate_io_data
Call Deallocate_mesh
Call Deallocate_solution
Call Deallocate_wind_grid
Call Deallocate_Tephra
Call Deallocate_Tephra_Met
Call Deallocate_Source
Call Deallocate_Source_Umbrella
Call Deallocate_Diff
Call Deallocate_Output_Vars
Call Deallocate_Ntime
Call Deallocate_Profile
Call Deallocate_Output_UserVars
Call Deallocate_Airports
Call Deallocate_Atmosphere_Met

Source.f90
MODULE Source
Allocate_Source_eruption
Allocate_Source_grid
Deallocate_Source
Calc_Normalized_SourceCol
EruptivePulse_MassFluxRate
CheckEruptivePulses
TephraSourceNodes
SourceVolInc

Source_Umbrella.f90
MODULE Source_Umbrella
Allocate_Source_Umbrella
Deallocate_Source_Umbrella
umbrella_winds
TephraSourceNodes_Umbrella
SourceVolInc_Umbrella
AbgCon_Umbrella

Diffusion.f90
MODULE Diffusion
Allocate_Diff
Deallocate_Diff
DiffuseHorz
Call diffCN_x
Call diffCN_y
Call diff_x
Call diff_y
DiffuseVert
Call diffCN_z
Call diff_z
diff_x
diff_y
diff_z
diffCN_x
Call sptsv / dptsv
diffCN_y
Call sptsv / dptsv
diffCN_z
Call sptsv / dptsv

Test Output Criteria

Output_Vars.f90
MODULE Output_Vars
Allocate_Output_Vars
Allocate_Ntime
Allocate_Profile
Allocate_Output_UserVars
Deallocate_Output_Vars
Deallocate_Ntime
Deallocate_Profile
Deallocate_Output_UserVars
Set_OutVar_ContourLevel
AshThicknessCalculator
AshTotalCalculator
DbZCalculator
Call AshLoadCalculator
ConcentrationCalculator
CloudAreaCalculator
Get_Output_Vars
Call AshThicknessCalculator
Call ConcentrationCalculator
Call CloudAreaCalculator
Calc_AshVol_Aloft
Calc_vprofile
Calc_AshVol_Deposit
Calc_AshVol_Outflow
FirstAsh
Call ConcentrationCalculator
Call AshThicknessCalculator

Output

Output_Results.f90
output_results
Call Set_OutVar_Specs
Call OpenFile_KML
Call create_netcdf_file
Call write_2D_ASCII
Call write_2D_KML
Call write_3D_ASCII
Call write_3D_Binary
Call append_to_netcdf
Call vprofileclose
Call OpenFile_KML
Call Write_2D_KML
Call Close_KML
Call write_2D_ASCII
Call Write_PointData_Airports_KML
Call Write_PointData_Airports_ASCII

write_ASCII.f90
MODULE Ash3d_ASCII_IO
Vprofileopener
Vprofilewriter
Vprofilecloser
write_2D_ASCII
read_2D_ASCII
write_3D_ASCII
write_PointData_Airports_ASCII

write_BINARY.f90
MODULE Ash3d_Binary_IO
write_3D_Binary
write_2D_Binary

write_KML.f90
MODULE Ash3d_KML_IO
Set_OutVar_Specs
OpenFile_KML
Call PlotModelBoundary
Call PJ_proj_inv
Write_2D_KML
Call PJ_proj_inv
Write_PointData_Airports_KML
Call PJ_proj_inv
Close_KML
PlotModelBoundary
Call PJ_proj_inv

write_NETCDF.f90
MODULE Ash3d_Netcdf_IO
NC_create_netcdf_file
NC_append_to_netcdf
NC_RestartFile_ReadTimes
NC_Restart_LoadConcen
NC_check_status
NC_Read_Output_Products
Call Allocate_Ntime
Call Allocate_Airports
Call Allocate_Profile
Call Set_OutVar_ContourLevel

write_Shapefile.f90
write_ShapeFile_Polyline
Call writeShapFileFieldDesArr
WriteShapFileFieldDesArr
BigEnd_4int
LitEnd_2int
LitEnd_4int
LitEnd_8real

Graphics Modules

Ash3d_PostProc_gnuplot.f90
MODULE Ash3d_PostProc_gnuplot
write_2Dmap_PNG_gnuplot
Call citylist
write_2Dprof_PNG_gnuplot
write_DepPOI_TS_PS_gnuplot

Ash3d_PostProc_dislin.f90
MODULE Ash3d_PostProc_dislin
write_2Dmap_PNG_dislin
Call citylist
write_2Dprof_PNG_dislin
write_DepPOI_TS_PS_dislin

Ash3d_PostProc_plplot.f90
MODULE Ash3d_PostProc_plplot
write_2Dmap_PNG_plplot
Call citylist
write_2Dprof_PNG_plplot
write_DepPOI_TS_PS_plplot

Ash3d_PostProc_cities.f90
MODULE citywriter
citylist
Call space_checker
space_checker

/opt/USGS/Ash3d/share/post_proc/USGSvid.png

/opt/USGS/Ash3d/share/post_proc/world_cities.txt