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1 Routine/Function Prologues

1.1 Fortran: Module Interface *vmix_background*

This module initializes derived types depending on the mixing method selected. For background mixing (specifically, constant mixing), this entails setting the constant viscosity and diffusivity in a variable of type *vmix_background_params_type*

REVISION HISTORY:

```
SVN:$Id: vmix_background.F90 39013 2012-07-28 21:02:38Z mlevy@ucar.edu $
SVN:$URL: https://svn-ccsm-models.cgd.ucar.edu/pop2/branches/vmix_project/source/vmix/vmix.
```

USES:

```
use vmix_kinds_and_types, only : vmix_r8,           &
                                vmix_input_type,    &
                                vmix_bkgnd_params_type, &
                                vmix_output_type
```

PUBLIC MEMBER FUNCTIONS:

```
public :: vmix_init_bkgnd
public :: vmix_coeffs_bkgnd
```

1.1.1 *vmix_init_bkgnd*

INTERFACE:

```
subroutine vmix_init_bkgnd(Vmix_inputs, Vmix_bkgnd_params, Vmix_outputs, &
                           km, ncol, const_vvc, const_vdc, convect_diff, &
                           convect_visc)
```

DESCRIPTION:

Initialization routine for static mixing. For each column, this routine sets *nlev* and allocates memory for viscosity and diffusivity in the input and output types, calculates density for the input type, and sets the static viscosity / diffusivity and convective properties for the parameter type.

USES:

Only those used by entire module.

INPUT PARAMETERS:

```

integer,      intent(in) :: km
integer,      intent(in) :: ncol
real(vmix_r8), intent(in) :: const_vvc
real(vmix_r8), intent(in) :: const_vdc

```

OUTPUT PARAMETERS:

```

type (vmix_input_type), dimension(:), intent(out) :: Vmix_inputs
type (vmix_bkgnd_params_type),          intent(out) :: Vmix_bkgnd_params
type (vmix_output_type), dimension(:), intent(out) :: Vmix_outputs

```

!OPTIONAL INPUT PARAMETERS:

```

real(vmix_r8), intent(in), optional :: &
  convect_diff,      &! diffusivity to mimic convection
  convect_visc       ! viscosity to mimic convection

```

1.1.2 vmix_coeffs_bkgnd

INTERFACE:

```

subroutine vmix_coeffs_bkgnd(Vmix_inputs, Vmix_bkgnd_params, &
                             Vmix_outputs, cols, cole)

```

DESCRIPTION:

Computes vertical diffusion coefficients for static mixing. Because the coefficients are time-independent, no calculations are done here unless a diffusive form of convection is chosen. In that case, the routine checks for stability and enhances the diffusion coefficients with the convective diffusion coefficient if the column is unstable.

USES:

Only those used by entire module.

INPUT PARAMETERS:

```

type (vmix_input_type), dimension(:), intent(in) :: Vmix_inputs
type (vmix_bkgnd_params_type),          intent(in) :: Vmix_bkgnd_params
! Will loop over Vmix_inputs(cols:cole)
integer,                                intent(in) :: cols, cole

```

INPUT/OUTPUT PARAMETERS:

```

type (vmix_output_type), dimension(:), intent(inout) :: Vmix_outputs

```