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MODULE example_gcm_host_model_module

CONTAINS
  SUBROUTINE example_gcm_host_model()
    ! A BLOCK OF: USE statements of the Host Model
    USE oblimap_configuration_module,    ONLY: dp, C
    USE oblimap_mapping_module,          ONLY: oblimap_ddo_type, oblimap_deallocate_ddo
    USE oblimap_embedded_mapping_module, ONLY: oblimap_initialize_embedded_mapping, &
      oblimap_embedded_gcm_to_im_mapping, oblimap_embedded_im_to_gcm_mapping
    IMPLICIT NONE

    ! A BLOCK OF:  Declaration statements of the Host Model
    REAL(dp), DIMENSION(C%number_of_mapped_fields,C%NX   , C%NY   ,C%number_of_vertical_layers) :: ism_field
    REAL(dp), DIMENSION(C%number_of_mapped_fields,C%NLON , C%NLAT,C%number_of_vertical_layers) :: gcm_field
    REAL(dp), DIMENSION(C%number_of_mapped_fields,C%NLON , C%NLAT,C%number_of_vertical_layers) :: prev_gcm_field
    TYPE(oblimap_ddo_type)                                                                     :: ddo_gcm_to_im
    TYPE(oblimap_ddo_type)                                                                     :: ddo_im_to_gcm

    ! Output: -
    CALL initialize_ISM()

    ! Output: ddo_gcm_to_im, ddo_im_to_gcm
    CALL oblimap_initialize_embedded_mapping(ddo_gcm_to_im, ddo_im_to_gcm)

    ! A BLOCK WITH: The initialization of the Host Model

    ! Start time loop of the Host Model:
       ! A BLOCK WITH: The Host Model time loop code (including the update of gcm_field)

       ! Keeping the previous gcm_field: 1. For merging with points which do not participate in the mapping.
       !                                 2. Eventually for time interpolation.
       prev_gcm_field = gcm_field

       ! Output: ism_field
       CALL oblimap_embedded_gcm_to_im_mapping(ddo_gcm_to_im, gcm_field, ism_field)

       ! In/Output: ism_field
       CALL embedded_ISM(time_start_ISM, time_stop_ISM, ism_field)

       ! Output: gcm_field
       CALL oblimap_embedded_im_to_gcm_mapping(ddo_im_to_gcm, ism_field, prev_gcm_field, gcm_field)

       ! A BLOCK WITH: The Host Model time loop code
    ! End time loop of the Host Model:

    ! A BLOCK WITH: The finalization of the Host Model

    ! Output: -
    CALL oblimap_deallocate_ddo(ddo_gcm_to_im)
    ! Output: -
    CALL oblimap_deallocate_ddo(ddo_im_to_gcm)
  END SUBROUTINE example_gcm_host_model

END MODULE example_gcm_host_model_module
```