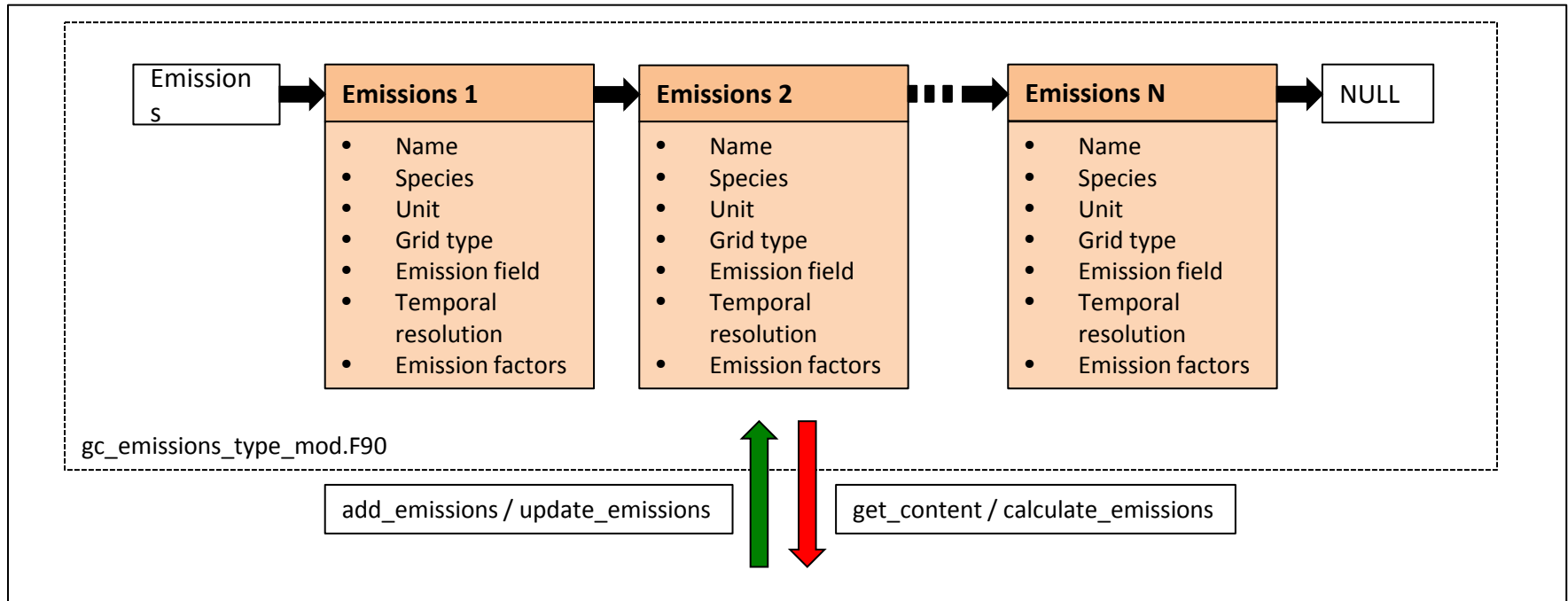
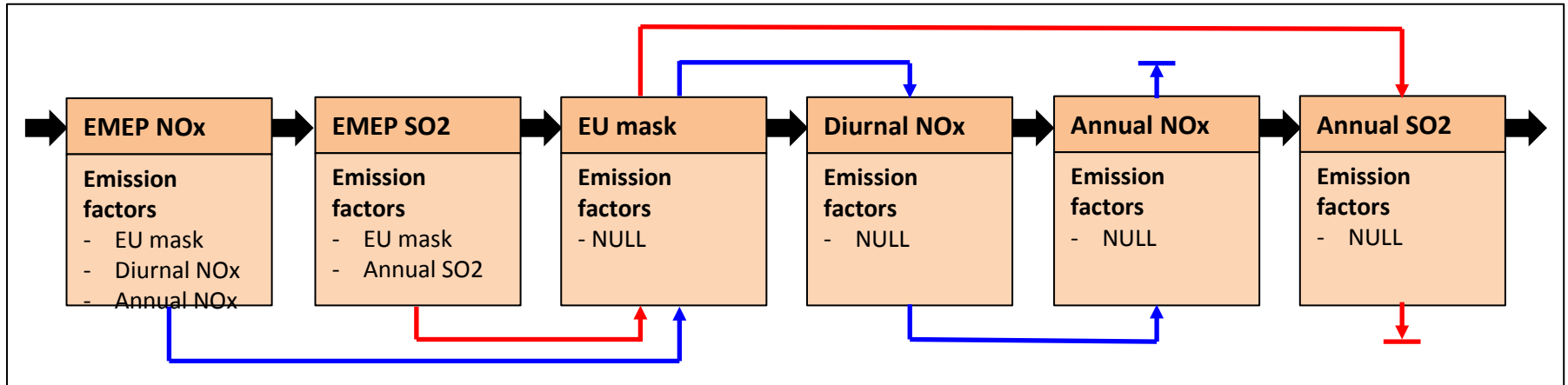


Geos – Chem: New Emissions Structure

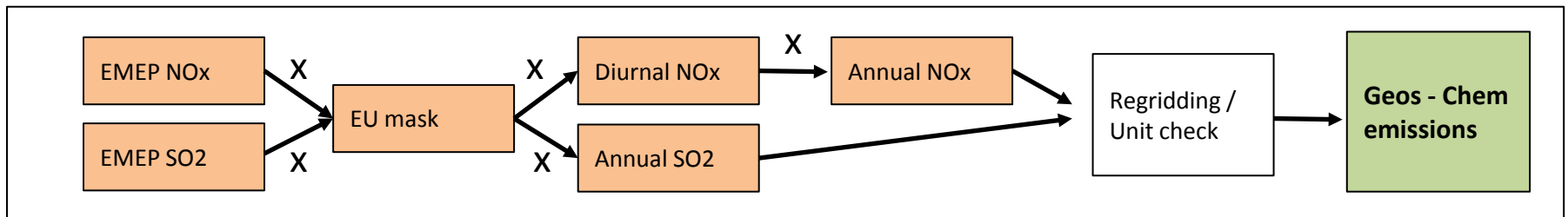


- Emissions are stored as a linked list, with each element containing the emission field and supplemental emission information (unit, grid dimension, time resolution, etc.)
- Emission fields are 4-dimensional, covering the 3 spatial dimensions plus time (useful for temporal scaling factors)
- Emissions are in native resolution and unit. Regridding and unit conversion will be done within Geos-Chem based on the specified units and grid types
- The emissions linked list is private, i.e. no direct access from outside of the module
- Adding / updating emission fields or getting content and calculating Geos-Chem emissions through public subroutines

Calculation of Geos-Chem Emissions



- Emission scaling factors are also elements of the linked list
- Each emission list element can refer to any number of emission factors (i.e. other list elements) using the 'emission factors' tag. These fields must have same spatial dimensions
- Internal pointers between base emissions and emission factors (red /blue arrows in figure) are established during first call
- Geos-Chem emissions for any particular time are then calculated by folding current base emissions with the assigned emission factors:



Regridding

- For now: Use existing Geos-Chem regridding routines
- Future plans: Represent emission fields in vector-format, so that regridding becomes a matrix-operation:

