

# Use a Number Outside of the Valid Data Range for a Variable's Fill Value

**Recommendation:**

The fill value of a variable should be a number outside its valid data range.

**Recommendation Details:** The `CF_FillValue` attribute is used to indicate missing or invalid data for a variable. Also, the value of the `CF_FillValue` attribute should match the actual fill value used for the variable in the file.

The value of the `CF_FillValue` attribute should be a mathematically valid number that lies outside the valid range for a variable. Please note that NaN (Not-a-Number) is neither a number nor is it mathematically valid, and, thus, should **not** be used as the fill value (see Recommendation 3.7 of ESDS-RFC-036).

If possible, using zero as the fill value should be avoided, because zero looks too much like a physically realistic value, and this can be confusing to the end users.

There should only be one fill value per variable. We recommend using a quality flag variable along with the `CF_flag_values` and `flag_meanings` attributes to explain the various reasons for using the fill value, instead of using several special values in the variable.



**Awaiting ESO Approval**

This recommendation has been finalized by DIWG but has not yet received final ESO approval.