Make a Variable's Valid Data Range Useful

Recommendation Details: Declaring the valid range of a variable's data according to the CF metadata conventions is part of an earlier DIWG recommendation (see Recommendation 2.1 of ESDS-RFC-028). The data value range can be specified either by two CF attributes, `valid_min` and `valid_max`, or via the `valid_range` CF attribute. Only one of these approaches should be used for a given variable.

The data ranges declared using these attributes are dependent on the type of data and their intended application, and should be chosen to place meaningful constraints on the possible data values. The CF metadata conventions require that any data value representing missing data or the variable's fill value must be excluded from the valid data range.

Generic range values are discouraged unless the actual data range is poorly understood. For example, we strongly discourage using the limits of a specific computer data type (e.g., floating-point single or double precision) as the valid range. If the valid range is poorly understood for a particular variable, then it would be best not to include the valid range attribute(s) for that variable.

A useful valid range allows scientists and other users to filter out values that violate physics or known characteristics of the sensor. It also allows visualization programs to either ignore such points or display them with a special style to warn users of the constraint violation.

⚠ **Awaiting ESO Approval**

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