Quality flagging

The O2A-INGEST performs automatic quality control to deliver quality-flagged data in the O2A-DASHBOARD. The automatic quality control requires the parameter properties in the O2A-SENSOR for each corresponding sensor and each quality control test. The input data is in NRT format, where each column of observations is under a unique sensor-URN. At ingest, the quality control algorithm builds a table of devices and parameters to assess the input data for correctness and validity of observations. The current flagging scheme is of primary level, i.e., quality flags are sequential and qualitative to describe a level of quality in the data. The starting point for the currently implemented quality control tests is the ARGO real-time quality control (Wong et al. 2019).

After requesting O2A-SENSOR for observation properties, the O2A-INGEST performs the following tests.

Test	Description	Property*	Ancillary data*	Status
Operation temperature range	Test for temperature conditions (air and/or surface temperature) under which the instrumentation is deployed.	Operation Temperature	Temperature observation	OPERATIONAL
Manufacturer range	Test if the value is within the limits of the instrumentation (e.g. due to construction, material, or filter) given by the manufacturer.	Manufacturer range	None	OPERATIONAL
Operation range	Test if the value is within a specific range valid for the location where the sensor is deployed.	Operation range	None	OPERATIONAL
Gradient test	Test for gradient, i.e. absolute distance from the median value of neighboring (n=5) observations.	Gradient Threshold	None	OPERATIONAL
Spike test	Test for spikes, i.e., distance from the median value subtracted by the standard deviation of neighboring (n=5) observations.	Spike Threshold	None	OPERATIONAL
Range function	Test for physical relationships, or interdependency, among observations.	Thresholds array	None	DEVELOPMENT
Geolocation	Test for a valid geographic location of moving and stationary sensors.	Latitude, longitude and altitude ranges	Location of observations or Event ("Mount", "Deployment", or "Information")	DEVELOPMENT

*These parameters are required to perform the test.