

Paper for Consideration by S-102PT

Bounding box #29

Submitted by:	Sweden and Finland
Executive Summary:	This is a continuation on Change Proposal presented at S102PT13 (Agenda item 1.2, GitHub issue #29). The paper gives a suggestion on how to encode the bounding box so that actual coverage of the data and the bounding box align and that NoData/FillValues are captured. Note! Any impact on PC is not included in this paper. There is a sub-group within S-102PT working on this issue currently.
Related Documents:	GitHub issue #29, S-100 part 8-6.2.8 Grid cell structures, S-98 Annex C section C-4-1.2
Related Projects:	None

Introduction / Background

The ongoing GitHub issue (#29) identifies two main questions within the product specification (PS) that needs addressing:

1. The grid cell representation as center node versus cell area.
2. The bounding box versus the data coverage discrepancy and the absence of a definition for how to handle NoData/FillValue.

During S-102PT13 the [Change Proposal](#) was discussed and it was concluded that further discussion/analysis is needed. SMA was tasked to lead this continued work with the intent to show the findings during S-102PT14.

The paper gives an encoding proposal for handling the bounding box – data coverage inconsistency and capturing the NoData/FillValues.

All project team members are highly encouraged to contribute and give feedback in GitHub issue #29 once published.

Part 3: Bounding box

The bounding box versus the data coverage discrepancy can suggestively be solved based on available encoding options in the PS in combination with S-100 ed.5.0.0. Looking into the Table 12 BathymetryCoverage feature instance group, a possibility would be to add dataOffsetCode=1 into Table 12.

Some change of wording in the spec is needed. The definition of the Bbox could suggestively be defined as a rectangle coincident/matching the outermost cell boundaries of the S-102. This would also take into account the NoData (perhaps even stated explicitly this way) cells and provide a Bbox in the products CRS. A similar definition could be made for the geographical CRS (WGS84, LL, degrees).

The connection between Bbox in Root-group and Bbox in BathymetryCoverage feature instance group is unclear.... Should the dataOffsetCode also be used in the Root-group...?

In addition to making the suggested changes above, some further texts edits are required:

- 5.1 Introduction: *The geo-referencing for an S-102 Bathymetric Surface product shall be node-based, referenced from the southwestern-most node in a grid. Each sample in a grid represents the value in the grid at a point location at the coordinate specified, rather than an estimate over any area with respect to the coordinate.*

This section is about referencing the grid in space. To be in line with the changes described above the wording may have to be changed. Suggestion: *The geo-referencing for an S-102 Bathymetric Surface product shall be lower left node-based, referenced from the southwestern-most lower left node in a grid. Or something similar, such as The geo-referencing for an S-102 Bathymetric Surface product shall coincide/match the outermost cell boundaries of the S-102 product.*

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