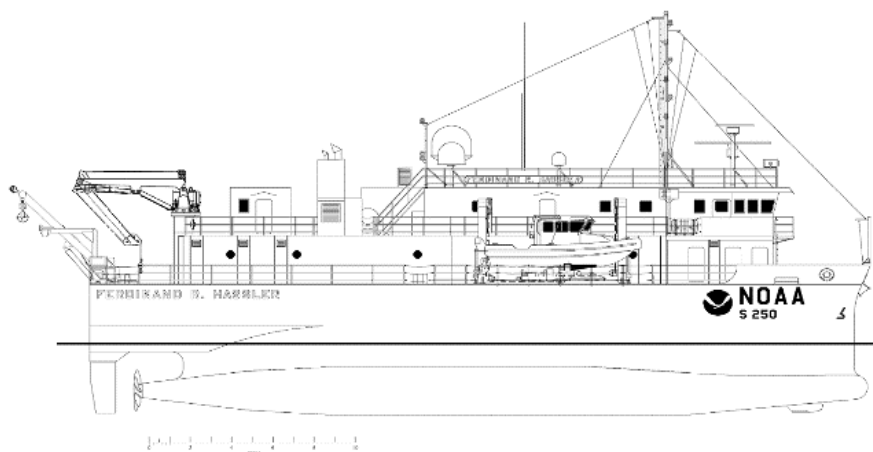


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Creating CUBE Surfaces in Caris 10
 Standard Operating Procedures



Revision History

Date	Revision Description (Reason/What)	Updated by
?	Original SOP from NOAA Ship FA	NOAA Ship FA personnel
05/23/2021	Reviewed for FH	ST Tigges
7/11/2023	Reviewed	LT Debrosse

Creating CUBE Surfaces in Caris 11

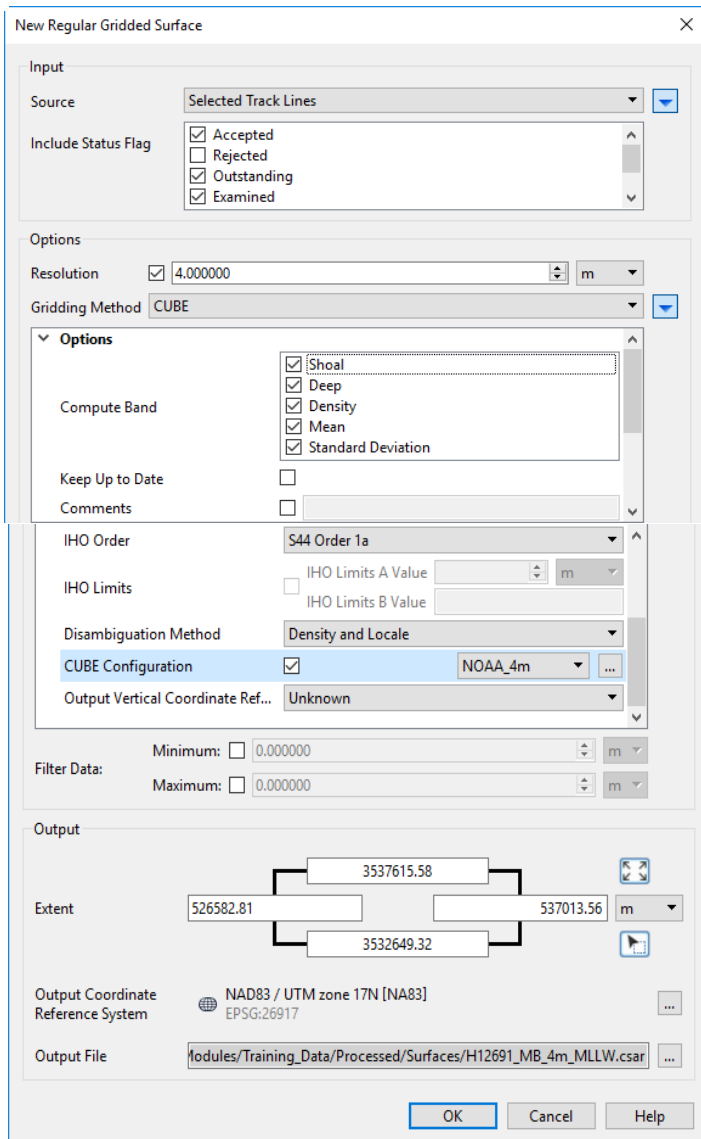
This document outlines how to create a CUBE surface in Caris 11. Section I explains the procedure for single resolution surfaces, Section II explains it for variable resolution surfaces using Calder-Rice, and Section II explains it for variable resolution surfaces using Ranges.

**** You will need to select the left-facing arrow to expand the options in all of the windows in Caris. Don't forget to scroll down in the options window, either! The screenshots below are cut and combined to view the settings linearly.**

I. Creating Single Resolution CUBE Surfaces

Open your sheet's .hips project in Caris. Ctrl+A to select all of the lines, or use your cursor to select specific lines or groups of lines.

Click the *New Single Resolution Surface* icon  in the main toolbar.



Input: **Source** > **Selected Track Lines**

Click on the left facing arrow to expand the window titled "Include Status Flag".

Check **Accepted**, **Outstanding**, and **Examined**. Leave **Rejected** unchecked.

Options: Check **Resolution** and enter the resolution of the surface you are creating (1, 2, 4, 8, and 16)

Gridding Method > **CUBE** click on the left facing arrow to expand the gridding method options.

Compute Bands > check **Shoal**, **Deep**, **Density**, **Mean**, **Standard Deviation**.

Uncheck **Keep Up to Date**

IHO Order > **S44 Order 1a**


Disambiguation Method > **Density and Locale**

Check CUBE Configuration then select the ellipsis. In the **CUBE Advanced Options** window select the ellipsis next to Template file and navigate to

C:\Program Files\CARIS\HIPS and SIPS\11.1\system and select the **CUBEParams_NOAA_20XX.xml** file.

Under **Configuration**, select the **NOAA_Xm** of the resolution of the surface you're creating. Click ok.

Back in Options, leave Output **Vertical Coordinate Reference** as **Unknown**.

Under Output select the  to automatically set the extents of your surface based on what's loaded into CARIS display screen. If you need to zoom in or out to adjust the extents in the display screen, select

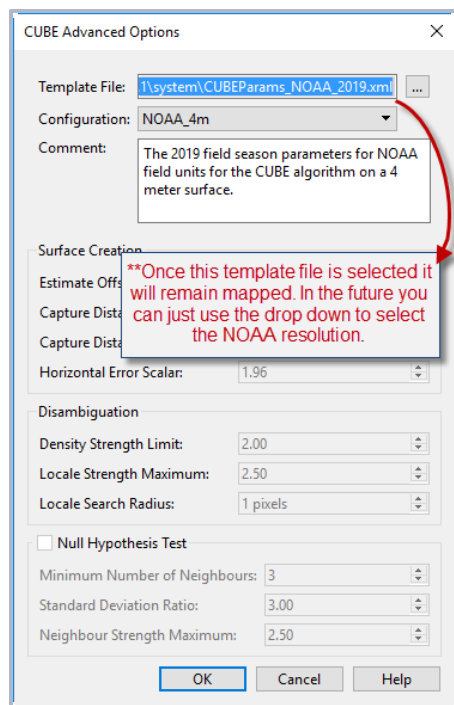


then adjust your display screen, then click and drag a box around the extents you wish to capture for surface creation.


Output File > Select the Ellipsis, browse to your surfaces folder for the project here:

S:\YYYY\OPR-XXXX-FH-
YY\HXXXXX\Working_Surfaces_Mosaics\Bathymetry
Give your surface a name including both H number and resolution.
HXXXXX_MB_Xm_MLLW

Click OK and you're finished!



II. Create a Variable Resolution Surface – Calder – Rice

Click the  icon in the main toolbar.

New Variable Resolution Surface

Input

Sources: All Track Lines, H12961_Bekah Track Lines, **Selected Track Lines**

Include Status Flag: ☒ Accepted, ☐ Rejected, ☒ Outstanding, ☒ Examined

Options

Estimation Method: **Calder-Rice Density**

Options

Finest Resolution: 0.10 m

Points Per Cell: 15

Output Vertical Coordinate Refer...: ☒ Unknown

Advanced

Keep Partial Bins: ☒

Maximum Grid Size: 160

Minimum Grid Size: 4

Coarsest Resolution: 32.000000 m

Area Estimation Method: **Swath**

Supergrid Size: 32.000000 m

Beam Width: 1.000000 deg

Population Method: **CUBE**

Options

Input Band: ☒ Depth

Primary Band: ☐

Vertical Uncertainty Band: ☒ Depth TPU

Horizontal Uncertainty Band: ☒ Position TPU

IHO Order: ☒ S44 Order 1a

IHO Limits: ☐ IHO Limits A Value, ☐ IHO Limits B Value

Disambiguation Method: **Density and Locale**

Comments: ☐

Advanced

Keep up to Date: ☐

Display Bias: **Highest**

CUBE Configuration: ☒ NOAA_VR

Use CHGF Mean Distance: ☐

Output

Extent: Custom

526582.81, 3537615.58, 537013.56, 3532649.32 m

Output Coordinate Reference System: NAD83 / UTM zone 17N [NA83] EPSG:26917

Output File: 234-FA-19/H12345/Working_Surfaces_Mosaics/H12691_MB_VR_MLLW.csar

OK Cancel


Input: Sources > Selected Track Lines
Include Status Flag > Check Accepted, Outstanding, Examined

Estimation Method > Calder-Rice Density
Options: Finest Resolution > 0.10m
Points Per Cell > 15

Advanced:
Check Keep Partial Bins
Maximum Grid Size > 160
Minimum Grid Size > 4
Coarsest Resolution > 32.0m
Area Estimation Method > Swath
Supergrid Size > 32.00m
Beam Width > 1.0 deg

Population Method > CUBE
Options:
Input Band > Depth
Vertical Uncertainty Band > Depth TPU
Horizontal Uncertainty Band > Position TPU
IHO Order > S44 Order 1a
Disambiguation Method > Density and Locale

Advanced:
Uncheck Keep up to Date
Display Bias > Highest
Check Cube Configuration > NOAA VR
 (unimportant for VR surfaces, any of the configurations will work)

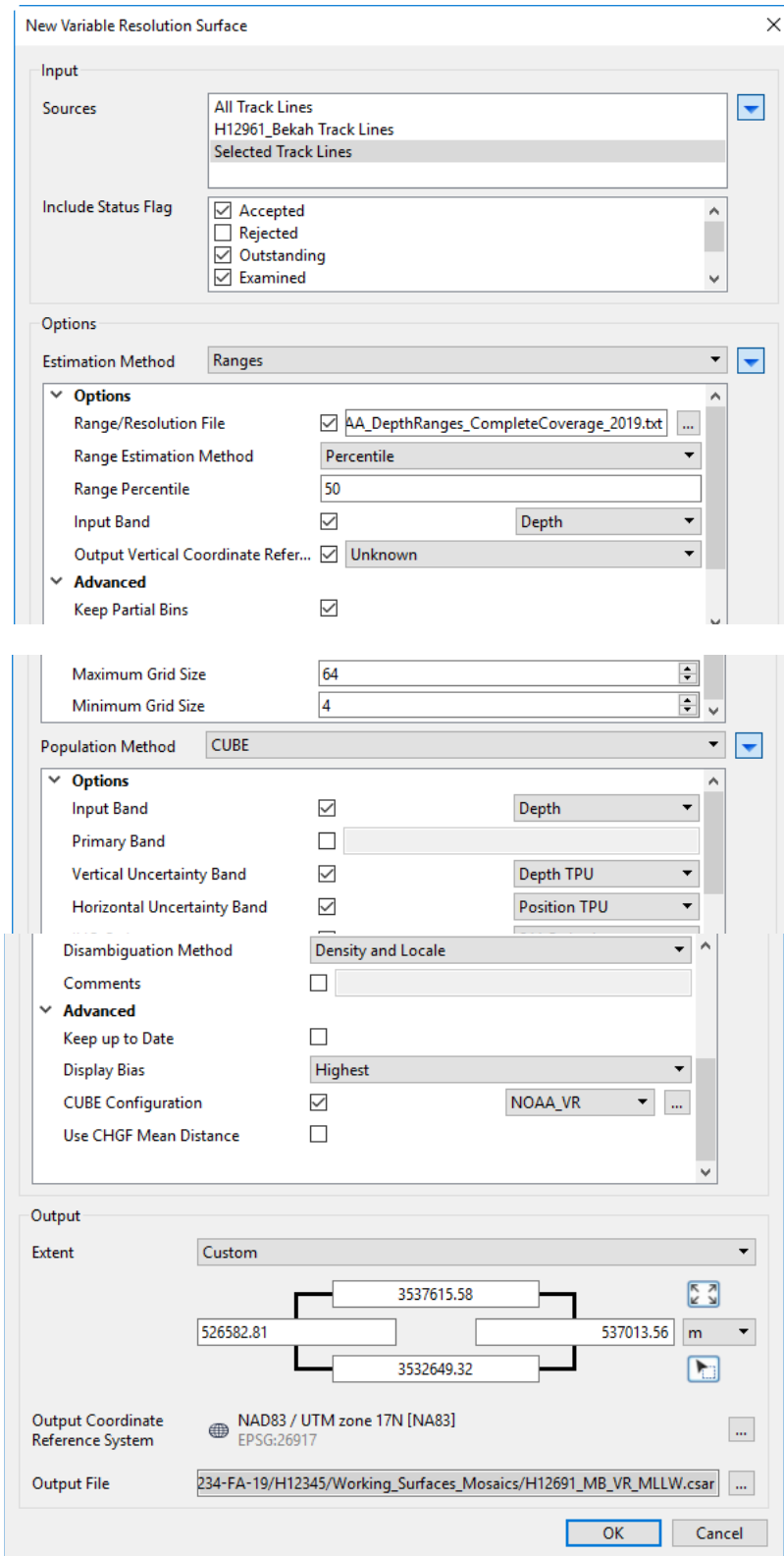
Output select the  to automatically set the extents of your surface based on what's loaded into CARIS display screen.
Set the Output Coordinate Reference System to the correct zone using the ellipsis

Output File > Select the Ellipsis, browse to
S:\YYYY\OPR-XXXX-FH-YY\HXXXXX\Working_Surfaces_Mosaics\Bathymetry
and save the surface as HXXXXX_MB_VR_MLLW.

Click ok and you're finished!

III. Creating a Variable Resolution Surface – Ranges

Click the  icon in the toolbar.



Input: Sources > Selected Track lines
Include Status Flag > Check Accepted, Outstanding, Examined

Estimation Method > Ranges

Options: Range/Resolution File > navigate to the appropriate file based on survey requirements
C:\CARIS\Caris_Support_Files_2019v0\HIPS\Grid_Parameters11_1\NOAA_DepthRanges_CompleteCoverage_2019
C:\CARIS\Caris_Support_Files_2019v0\HIPS\Grid_Parameters11_1\NOAA_DepthRanges_ObjectDetection_2019

Range Estimation Method > Percentile

Range Percentile > 50

Input Band > check > Depth

Advanced: Check Keep Partial Bins

Maximum Grid Size > 64

Minimum Grid Size > 4

Population Method > CUBE

Options: Input Band > Depth

Vertical Uncertainty Band > Depth TPU

Horizontal Uncertainty Band > Position TPU

IHO Order > S44 Order 1a

Disambiguation Method > Density and Locale


Advanced:

Uncheck Keep up to Date

Display Bias > Highest

Check CUBE Configuration > NOAA VR

(Unimportant for VR surface, any of the configurations will work)

Output select the  to automatically set the extents of your surface based on what's loaded into CARIS display screen.

Set the **Output Coordinate Reference System** to the correct zone using the ellipsis

Output File > Select the Ellipsis, browse to

S:\YYYY\OPR-XXXX-FH-YY\HXXXXX\Working_Surfaces_Mosaics\Bathymetry and save the surface as HXXXXX_MB_VR_MLLW.

Click ok and you're finished!