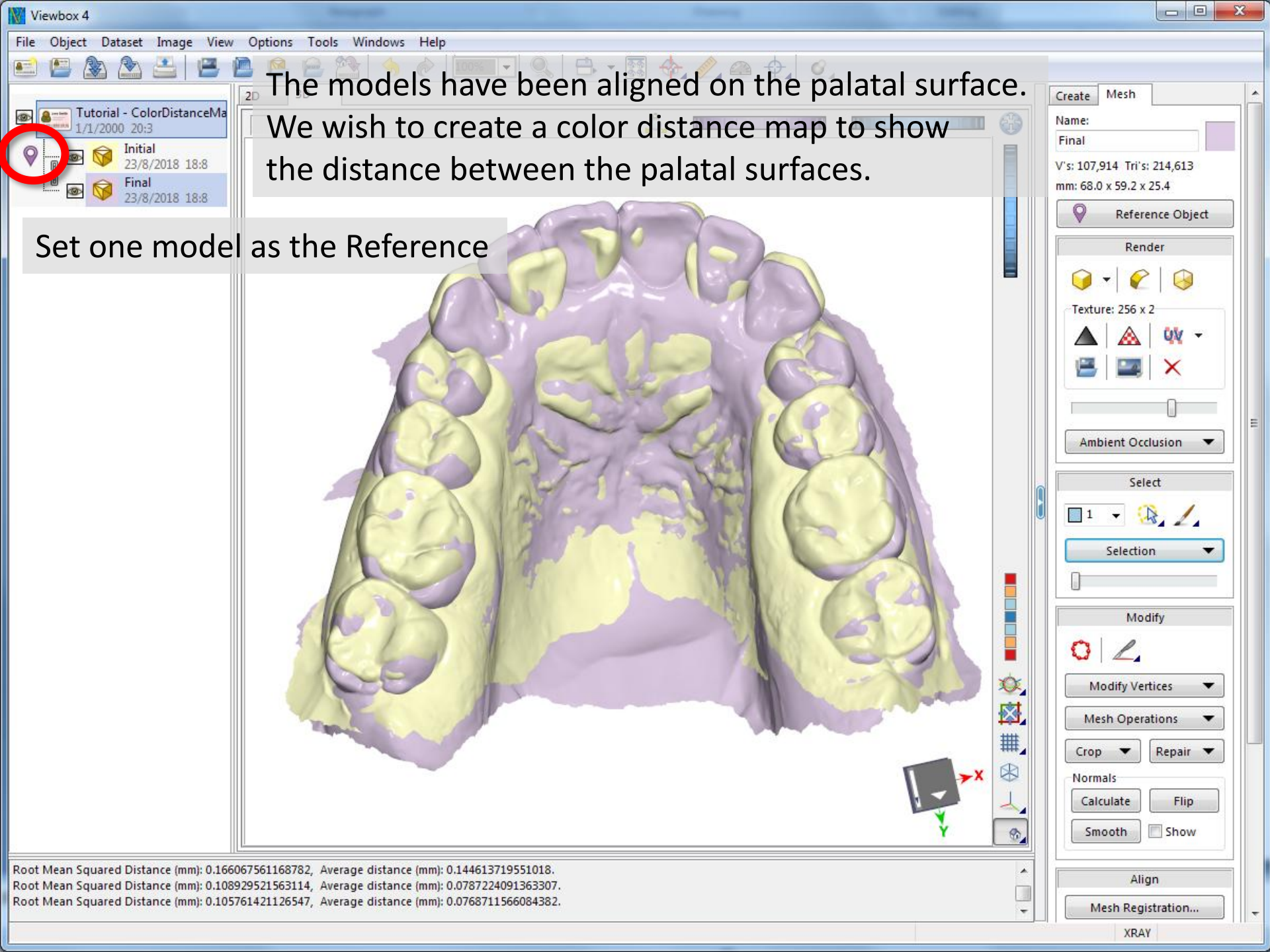


Viewbox Tutorial

How to create color distance maps

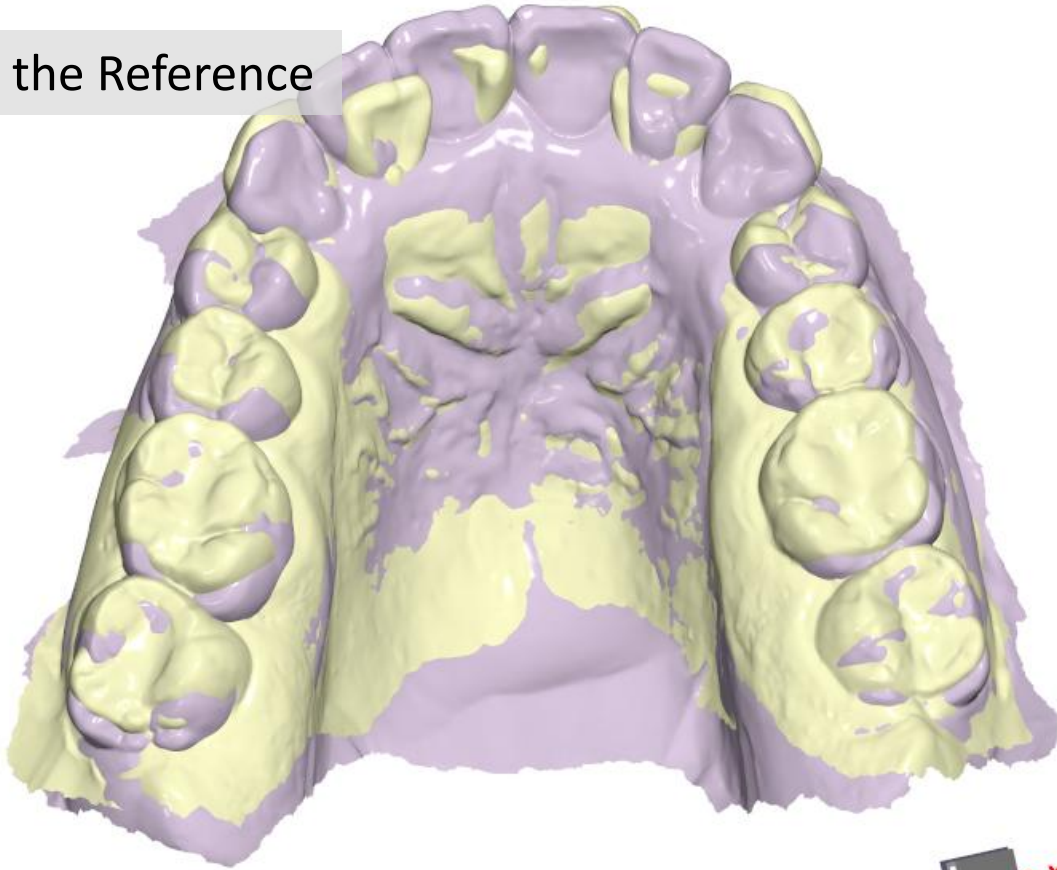
Requires a 'before' and 'after' virtual model

www.dhal.com

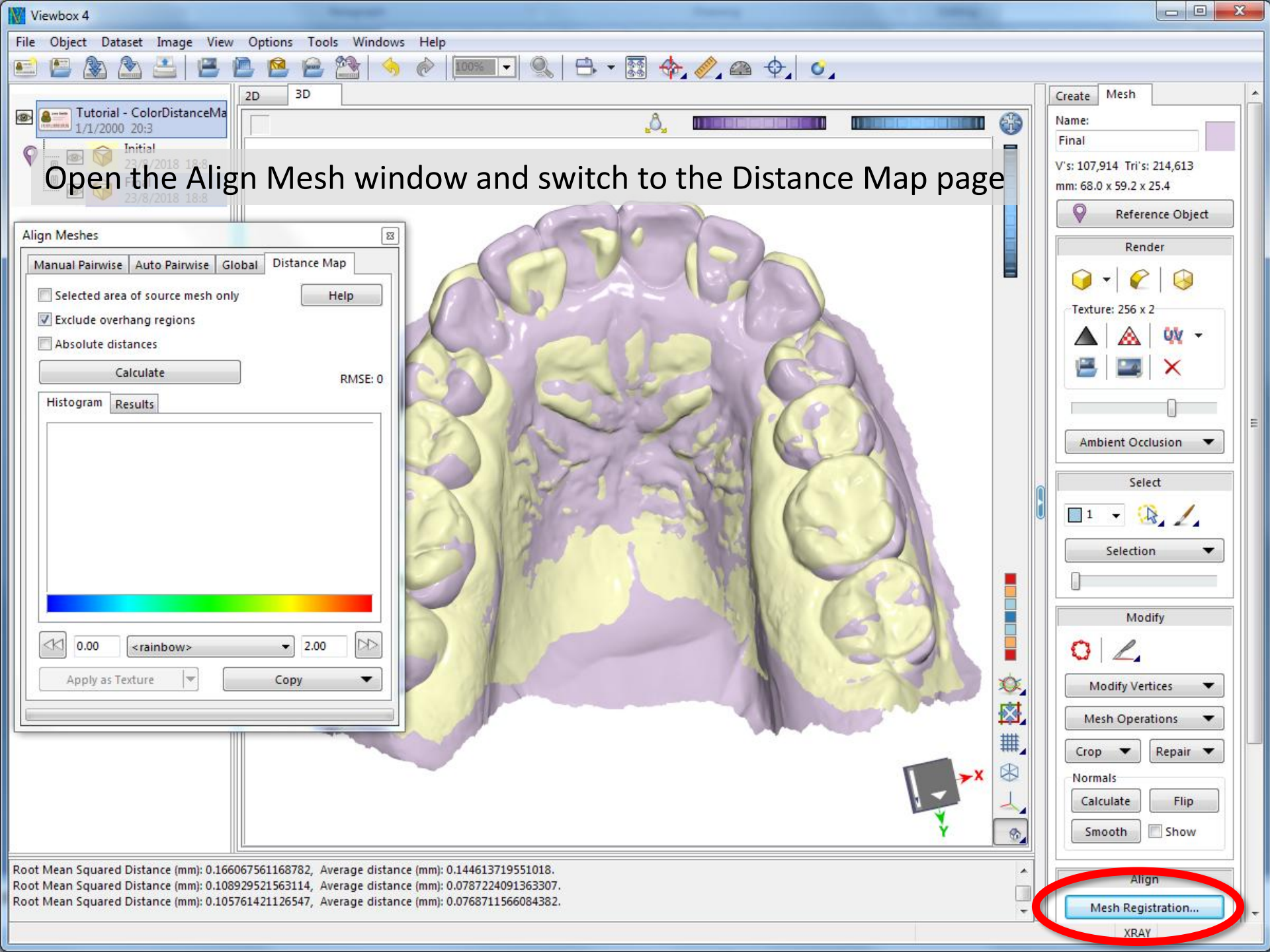


The models have been aligned on the palatal surface.
We wish to create a color distance map to show the distance between the palatal surfaces.

Set one model as the Reference



Root Mean Squared Distance (mm): 0.166067561168782, Average distance (mm): 0.144613719551018.
Root Mean Squared Distance (mm): 0.108929521563114, Average distance (mm): 0.0787224091363307.
Root Mean Squared Distance (mm): 0.105761421126547, Average distance (mm): 0.0768711566084382.



Open the Align Mesh window and switch to the Distance Map page

Align Meshes

Manual Pairwise | Auto Pairwise | Global | **Distance Map**

Selected area of source mesh only Help

Exclude overhang regions

Absolute distances

Calculate RMSE: 0

Histogram | **Results**

<< 0.00 <rainbow> 2.00 >>

Apply as Texture Copy

Create Mesh

Name: Final

V's: 107,914 Tri's: 214,613
mm: 68.0 x 59.2 x 25.4

Reference Object

Render

Texture: 256 x 2

Ambient Occlusion

Select

Selection

Modify

Modify Vertices

Mesh Operations

Crop Repair

Normals

Calculate Flip

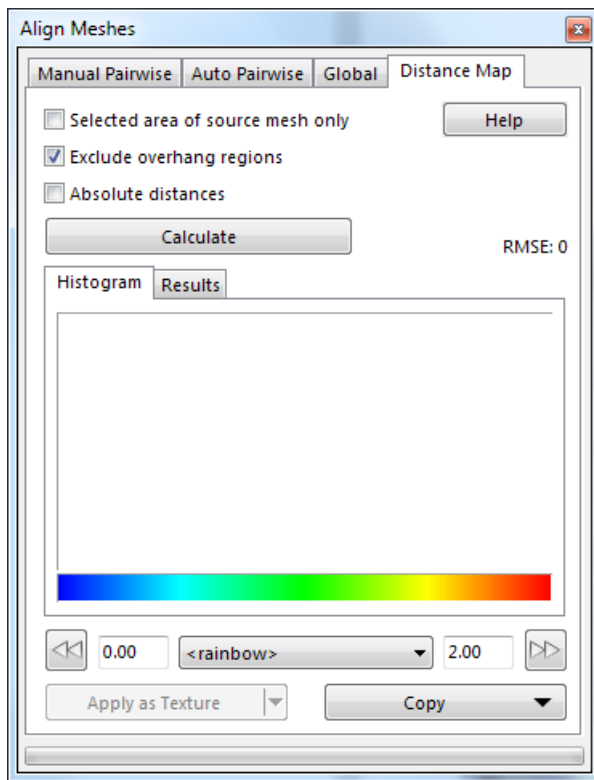
Smooth Show

Align

Mesh Registration...

XRAY

Root Mean Squared Distance (mm): 0.166067561168782, Average distance (mm): 0.144613719551018.
Root Mean Squared Distance (mm): 0.108929521563114, Average distance (mm): 0.0787224091363307.
Root Mean Squared Distance (mm): 0.105761421126547, Average distance (mm): 0.0768711566084382.



Calculate:

Will compute the distances of all vertices of the source mesh to the closest point on the target mesh (the Reference mesh). The closest point on the target mesh can be a vertex of the mesh, or a point inside a triangle of the mesh, or a point on a triangle edge.

Selected area of source mesh only:

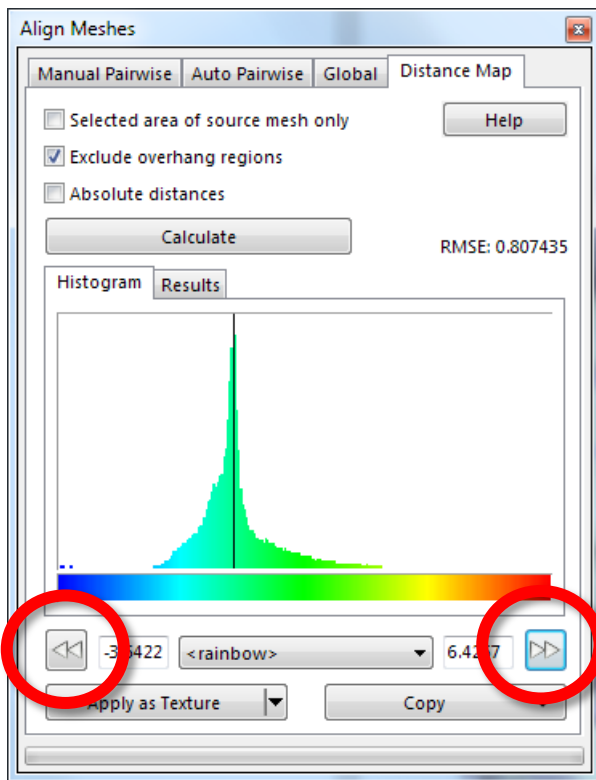
If checked, only vertices inside the selected area will be considered. If unchecked, or if nothing is selected, all distances will be computed.

Exclude overhang regions:

If checked then, if the closest point of the target mesh is on the outside edge of the mesh, the distance will be ignored.

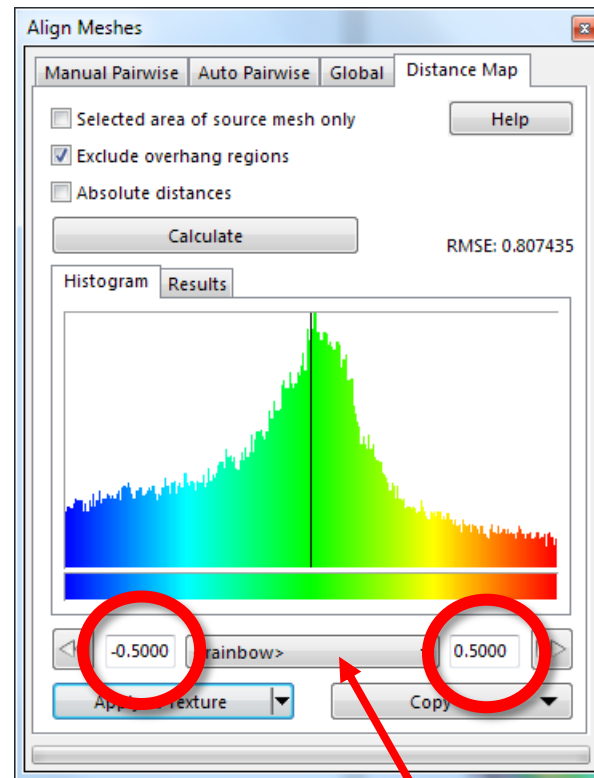
Absolute distances:

If checked, the distances are taken as absolute values (always positive). If unchecked, the distance is positive if the point of the source mesh is outside (in front of) the target mesh, else it is negative.



The histogram shows the distribution of the distances. Click the two arrow buttons to ensure that the whole range is included.

Enter values in the edit boxes and press Enter to restrict the range. Values are in mm.



Select color schemes from the drop-down list box.

Tutorial - ColorDistanceMa
1/1/2000 20:3
Initial
23/8/2018 18:8
Final
23/8/2018 18:8

Click the Apply as Texture button to transfer the data to the mesh.
Note that the target mesh has been hidden for unobstructed viewing.

Align Meshes

Manual Pairwise | Auto Pairwise | Global | Distance Map

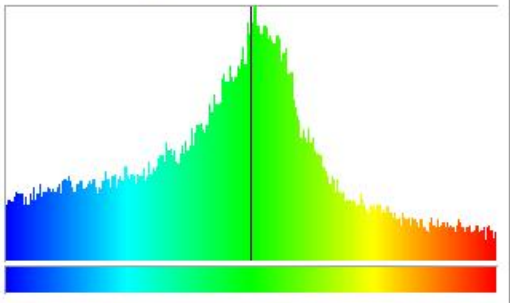
Selected area of source mesh only Help

Exclude overhang regions

Absolute distances

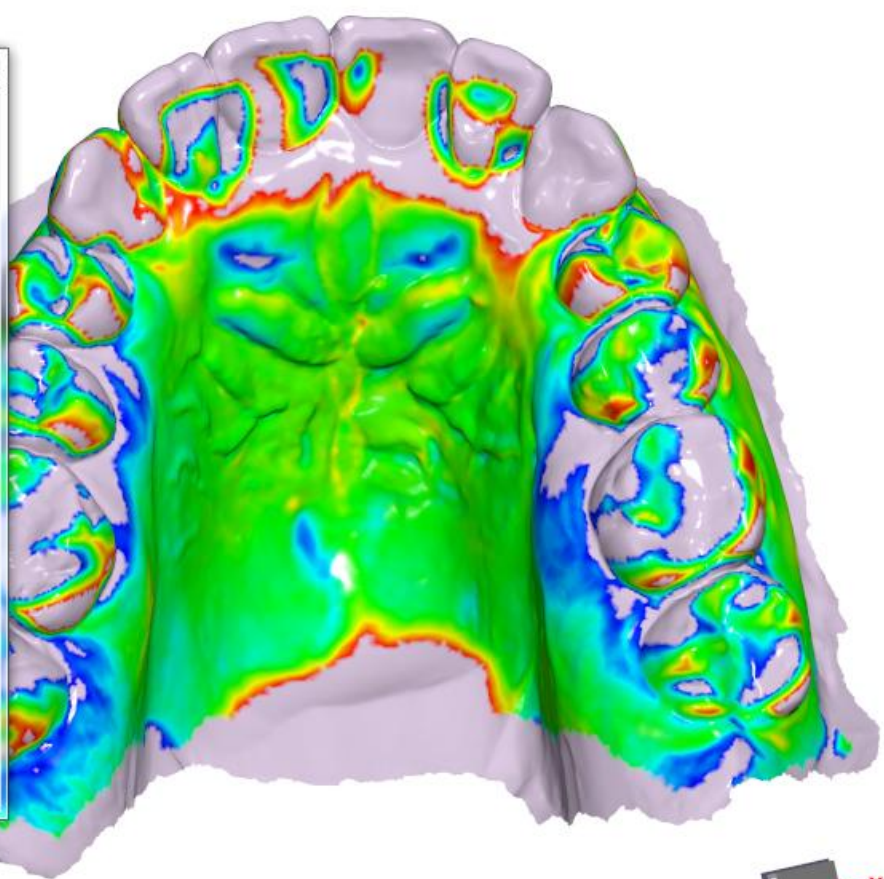
Calculate RMSE: 0.807435

Histogram Results



0.5000 <rainbow> 0.5000

Apply as Texture Copy



Create Mesh

Final

mm: 68.0 x 59.2 x 25.4

Reference Object

Render

Texture: 256 x 2

Ambient Occlusion

Select

Selection

Modify

Modify Vertices

Mesh Operations

Crop Repair

Normals

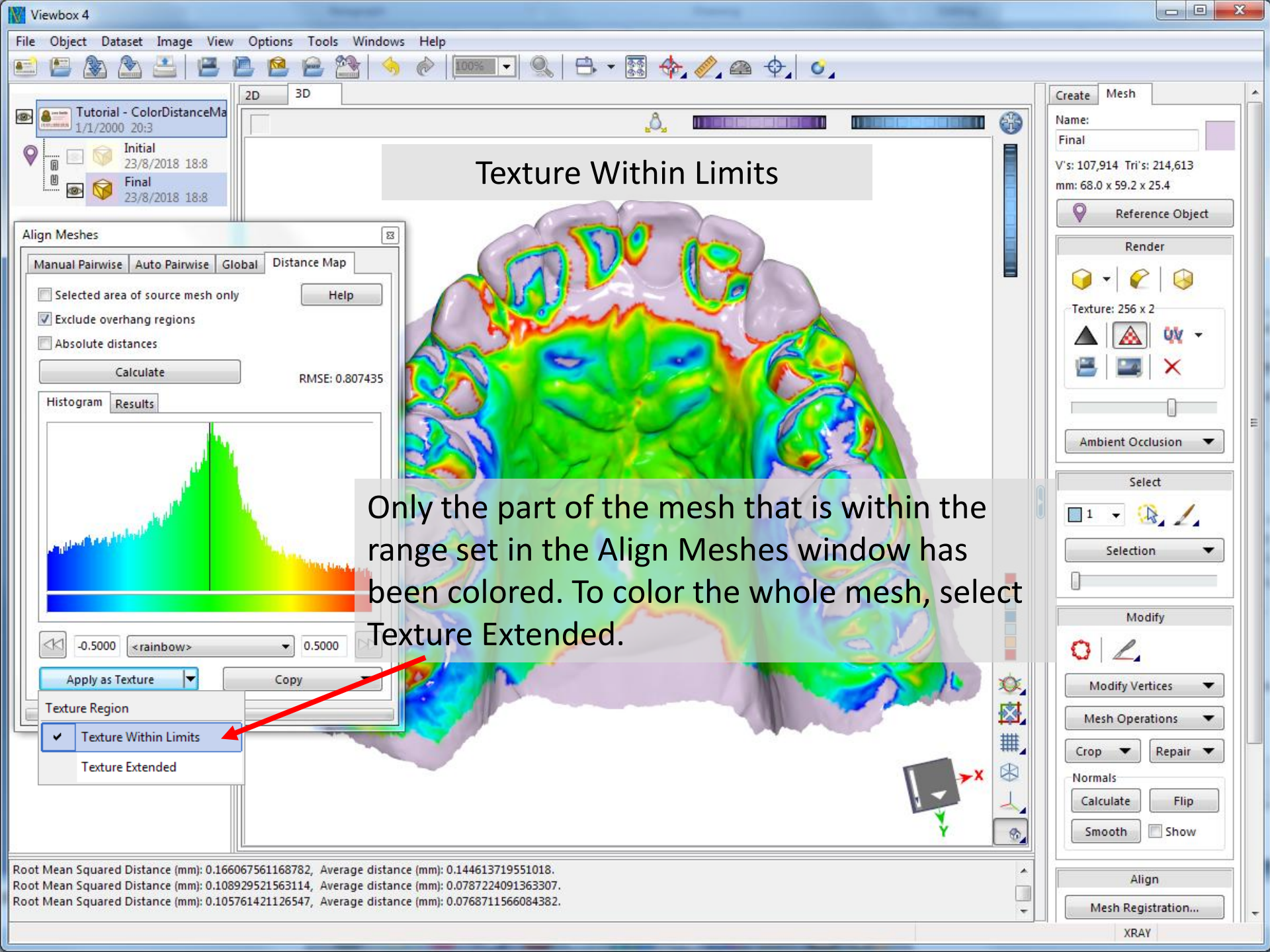
Calculate Flip

Smooth Show

Align

Mesh Registration...

Root Mean Squared Distance (mm): 0.166067561168782, Average distance (mm): 0.144613719551018.
Root Mean Squared Distance (mm): 0.108929521563114, Average distance (mm): 0.0787224091363307.
Root Mean Squared Distance (mm): 0.105761421126547, Average distance (mm): 0.0768711566084382.



Texture Within Limits

Only the part of the mesh that is within the range set in the Align Meshes window has been colored. To color the whole mesh, select Texture Extended.

Align Meshes

Manual Pairwise | Auto Pairwise | Global | Distance Map

Selected area of source mesh only Help

Exclude overhang regions

Absolute distances

Calculate RMSE: 0.807435

Histogram | Results

<< -0.5000 <rainbow> 0.5000 >>

Apply as Texture | Copy

Texture Region

- Texture Within Limits
- Texture Extended

Root Mean Squared Distance (mm): 0.166067561168782, Average distance (mm): 0.144613719551018.
Root Mean Squared Distance (mm): 0.108929521563114, Average distance (mm): 0.0787224091363307.
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Create Mesh

Name: Final

V's: 107,914 Tri's: 214,613
mm: 68.0 x 59.2 x 25.4

Reference Object

Render

Texture: 256 x 2

Ambient Occlusion

Select

Selection

Modify

Modify Vertices

Mesh Operations

Crop Repair

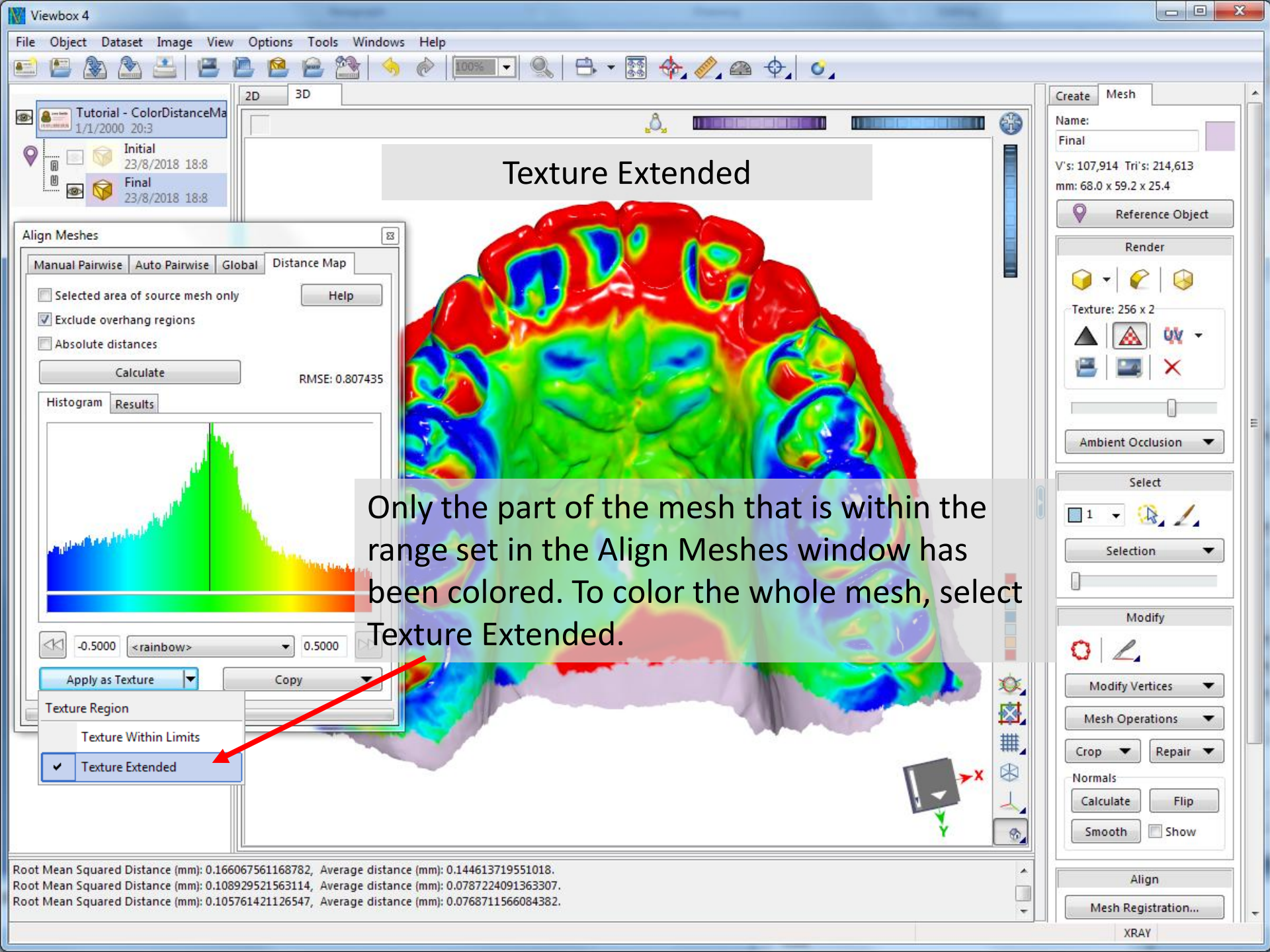
Normals

Calculate Flip

Smooth Show

Align

Mesh Registration...



Texture Extended

Only the part of the mesh that is within the range set in the Align Meshes window has been colored. To color the whole mesh, select Texture Extended.

Align Meshes

Manual Pairwise | Auto Pairwise | Global | Distance Map

Selected area of source mesh only

Exclude overhang regions

Absolute distances

Calculate RMSE: 0.807435

Help

Histogram Results

<< -0.5000 <rainbow> 0.5000 >>

Apply as Texture

Copy

Texture Region

- Texture Within Limits
- Texture Extended

Root Mean Squared Distance (mm): 0.166067561168782, Average distance (mm): 0.144613719551018.
Root Mean Squared Distance (mm): 0.108929521563114, Average distance (mm): 0.0787224091363307.
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Create Mesh

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mm: 68.0 x 59.2 x 25.4

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Texture: 256 x 2

Ambient Occlusion

Select

1

Selection

Modify

Modify Vertices

Mesh Operations

Crop Repair

Normals

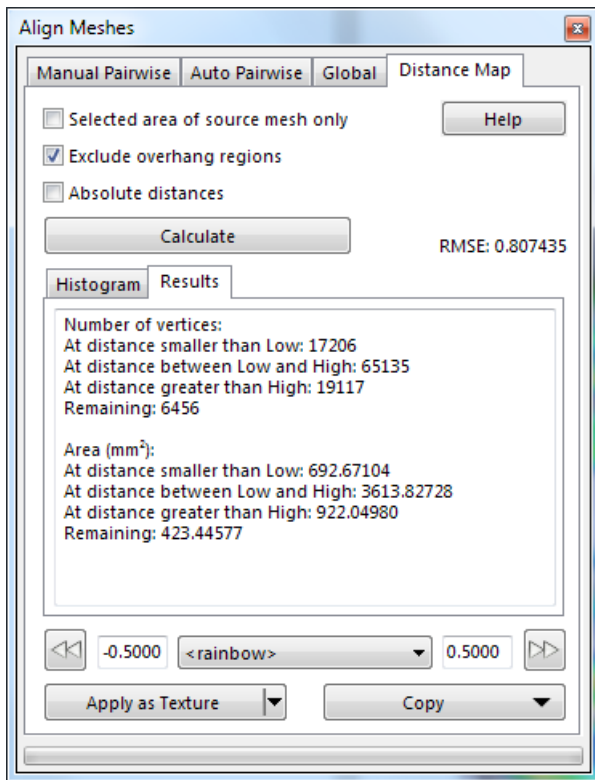
Calculate Flip

Smooth Show

Align

Mesh Registration...

XRAY



Results show the number of vertices and the surface area that falls within and outside the set limits. 'Remaining' are the vertices and area that were ignored because the 'Exclude overhang regions' was checked.

RMSE is the root mean squared error between the two meshes, i.e. the square root of the average of the squared distances of each vertex of the source mesh to the closest point of the target mesh.

Use Copy to copy these Results to the Clipboard. You can also copy all distances to the Clipboard, and then paste them into another program for statistical calculations. This list of distances can easily run into hundreds of thousands. E.g., the results on the left show that 101,458 distances were computed.

