

Panorama Coordinate Systems

This section provides more background about Nearmap's Panorama Tile Interface.

There is complexity involved in how panorama tiles are arranged, and this section serves as background information to help understand the sample code that is provided below.

Nearmap Panorama imagery is an orthorectified mosaic. Because it is created by combining many images, metadata that is normally associated with oblique imagery (such as pose and calibration), is not available. All the metadata available for panorama imagery is described under [Getting a List of Surveys by Date for a Location](#).

Foreshortening Effect

Panorama tiles cover the same area as a vertical tile with the same coordinates. If visualised at the same size (256x256 px), panorama tiles look distorted (stretched vertically). This is why we recommend that the client applications display panorama tiles at 256px (width) x 192 px (height).

The compensation for the foreshortening effect needs to be done on the client. Theoretically, the best resize ratio for zoomed-in imagery is $\cos(45^\circ)$, which yields images being 181 pixels high. Nearmap chose to use 192 px in the MapBrowser application as it is convenient ratio.

Important Tiling Parameters

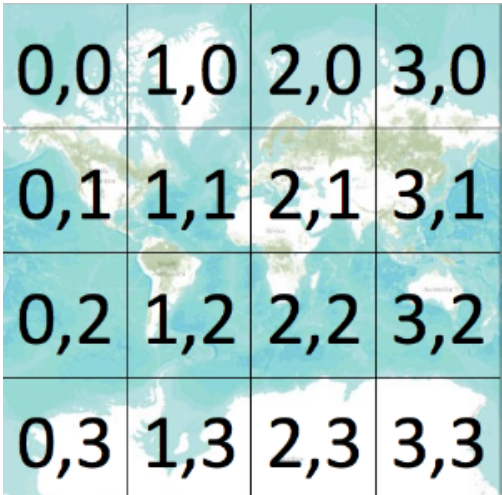
The following terms are useful for understanding panorama tiles:

| Term | Description |
|---------------------|--|
| Tile Storage Width | The width of the image in pixels as it is stored. |
| Tile Storage Height | The height of the image in pixels. |
| Tile Display Width | The width of the tile as it should be displayed. |
| Tile Display Height | The height of the tile as it should be displayed in order to compensate for the foreshortening effect. |
| Tile Orientation | The direction in which the imagery in the tile is pointing. E.g. " East Up" means that the top edge of the tile is due East. |

The images accompanying each orientation below demonstrate how tiling works using the "X,Y" format. To provide compatibility for the older web-mapping frameworks, the tiles are rotated for orientations other than Vertical and North. When representing them on the screen, the client implementation should arrange the tiles according to the appropriate tiling scheme, as shown below.

Whilst the position X=0,Y=0 on the screen may move, the physical location of that tile is the same for all tiling schemes. The origin tile (X=0,Y=0) is always just west of Greenland, no matter the orientation.

Vertical

|  | <table border="1"><thead><tr><th>Attribute</th><th>Value</th></tr></thead><tbody><tr><td>Tile Storage Width</td><td>256px</td></tr><tr><td>Tile Storage Height</td><td>256px</td></tr><tr><td>Tile Display Width</td><td>256px</td></tr><tr><td>Tile Display Height</td><td>256px</td></tr><tr><td>Tile Orientation</td><td>North Up</td></tr></tbody></table> | Attribute | Value | Tile Storage Width | 256px | Tile Storage Height | 256px | Tile Display Width | 256px | Tile Display Height | 256px | Tile Orientation | North Up |
|---|--|-----------|-------|--------------------|-------|---------------------|-------|--------------------|-------|---------------------|-------|------------------|----------|
| Attribute | Value | | | | | | | | | | | | |
| Tile Storage Width | 256px | | | | | | | | | | | | |
| Tile Storage Height | 256px | | | | | | | | | | | | |
| Tile Display Width | 256px | | | | | | | | | | | | |
| Tile Display Height | 256px | | | | | | | | | | | | |
| Tile Orientation | North Up | | | | | | | | | | | | |

North

| | | | |
|-----|-----|-----|-----|
| 0,0 | 1,0 | 2,0 | 3,0 |
| 0,1 | 1,1 | 2,1 | 3,1 |
| 0,2 | 1,2 | 2,2 | 3,2 |
| 0,3 | 1,3 | 2,3 | 3,3 |

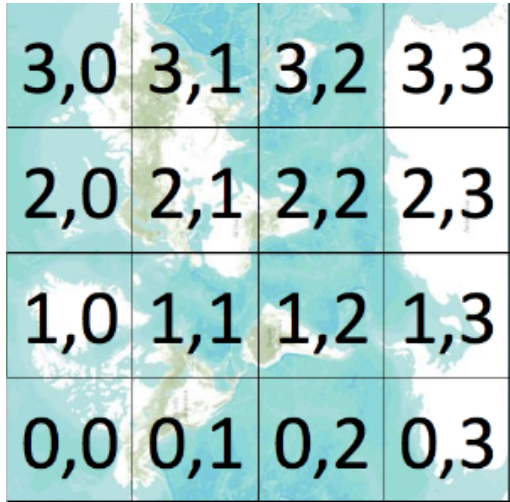
| Attribute | Value |
|---------------------|----------|
| Tile Storage Width | 256px |
| Tile Storage Height | 256px |
| Tile Display Width | 256px |
| Tile Display Height | 192px |
| Tile Orientation | North Up |

South

| | | | |
|-----|-----|-----|-----|
| 3,3 | 2,3 | 1,3 | 0,3 |
| 3,2 | 2,2 | 1,2 | 0,2 |
| 3,1 | 2,1 | 1,1 | 0,1 |
| 3,0 | 2,0 | 1,0 | 0,0 |

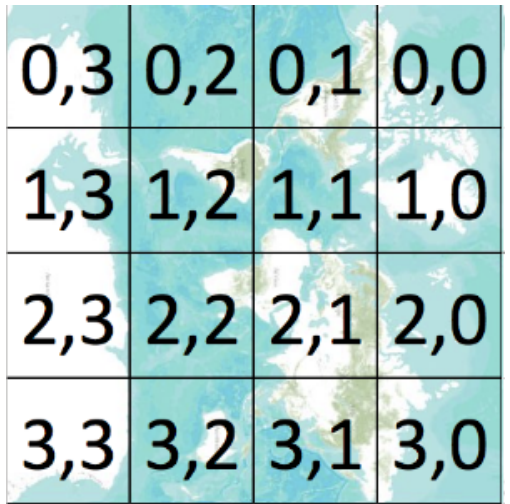
| Attribute | Value |
|---------------------|----------|
| Tile Storage Width | 256px |
| Tile Storage Height | 256px |
| Tile Display Width | 256px |
| Tile Display Height | 192px |
| Tile Orientation | South Up |

East



| Attribute | Value |
|---------------------|---------|
| Tile Storage Width | 256px |
| Tile Storage Height | 256px |
| Tile Display Width | 256px |
| Tile Display Height | 192px |
| Tile Orientation | East Up |

West



| Attribute | Value |
|---------------------|---------|
| Tile Storage Width | 256px |
| Tile Storage Height | 256px |
| Tile Display Width | 256px |
| Tile Display Height | 192px |
| Tile Orientation | West Up |