**Data Augmentations (Sparse To Dense Original):**

They perform the following augmentations in order which will have certain effects on the depth value:

**Resize**. By fixed ratio of 250/480 ~= 1/2

**Random Rotation**. No depth impact\*. Think about it as physically rotating the scene and fixing the camera. The reshape argument is set to false, so there is no resizing done and pixels off the image are filled as constant values (black?).

**Random Resize**. By scale factor s. They then correct the depth by dividing by s.

**Center Crop.** Down to (228,304). Only a small crop by a fixed amount, because they do not resize this has no depth impact.

**Random Horizontal Flip**. No depth impact\*.

\*No depth impact means that we need to apply the same transformation to the depth image before extracting the distance value as usual.

During validation they only perform a resizing by half and a centre crop to the output size (228,304).

Their assumptions:

They are transforming the depth image in the same way as the RGB image, with the exception of dividing all the values by the scale factor s. They don’t seem to correct for the ½ scale resizing, so they are assuming an artificial fixed focal length which is learned by the network, then accounting for small changes in this which are induced by the s-scale rescaling.