Purpose: To quantify the correlation between patient surface motion and internal tumor motion. **Method and Materials:** Thoracic 4D-CT scans are used for the study. The CT image at the end of inhale is set as the target image. On each CT slice of the target image, 201 points are evenly placed on the skin contour (excluding the patient's back). The other nine CT images, corresponding to nine different respiratory phases, are set as moving images. An optical flow deformable image registration algorithm is used to map the moving images to the target image. Then the surface points in the target image are transferred to the moving images using the deformation vector field. The motion trajectory of each surface point is quantified for the ten respiratory phases, and the correlation between each surface point motion and internal tumor movement in the superior-inferior direction is computed. **Results:** Color maps of the surface point motion amplitude and correlation with internal tumor motion have been derived for each patient. Color maps highlight the high-correlation and high-amplitude motion regions on the surface. It has been observed that 88% of body surface has a correlation of 0.9 or higher with internal tumor motion in the SI direction but only 17% of surface points have motion amplitude bigger than 2mm. **Conclusion:** Color maps of the surface point motion amplitude and correlation with internal tumor motion have been derived for each patient from a 4D-CT scan. These color maps can be used to identify patient specific surface regions of interest to be used as surrogates for external gating.