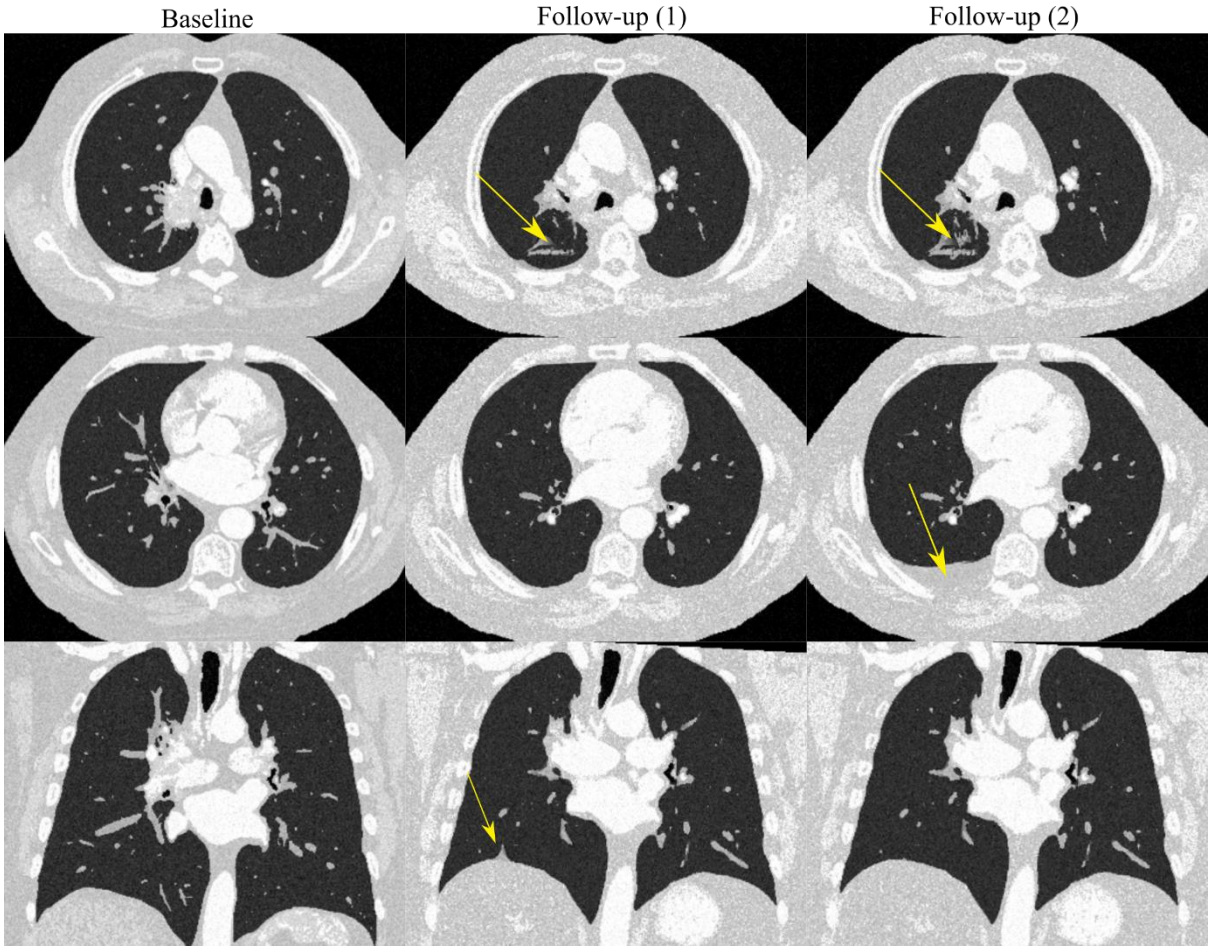
The data provided serves to benchmark the biomarkers described in the publication:

Veiga et al 2018, “Novel CT-based objective imaging biomarkers of long term radiation-induced lung damage”, Int J Radiat Oncol Biol Phys. (2018)

This dataset consists of two virtual phantom datasets, that represent radiation-induced lung damage (RILD) after curative RT.

The two datasets contain the same baseline CT scan, and two different images for possible follow-up. These differ in the volume of parenchymal damage, and presence/absence of pleural effusion and diaphragmatic tenting (see Figure below).



Data description

Total of two virtual patients provided: phantom001, phantom002

For each one, the following folder structure follows:

- Baseline_data: contains all information of pre-RT scan
    - segmentations:
        - Major Airways (at least up to 4th generation): airways.nii
        - Bone anatomy (to define patient specific coordinate system): bones_for_PCA.nii
        - Chest wall surface (for both ipsi and contralateral lungs): chestwalll_ipsi.nii/ chestwall_contra.nii
        - Lungs (semi-automated segmentation of left and right lung, and ipsilateral thoracic cage): lungs.nii
        - Diaphragm surface (for both ipsi and contralateral lungs): diaphragm_ipsi.nii/ chest_contra.nii
        - Normal lung volume (NV, for both ipsi and contralateral lungs): nvolume_ipsi.nii/ nvolume_contra.nii
        - Spinal canal: scanal.nii
    - transformations:
        - Affine transformation from raw to PSC coordinate system: psc_baseline.txt
    - Raw CT image: CT_baseline.nii
    - PS transformed CT image: psc_CT_baseline.nii
- Follow_up_data: contains all information of pos-RT scan
    - Raw segmentations:
        - Major Airways (at least up to 4th generation): airways.nii
        - Chest wall surface (for both ipsi and contralateral lungs): chestwall_ipsi.nii/ chestwall_contra.nii
        - Lungs (semi-automated segmentation of left and right lung, and ipsilateral thoracic cage): lungs.nii
        - Chest wall surface (for both ipsi and contralateral lungs): chestwalll_ipsi.nii/ chestwall_contra.nii
        - Normal lung volume (NV, for both ipsi and contralateral lungs): nvolume_ipsi.nii/ nvolume_contra.nii
        - High-intensity lung volume (NV, for both ipsi and contralateral lungs): hivolume_ipsi.nii/ hivolume_contra.nii
        - Spinal canal: scanal.nii
        - Diaphragm surface (for both ipsi and contralateral lungs, defined for CT image resampled in baseline space): psc_diaphragm_ipsi_resampled.nii/ psc_contra_ipsi_resampled.nii
    - Transformations:
        - Affine transformation from raw to PSC coordinate system: psc_follow_up.txt
        - Affine transformation to baseline scan: followup2baseline.txt
    - Raw CT image: CT_followup.nii
    - PSC transformed CT image: psc_CT_followup.nii
    - CT image resampled to baseline space: psc_CT_followup_resampled.nii

Biomarker calculation