

Instantaneous release scenarios are designed to quantify the rate of mixing within the crater and between the crater and air external to the crater. The release scenario is instantaneous, because the tracer(s) appear instantaneously within a specified region of the model and no additional sources or sinks are provided.

The goal of the instantaneous methane release experiments is to quantify how different air masses within and outside the crater mix. The amount of mixing can be diagnosed by evaluating the fraction of a given tracer mixing ratio compared to the total as a function of time for the tracer configuration shown in Figure 7 of the paper.

For instance, file name *Tracer1_fraction_CrossSection_Ls90_grid4.mp4* means:

$$\text{Tracer \#1 fraction} = \frac{\text{Tracer \#1}}{\text{Tracer \#1} + \text{Tracer \#2} + \text{Tracer \#3} + \text{Tracer \#4}}$$

CrossSection of each animation is a view through longitude of the tracer (in the example Tracer 1#) release center location, at Ls 90 in a grid4 view (8.9 km horizontal resolution).

Right side of all the CrossSection view animations is north and left side is south.