

To conclude the section on transformations and deposition we will do an exercise. In the previous wet deposition simulation for particles, we showed that the deposition results were 10,000 times larger than for the gaseous simulation. So the question to you would be what Henry's constant is required for the gaseous deposition to match the magnitude of the particle deposition. And the hint is relatively straightforward; we just rerun the gaseous wet deposition simulation, trying some different removal constants. If you recall in the previous section, the particle deposition pattern, showed a peak about six to ten picograms, so that is 500,000 to 600,000 picograms per square meter, and we need to be on the order of, the other pattern, the gaseous pattern, showed a peak about 20 or so.

So I will, or you should pause the video, and then we will come back and show you the solution.

Now that you have answer, let's go back and try a different, a couple of different simulations. Now if you're starting this from my some other point, you should retrieve the CONTROL and name list files. Now we just set up to run again for wet deposition. I am going to reset here, and we will instead of putting in a Henry's constant, well how do I know, if we turn on wet deposition here, the default was three, which is small, what do we need. Well let's try something on the order of a thousand and see what kind of answer we get.

Go to the end and a Henry's constant of a thousand, gave

us about seven or 8000 pg per square meter at the peak area. So we're still at least two orders of magnitude away from that. So the natural next option would be to try a number like 10^5 , 100,000.

And display and go to the end and now we're seeing numbers very similar, 6.8×10^5 6.8×10^6 , 700,000 for the maximum deposition area. So we needed a Henry's constant on the order of hundred thousand for the gaseous deposition to match the particle deposition.

And to put that in some perspective, if you look up in the tables the Henry's constant, for what you might essentially call water, is 10,000, so the gaseous wet deposition is just not as effective as the particle removal.

And that terminates the exercise.