



Seasonal variations of atmospheric methane and hot winter 2006-2007

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It is well known that methane emission to the atmosphere mostly take place during warm seasons from major wetland groups, rice paddies, sewages etc. In the same time OH concentration in the atmosphere is higher during sunshine periods. So the maximum of atmospheric methane concentration in the mid latitudes of the Northern Hemisphere is reached late autumn or even in winter.

Global methane emissions have two strong latitudinal bands: one in the tropics and the other in the northern high latitudes. The strong seasonal cycle for the northern mid and high latitude CH₄ emissions creates the seasonal cycle of global CH₄ amount.

The annual cycle, driven by seasonal changes in emission and photochemical oxidation, provides the changes in the mixing ratio magnitude and the shift in phase between the Northern and Southern Hemispheres.

The seasonal changes of atmospheric methane concentration are much larger in Northern Hemisphere, than in Southern Hemisphere. The difference between hemispherical seasonal amplitudes varied from 5 to 10 times. Seasonal amplitude in northern Eurasia could be 100 ppb and even more.

Weather abnormalities during autumn and winter 2006-2007 create a very special condition for methane concentration growing.

Long warm and cloudy situation above the large area of the Northern Hemisphere should increase methane concentration due to continuation of thaw season and lack of sunshine and OH.

The last months methane concentration measurements compared with theoretical estimations are presented.