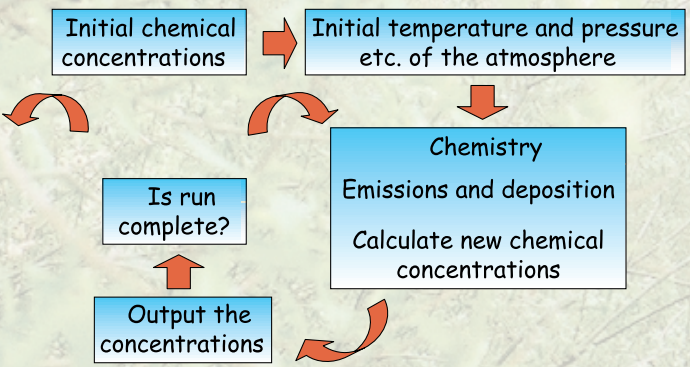
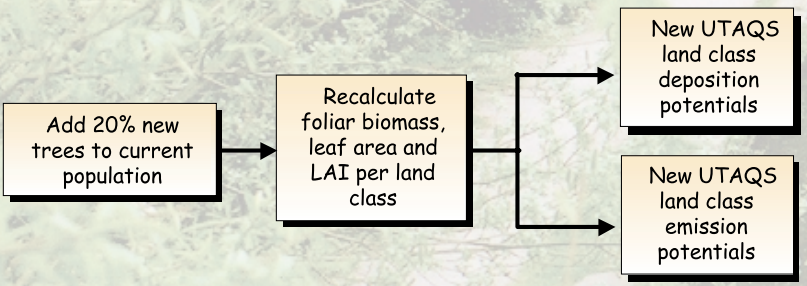
Introducing our air quality modelling tool - CiTTyCAT

CiTTyCAT (the Cambridge Tropospheric Trajectory model of Chemistry and Transport) is a computer model that simulates the chemistry of the lowest part of the atmosphere by picking up emissions, performing chemical reactions and depositing some of the products of the reactions at the earth's surface. The diagram below shows the way CiTTyCAT works.



We used CiTTyCAT to simulate atmospheric chemistry over the current West Midlands tree population for a five-day period. This gives the model enough time for the chemistry to reach a steady daily cycle. We then tested the effects of planting different tree species on the air quality in the region. We selected the 30 most common tree species in the West Midlands, making up 90% of the total population, and added 20% more trees of each of the 30 species in turn to the existing population. We recalculated the biomass and leaf area of each land class for each new tree population, and then calculated new emission and deposition potentials.



Finally, we ran the CiTTyCAT model for five days for each scenario and simulated air quality in the West Midlands with each of the different tree populations.