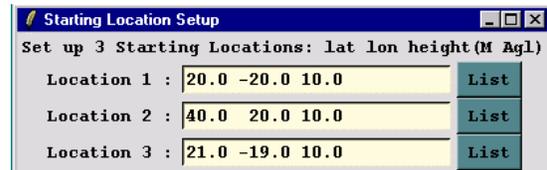


Modeling PM10 Emissions from Dust Storms

The model contains a PM10 emission algorithm that will emit particles from grid-cells with a desert land-use classification and a friction velocity that exceeds a certain threshold value. More detail on this approach can be found in the on-line HYSPLIT references.

To set up the model for such a simulation, an approach similar to the matrix configuration is employed. Set up three starting locations representing the domain limits over which dust will be emitted and the third representing the grid resolution.

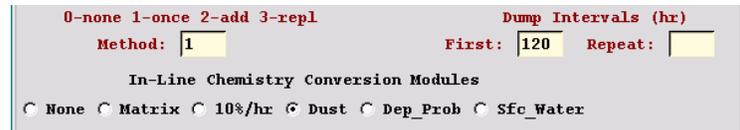


Location	lat	lon	height (M Agl)
Location 1	20.0	-20.0	10.0
Location 2	40.0	20.0	10.0
Location 3	21.0	-19.0	10.0

For this example set up the model to run for a region over North Africa, starting on July 12, for a duration of 5 days. Use the ECMWF data and set the concentration grid resolution to 0.2 degrees to speed up the calculation. The emission duration should also be set to 120 hours.

The [initial control file](#) will only have 3 starting locations. From the “Advanced Configuration” menu, set the conversion module to “Dust”, output a particle dump file after 120 hours, and set the default mode to 3D particle. The particle dump output file will also be used in the next example. Other

parameters in the “[namelist](#)” file can have their default value.



0-none 1-once 2-add 3-repl Dump Intervals (hr)
Method: First: Repeat:
In-Line Chemistry Conversion Modules
 None Matrix 10%/hr Dust Dep_Prob Sfc_Water

The model is run from the “Run Dust Storm” tab of the “Special Simulation” menu. This causes the execution of a pre-processor that writes out the value of all the desert land-use locations to the [control file](#) that will be used for the simulation. Only grid cells where the friction velocity exceeds the threshold will emit dust. Upon completion use the particle display program to show the dust distribution. Note the dust at higher elevations over southern Spain.

