Shower profile

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September 27, 2013

In [1]:
```
%pylab inline
matplotlib.rcParams['figure.figsize'] = 9, 6
import sys,os
sys.path.append('..')
import EGS5Simulations
from numpy import *
```

```
Populating the interactive namespace from numpy and matplotlib
```

In [2]:
```
cd /Users/sfegan/Google Drive/Code/Projects/Simulations/EGS5
```

```
/Users/sfegan/Google Drive/Code/Projects/Simulations/EGS5
```

In [3]:
```
atm = EGS5Simulations.LayeredAtmosphere('Parameters/atmprof6.dat')
ztop   = atm.topOfAtmosphere()
z0     = 0
nlayer = 100
bfield = None
nmedia = 1
emax   = 10000000
media  = EGS5Simulations.VecMedia()
layers = EGS5Simulations.VecLayer()
EGS5Simulations.EGS5AtmosphericDetector.makeMediaAndLayers(media, layers, atm, nlayer,
```

In [4]:
```
det = EGS5Simulations.TrackWritingDetector(media,layers,z0,emax)
```

In [5]:
```
egs5 = EGS5Simulations.EGS5System.instance()
egs5.setUI(det)
egs5.initializeEGS5()
```

In [49]:
```
egs5.shower(500000,0,0,ztop,0,0,-1.0,layers.size()+1,0)
det.nTracks()
```

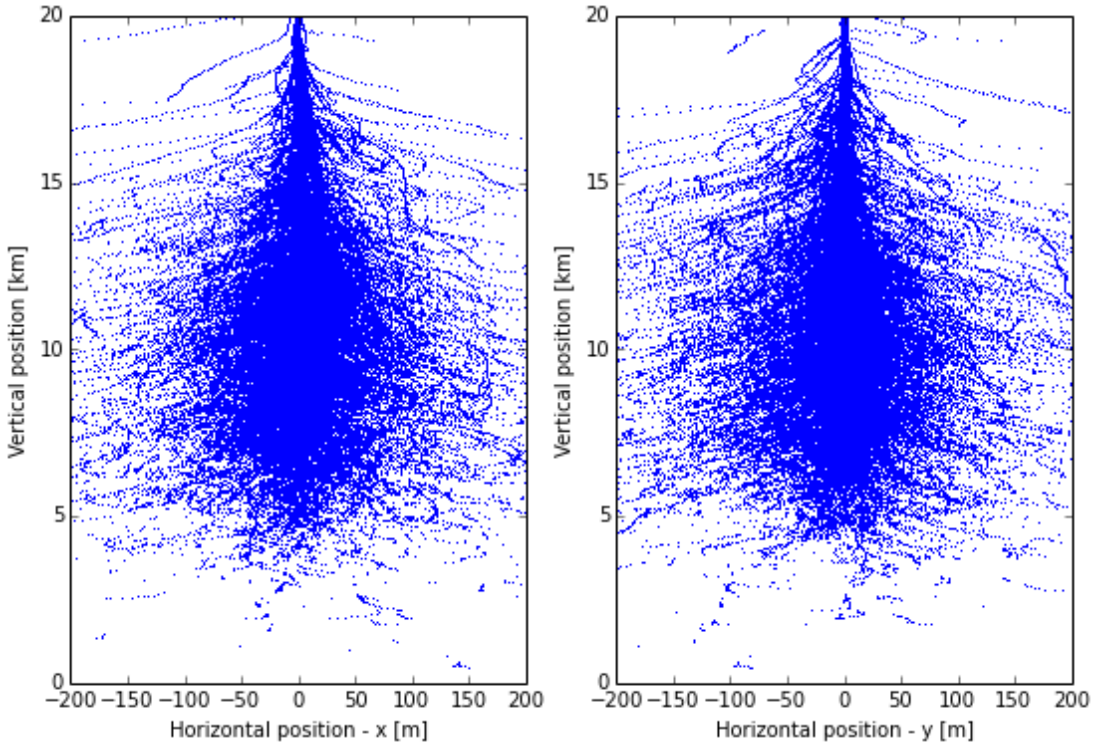
Out [49]:
```
965394
```

In [50]:
```
istep=10
i=range(0,det.nTracks(),istep)
x=map(lambda ii: det.track(ii).x0*1e-2, i)
y=map(lambda ii: det.track(ii).y0*1e-2, i)
z=map(lambda ii: det.track(ii).z0*1e-5, i)
```

```
subplot(121)
plot(x,z,',')
axis([-200,200,0,20])
xlabel('Horizontal position - x [m]')
ylabel('Vertical position [km]')
subplot(122)
plot(y,z,',')
axis([-200,200,0,20])
xlabel('Horizontal position - y [m]')
ylabel('Vertical position [km]')
```

Out [50]:

```
<matplotlib.text.Text at 0x146c84250>
```

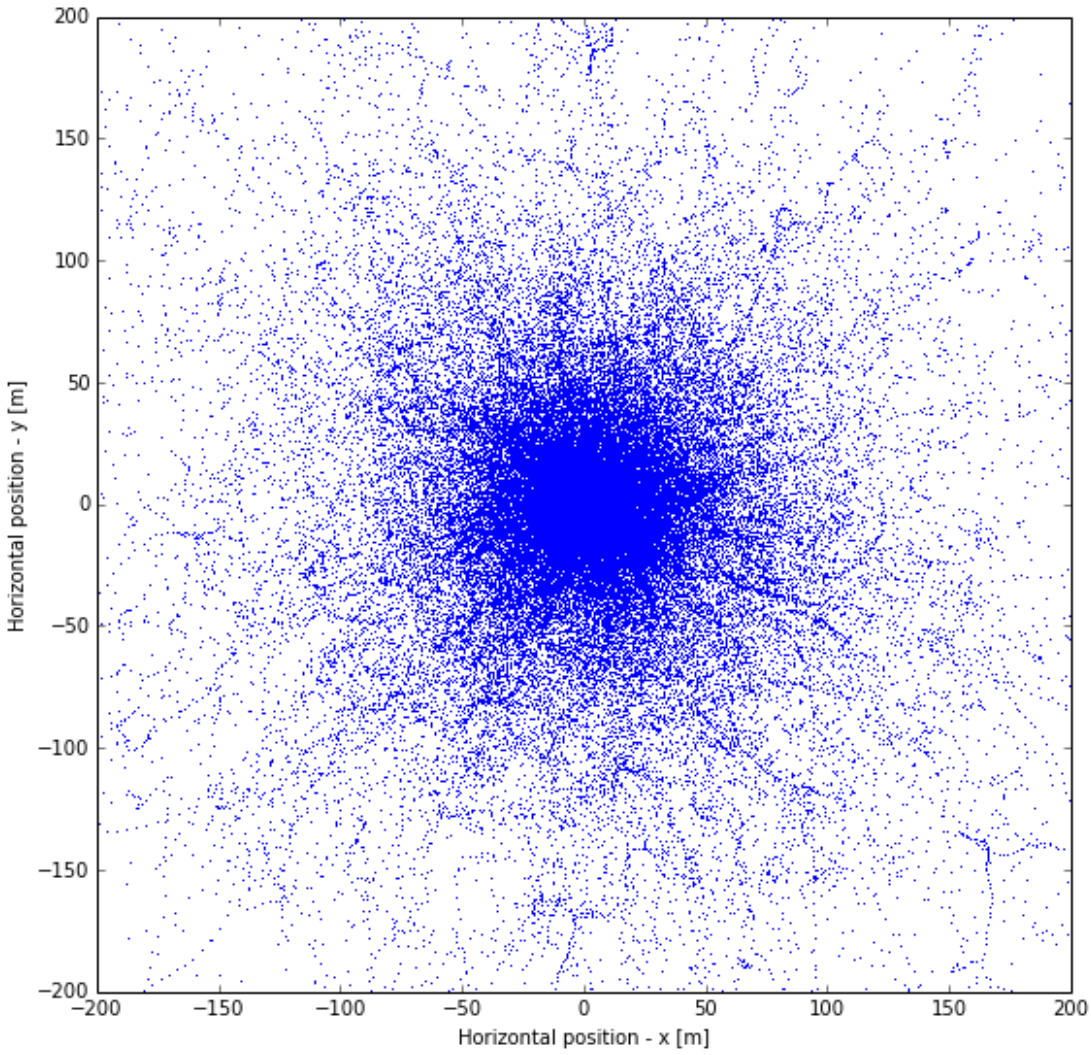


In [59]:

```
figure(figsize=(9,9))
plot(x,y,',')
axis([-200,200,-200,200])
xlabel('Horizontal position - x [m]')
ylabel('Horizontal position - y [m]')
```

Out [59]:

```
<matplotlib.text.Text at 0x148d6b650>
```


Horizontal position - y [m]
Horizontal position - x [m]
200
150
100
50
0
−50
−100
−150
−200
−200
−150
−100
−50
0
50
100
150
200

In []: