Changes to code from AMOS 2017 (EnKF\_withDensity\_comb\_norm\_loc.ipynb) to full state implementation

Changes made due to Python Update:

* In calc\_lat\_lst\_indices() function, added conversion to integers before return, this is already implemented in filter\_functions.py, but this code does not yet call that function directly from that file, it still just has it included in its script

Changes to due to error in AMOS code:

* Generate Measurements script:
  + LST input to MSIS was given in radians instead of hours, needs to be hours, this is already correct in filter. Will regenerate measurements based on this error/update (3-7-18)
  + Account for if the simulation is over one day in miss density calculation by adding t = t - math.floor(t/86400) \* 86400 (3-7-18)
  + Saving true density (used in propagation) at each time step and added it to the output file
* Calc\_MSIS density using hour\_init in filter instead of hour\_init\_UT, was using correct hour\_init\_UT in measurement generation
* Inconsistency with using day of year and day of month, calc\_julian\_date accepts day of month as a parameter, not day of year!

Other Updates:

* Updated calc\_MSIS in meas gen to call calc\_lat\_lon\_from\_t\_R in order to be more consistent with filter
* When I normalized the density from 1e-13 to 1e-4, I did not change the amount of noise/error I was adding to the initial estimate from 1e-4, which is too low now that the density is on the order of 1e-4. Updating noise to