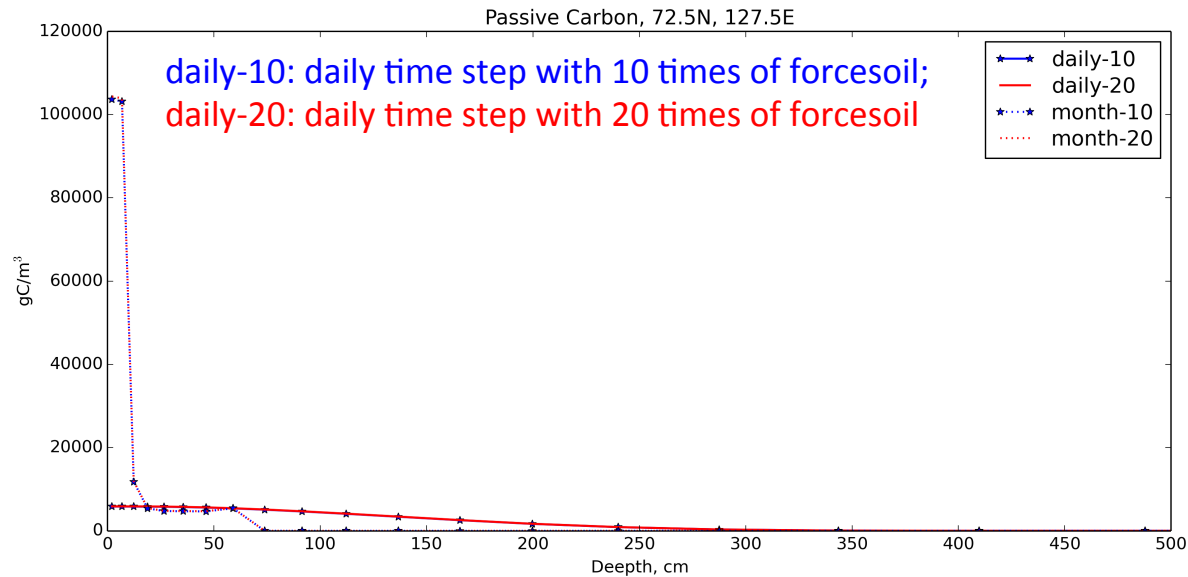
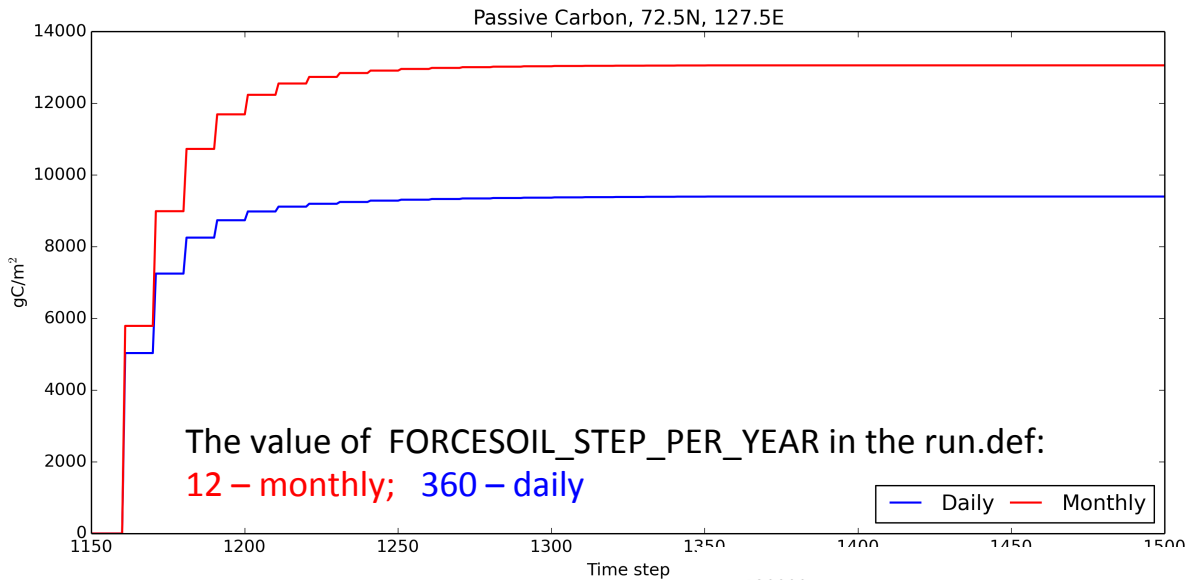


# Some tests on forced soil related with soil carbon pool spinup

Ye Huang, Chao Yue

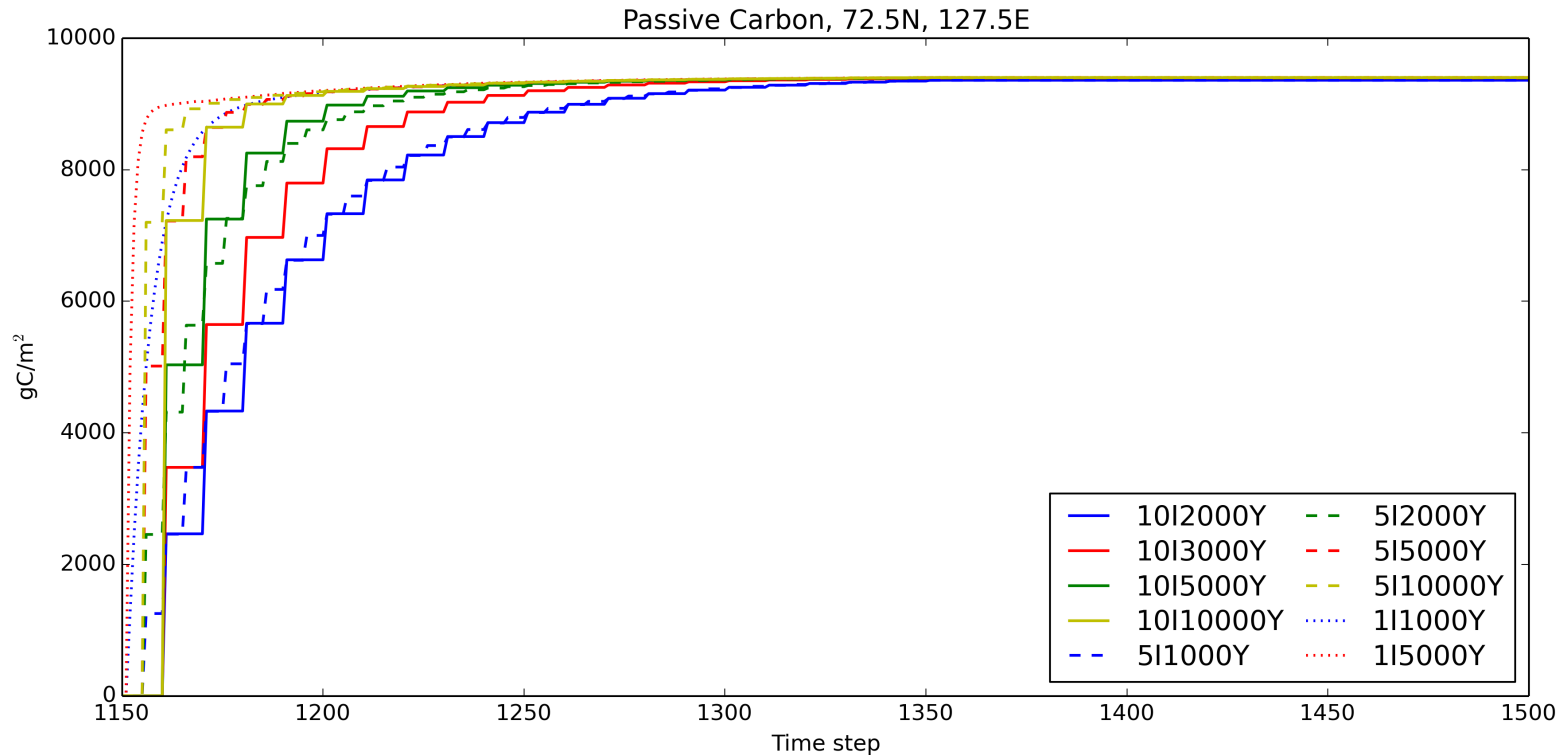
# Forcesoil run starting from the restart file of 150-year ORCHIDEE run

The evolution of passive soil carbon pool when forcesoil uses daily or monthly input, 10 times between two forcesoil runs (10Y|5000Y = orchidee|forcesoil)



# Forcesoil run starting from the restart file of 150-year ORCHIDEE run

The evolution of passive soil carbon pool under different combinations

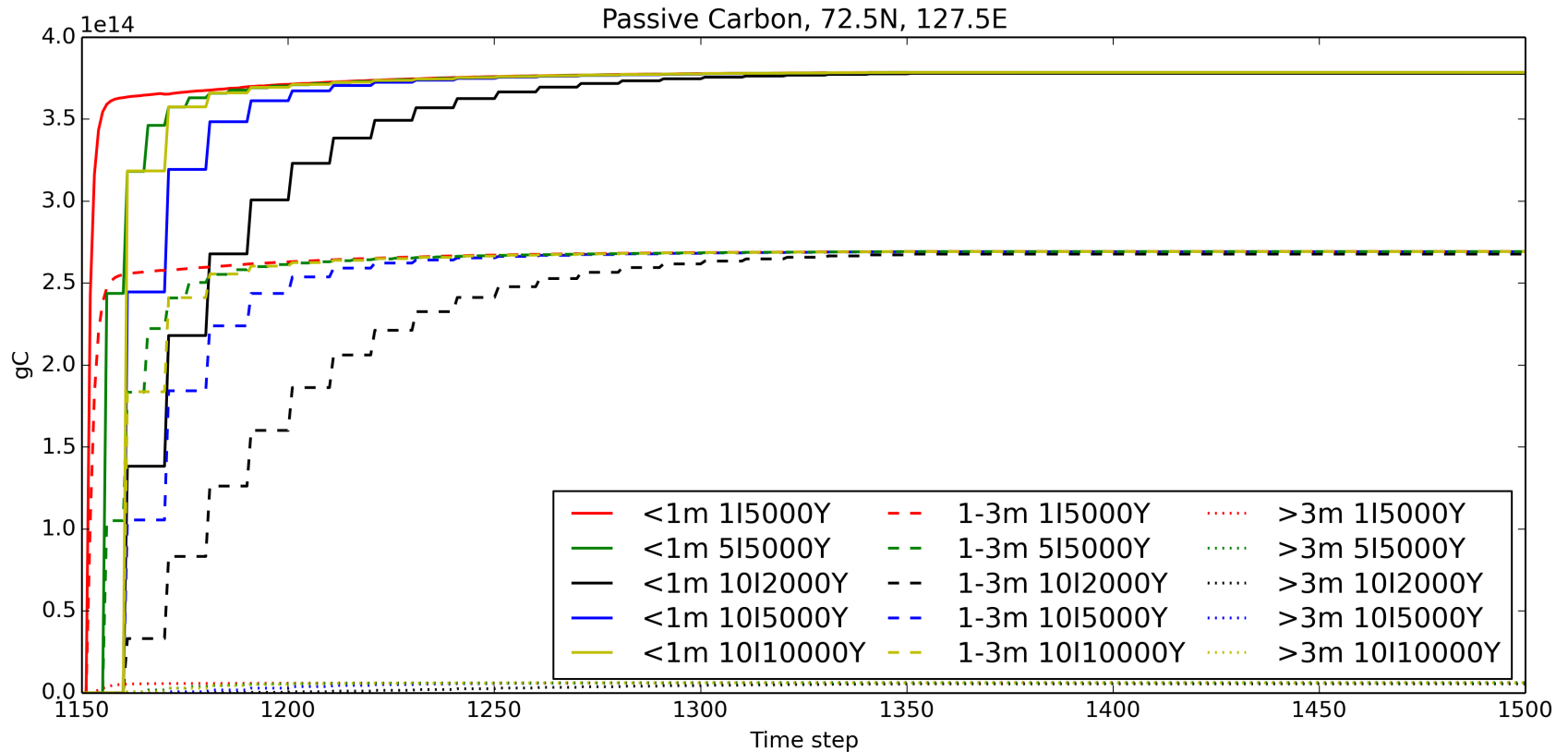


Looks like 1|5000Y reaches the stability the fastest ...

Note that for the same time interval on X-axis, the times of forcesoil are different, the shorter ORCHIDEE-interval has more times of forcesoil being run.

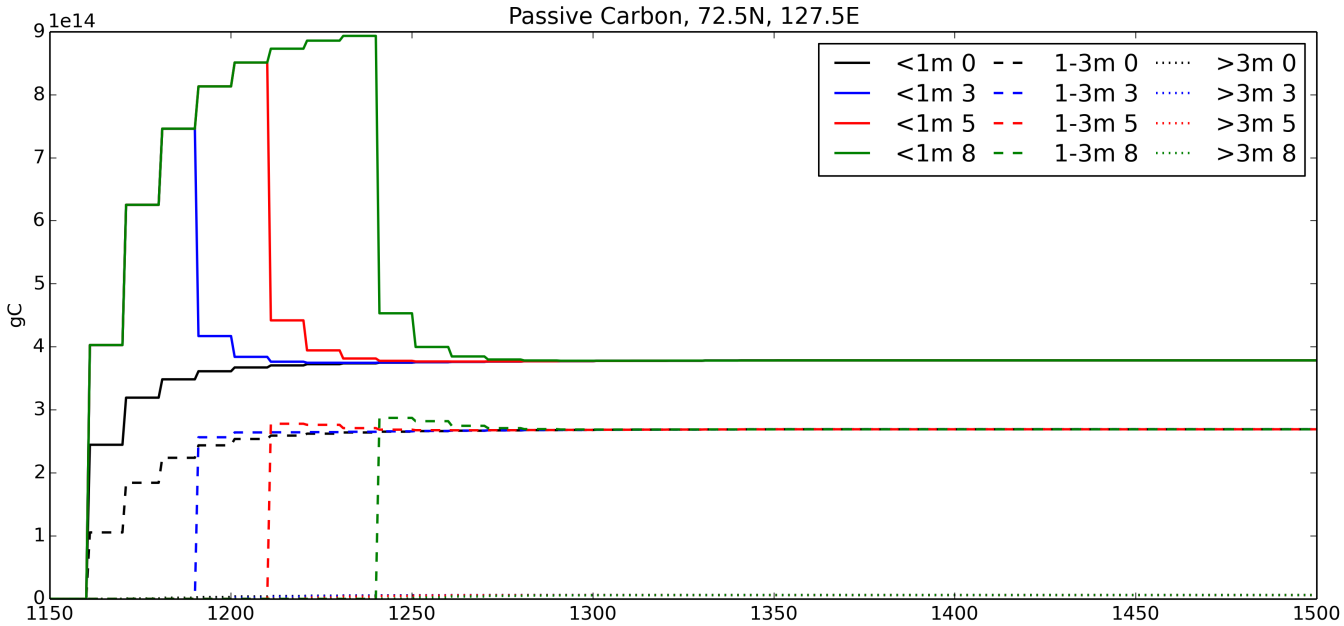
# Forcesoil run starting from the restart file of 150-year ORCHIDEE run

The evolution of passive soil carbon pool of different depth for selected combinations





# Combine monthly and daily time step to reduce time

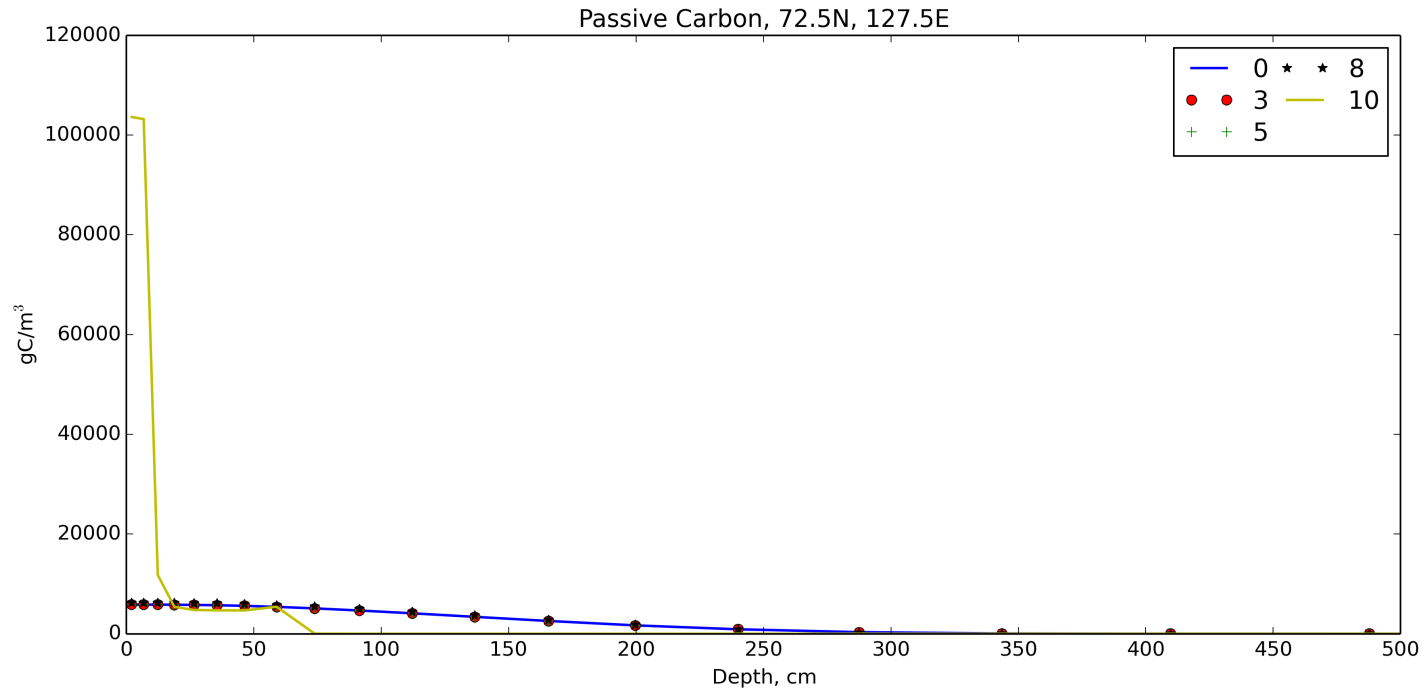


The value of  
FORCESOIL\_STEP\_PER\_YEAR:

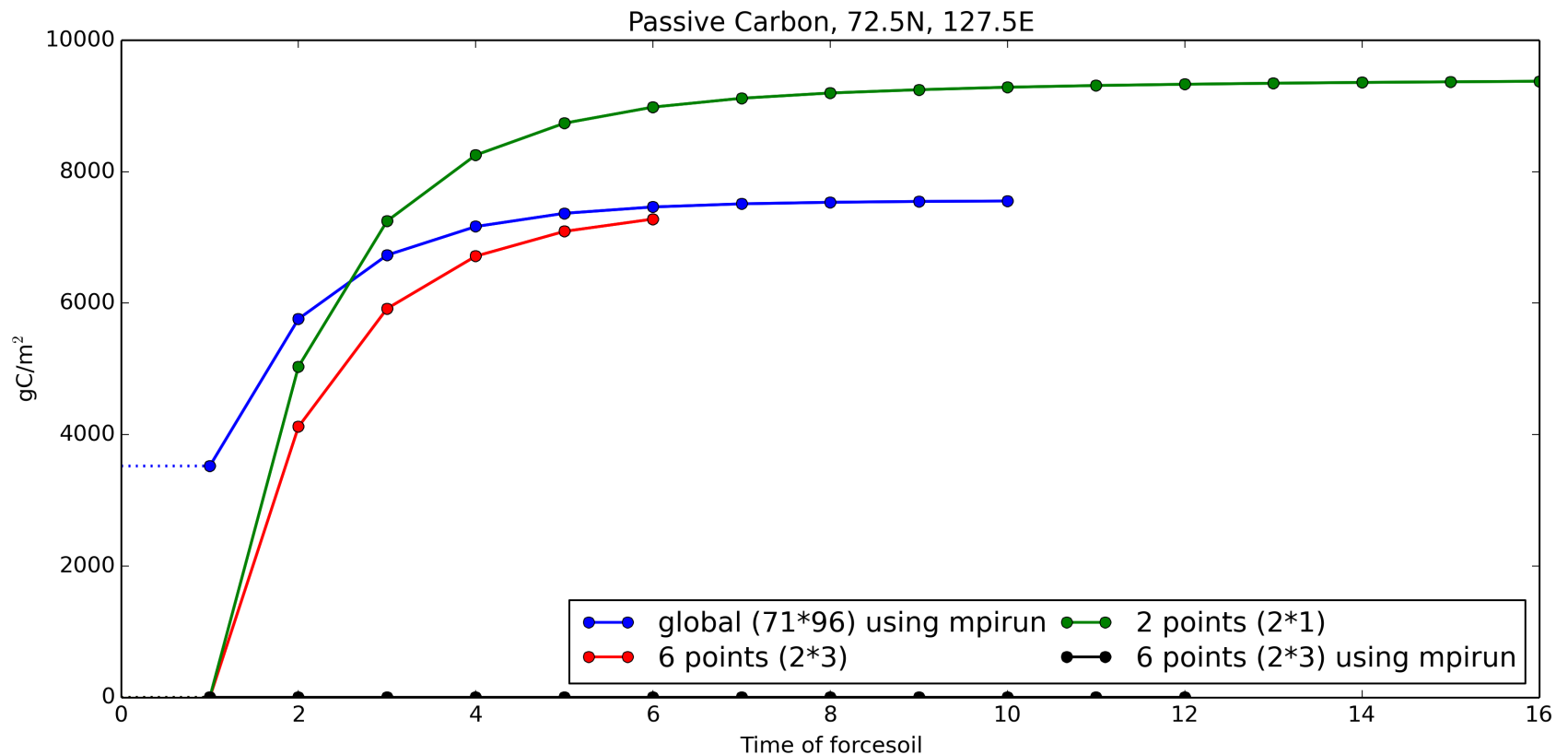
12 – monthly

360 – daily

(10Y | 5000Y = orchidee | forcesoil)



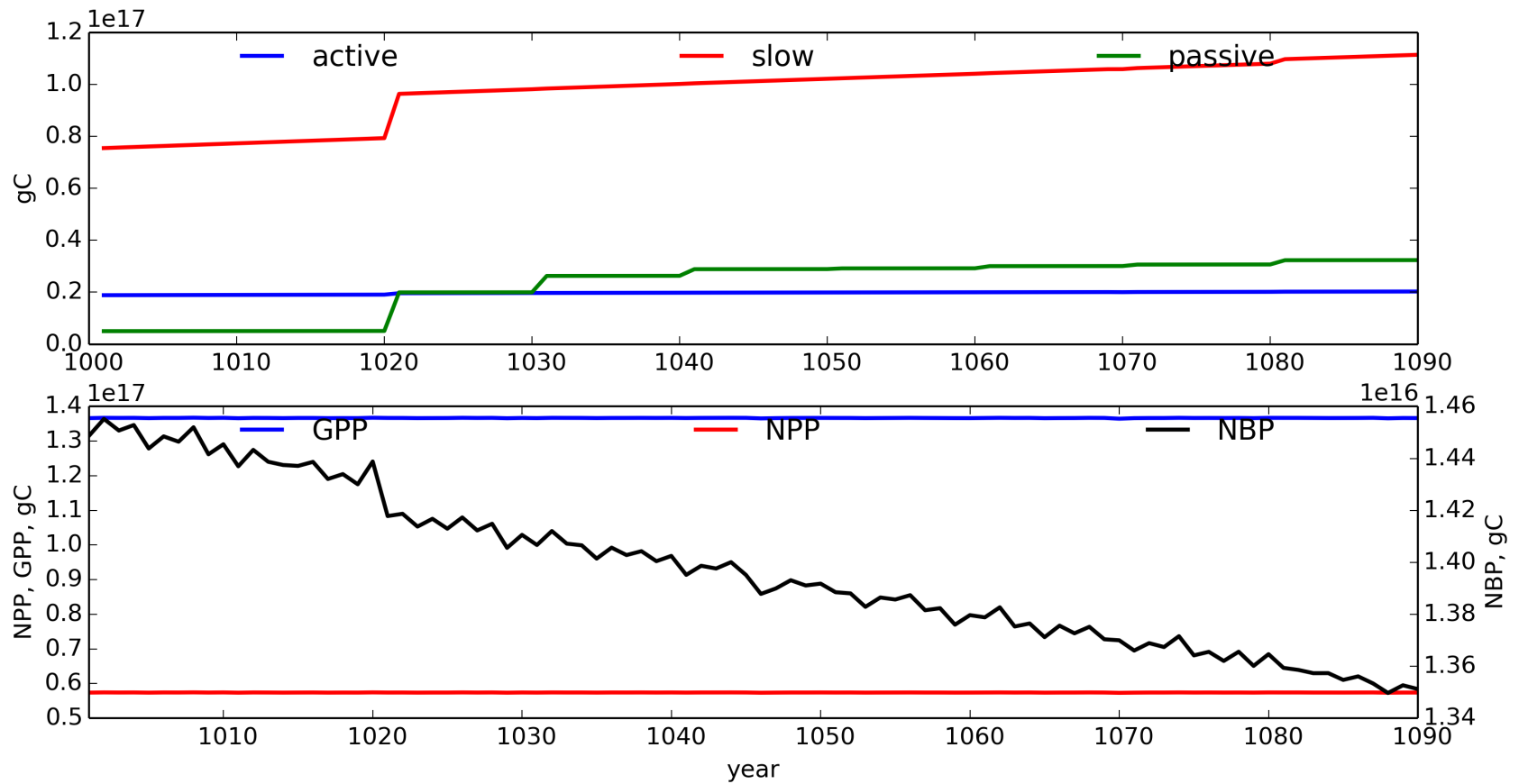
# Compare soil carbon pool from different configurations



X-axis represents the times of forcesoil being run, using 10Y|5000Y combination.

6 points (2\*3): red for single processor; black for using 2 processors with mpirun

# The evolution of global soil carbon pool after 7 times of forcesoil



Before forcesoil, orchidee was run for  $\sim 500$  years (with failed forcesoil in between with an older version), using 10Y|5000Y combination. **The global soil carbon pool grows very slowly.**



## Time consumed

	region	year(Y)	time	nodes	ppn
Daily	2 points	1000	1min	1	1
		2000	2min	1	1
		3000	3min	1	1
		5000	5min	1	1
		10000	10min	1	1
	6 points	5000	13min	1	1
	Globe	5000	9h-15h	4	4
Monthly	Globe	1000Y	35min	2	4 or 8

!! Remaining bug: with mpirun on global scale (2.5X3.75), forcesoil can be done very quickly (<30min) without reporting any error information, but soil carbon pool shows no increase.