

## Soil-air interface.

Using the functionality of COMETS, one can design simulations which go beyond in silico corollaries of lab experiments to make predictions for environments mimicking natural ecosystems, which is a necessary step for understanding natural ecology from first principles. In this example, we consider a simulation of a soil environment. We use source-and-sink functions to model how a root provides organic acids to the environment while removing ammonia (Huang et al 2014 Botany). While we restrict the root functionality to a source/sink, one could use functionality demonstrated above, for example extracellular enzymes, to generate feedback loops between microbe-produced metabolites and root exudation. We use fixed metabolite concentrations to mimic the largely unchanging air interface above a root, which generates an oxygen gradient. Additionally, since soil is characterized by strong spatial structure with many impenetrable barriers that localized interactions (Nunan 2017), we place "rock" barriers throughout the simulation area. A more complex simulation could use varying diffusion constants for metabolites, as described in a previous protocol (Virtual Petri Dish). Similarly, we use standard diffusion of biomass, but this could be changed to use pushing force or non-linear diffusion for a potentially increased realism.

```
In [1]: import cobra
import sys
import copy
import numpy as np
from matplotlib import pyplot as plt
import cometspy as c
```

Para nuestro proyecto, utilizaremos *Escherichia coli* (modelo iAF1260), *Pseudomonas putida* (modelo iJN1463) y *Saccharomyces Cerevisiae* (modelo iMM904), recuperados de la base de datos BIGG.

Cambiamos los bounds de las funciones objetivo de los modelos:

```
In [2]: model_dir = "./modelos" # model location
iAF = cobra.io.read_sbml_model(model_dir + '/iAF1260.xml')
iJN = cobra.io.read_sbml_model(model_dir + '/iJN1463.xml')

iAF.reactions.get_by_id('BIOMASS_Ec_iAF1260_core_59p81M').lower_bound = 0
iAF.reactions.get_by_id('BIOMASS_Ec_iAF1260_core_59p81M').upper_bound = 1000

iJN.reactions.get_by_id('BIOMASS_KT2440_WT3').lower_bound = 0
iJN.reactions.get_by_id('BIOMASS_KT2440_WT3').upper_bound = 1000
```

Luego se convierten estos modelos al formato de COMETS. Se utilizan funciones helper para dos cosas: a) Asegurar que el modelo en COMETS no confunda las reacciones de "sink" con las de exchange, ya que en COBRA están desbalanceadas y por tanto se parecen a las de exchange, y b) abrir todos los bounds de las reacciones de exchange, para que COMETS controle la composición del medio.

```
In [3]: iAF_comets = c.model(iAF)
iAF_comets.ensure_sinks_are_not_exchanges()
iAF_comets.open_exchanges()

iJN_comets = c.model(iJN)
iJN_comets.ensure_sinks_are_not_exchanges()
iJN_comets.open_exchanges()
```

El mundo que se simulará tendrá dimensiones de 30x30. El eje de la izquierda (x = 0) corresponde a la raíz, y el eje superior (y = 0) corresponde al aire. La biomasa y las rocas se distribuyen en el resto del grid. Donde hayan rocas no puede haber ni biomasa ni metabolitos, así que seleccionamos esos lugares primero. Para esta simulación, se generarán 3 rocas con un tamaño medio de 1 cuadraditos. Para generar las piedras se utiliza la función helper `grow_rocks`.

```
In [15]: from cometspy.utils import grow_rocks, pick_random_locations

grid_size = 5 # 100
n_rocks = 3 # 70
rock_locs = grow_rocks(n = n_rocks, xrange = [1,grid_size-1],yrange = [1,grid_size-1],mean_size = 1)
```

Cada especie será plantada en 20 lugares sin superponerse. Para esto se utiliza la función helper `pick_random_locations`, la cual toma como argumento una tupla generada anteriormente que marca lugares "prohibidos", como los cuadrados donde se encuentran las rocas.

Generamos una copia de `rock_locs` para no cambiarla accidentalmente, y la llamamos `forbidden_locs`:

```
In [16]: import copy
forbidden_locs = copy.deepcopy(rock_locs)
```

Ahora elegimos al azar los lugares para cada especie, y los vamos añadiendo a la lista `forbidden_locs` para que no se superpongan:

```
In [17]: founders_per_species = 2 # 60
```

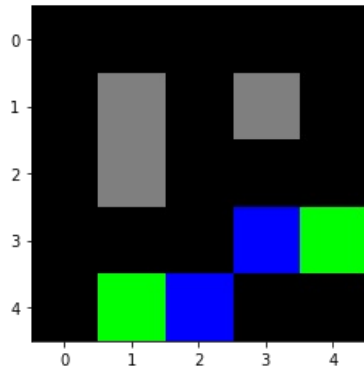
```
iAF_locs = pick_random_locations(n = founders_per_species,
                                xrange = [1,grid_size], yrange = [1,grid_size],
                                forbidden_locs = forbidden_locs)

forbidden_locs.extend(iAF_locs)
iJN_locs = pick_random_locations(founders_per_species, [1,grid_size],[1,grid_size], forbidden_locs)
```

Para graficar los lugares utilizamos matplotlib:

```
In [70]: from matplotlib import pyplot as plt
initial_image = np.zeros((grid_size,grid_size,3))
for rock in rock_locs:
    initial_image[rock[0],rock[1],0:3] = 0.5
for loc in iAF_locs:
    initial_image[loc[0],loc[1],1] = 1
for loc in iJN_locs:
    initial_image[loc[0],loc[1],2] = 1
plt.imshow(initial_image)
```

```
Out[70]: <matplotlib.image.AxesImage at 0x20d374a9310>
```



Generamos el layout y agregamos las rocas:

```
In [19]: # iAF
iAF_initial_pop = []
for loc in iJN_locs:
    iAF_initial_pop.append([loc[0], loc[1], 1.e-8])
iAF_comets.initial_pop = iAF_initial_pop
# iJN
iJN_initial_pop = []
for loc in iJN_locs:
    iJN_initial_pop.append([loc[0], loc[1], 1.e-8])
iJN_comets.initial_pop = iJN_initial_pop
```

Setteamos las poblaciones iniciales para cada especie, con esto los modelos están listos y los añadimos al layout:

```
In [42]: layout = c.layout([iAF_comets, iJN_comets])
layout.grid = [grid_size,grid_size]
layout.add_barriers(rock_locs)
```

Añadimos los metabolitos que estarán inicialmente disponibles en el ambiente. Usamos la función helper `add_typical_trace_metabolites()` para las trazas típicas. Bajamos el valor del oxígeno dado que la idea es que el que esté disponible difunda desde la atmósfera. Añadimos algunos metabolitos que no se añadieron con la función helper:

```
In [43]: layout.add_typical_trace_metabolites()
layout.set_specific_metabolite('o2_e',0.00001)
layout.set_specific_metabolite('hco3_e',1000)
layout.set_specific_metabolite('co2_e',1000)
layout.set_specific_metabolite('h2_e',1000)
layout.set_specific_metabolite('so3_e',1000)
layout.set_specific_metabolite('nh4_e',0.000001)

layout.set_specific_metabolite('glc_D_e',0.0000001)
layout.set_specific_metabolite('meoh_e',0.0000001)
layout.set_specific_metabolite('cys_L_e',0.0000001)
layout.set_specific_metabolite('nac_e',0.0000001)
```

Para la capa de aire, dejamos el oxígeno en un valor constante. Al fondo también dejamos al oxígeno en un valor fijo e igual a 0, para simular el efecto de difusión. De manera similar, hacemos lo mismo con el amoníaco y la raíz en la parte izquierda:

```
In [44]: # set static media of O2 and CO2 at the top and bottom-- the "air" and continuous loss of O2 downwards
for x in range(grid_size):
    layout.set_specific_static_at_location('o2_e', (x,0), .0001) # top
    layout.set_specific_static_at_location('o2_e', (x,grid_size-1), 0.) # bottom
    layout.set_specific_static_at_location('co2_e', (x,0), .0001)

for x in range(grid_size):
    layout.set_specific_static_at_location('nh4_e', (0,x), 0.0)
```

La raíz consume todo el amoníaco, pero es una fuente de ácidos orgánicos y metanol para el ambiente. Asumiendo una tasa fija:

```
In [55]: for x in range(grid_size):
    layout.set_specific_refresh_at_location('cit_e', (0,x), .000001)
    layout.set_specific_refresh_at_location('meoh_e', (0,x), .000001)
    layout.set_specific_refresh_at_location('succ_e', (0,x), .000001)
```

El layout y los modelos están listos, ahora setteamos los parámetros de la simulación:

```
In [56]: params = c.params()
params.set_param('timeStep', 0.1)
params.set_param('maxCycles', 1000)
params.set_param('maxSpaceBiomass', 10)
params.set_param('deathRate', 0.0001) # die at rate of 1/10000 per hour
params.set_param('writeBiomassLog', True)
params.set_param('BiomassLogRate', 500)
params.set_param('writeMediaLog', True)
params.set_param('MediaLogRate', 500)
params.set_param('writeFluxLog', True)
params.set_param('FluxLogRate', 500)
params.set_param('numRunThreads', 3)
params.set_param('defaultKm', 0.000001)
```

Ahora creamos el objeto de la simulación y la corremos. Ojito que se demora y el pc empieza a despegar.

```
In [57]: sim = c.comets(layout, params)
sim.run(False)
```

Running COMETS simulation ...  
Done!

```
In [58]: print(sim.run_output)
print(sim.run_errors)
```

```
-script
running script file: C:\Users\ronal\Desktop\Testing\Simulacion_suelo_testing_2/.current_script_0x20d3707a790
Current Java version: 17.0.1
Parameters file .current_global_0x20d3707a790 loaded.
Parameters file .current_package_0x20d3707a790 loaded.
Loading layout file '.current_layout_0x20d3707a790'...
null\COMETS_manifest.txt (El sistema no puede encontrar la ruta especificada)
Unable to initialize manifest file.
Continuing without writing manifest file.
Found 2 model files!
Loading '.\iAF1260.cmd' ...
Academic license - for non-commercial use only - expires 2021-12-02
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Done!
Testing default parameters...
Done!
Optimizer status code = 5 (looks ok!)
objective solution = 395.7352921962825
Loading '.\iJN1463.cmd' ...
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Done!
Testing default parameters...
Done!
Optimizer status code = 5 (looks ok!)
objective solution = 237.06607191111198
Constructing world...
Done!
medialist      12dgr160_e      12dgr180_e      12ppd_R_e      12ppd_S_e      13damp_e      14glucan_e
15dap_e lag160_e      lag180_e      lag181d9_e      lag182d9d12_e  23camp_e      23ccmp_e      23cgm_e
23cump_e      23dappa_e      25dkglcn_e      26dap_M_e      2ameph_e      2ddglcn_e      2dhglcn_e
2m35mdntha_e  34dhbz_e      34dhcinm_e      34dhpac_e      34dhphe_e      35dnta_e      3amp_e      3cmp_e
3gmp_e 3h4atb_e      3hcinm_e      3hppn_e      3mb_e      3oxoadp_e      3ump_e      4abut_e      4hbz_e
```

4hoxpacd_e	4hpro_DC_e	4hpro_LT_e	4hptn_e	4oxptn_e	5aptn_e	5dglcn_e	5g2oxpt_e
5mcsn_e	5oxpro_e	6atha_e	6hnac_e	LalaDgluMdapDala_e	LalaDgluMdap_e	LalaLglu_e	Ncbmpts_e
R3hdec4e_e	R_3h4atba_e	R_3h6atha_e	R_3hcmrs7e_e	R_3hdcaa_e	R_3hdd5ea_e	R_3hdd6e_e	R_3hdd6e_e
R_3hdda_e	R_3hhdca_e	R_3hhpa_e	R_3hhxa_e	R_3hnonaa_e	R_3hocta_e	R_3hpba_e	R_3hpt_e
R_3hpdeca_e	R_3hphpa_e	R_3hphxa_e	R_3hpnona_e	R_3hpocta_e	R_3hppta_e		
R_3htd58e_e	R_3htd5e_e	R_3httdca_e	T4hcinm_e	ac_e	acac_e	acald_e	acgallp_e
cgam1p_e	acgam_e	acmana_e	acmtsoxin_e	acmum_e	acnam_e	acolipa_e	acon_C_e
acser_e	actn_R_e	ade_e	adn_e	adocbl_e	ag_e	agm_e	akg_e
alaala_e	alahis_e	alaleu_e	alathr_e	alatr_p_e	ala_B_e	ala_D_e	ala_L_e
algac_MG_32_e	algac_MG_41_e	algac_M_e	all_D_e	alltn_e	amp_e	anhgm_e	apc_e
arbtn_e	arbtn_fe3_e	arg_D_e	arg_L_e	ascb_L_e	asn_D_e	asn_L_e	aso3_e
aso4_e	asp_L_e	balaala_e	balabala_e	balagly_e	balaleu_e	balamd_e	bhb_e
biliverd_e	btd_RR_e	btn_e	but_e	butso3_e	bz_e	ca2_e	carn_e
cb11_e	cd2_e	cell4_e	cgly_e	chol_e	chole_e	cinm_e	cit_e
co2_e	co_e	cobalt2_e	colipa_e	confrl_e	cpgn_e	cpgn_un_e	creat_e
cro4_e	crt_n_e	csn_e	cu2_e	cu_e	cyan_e	cynt_e	cys_D_e
4one_e	dad_2_e	dag181d9_e	dag182d9d12_e	damp_e	dca_e	dcmp_e	dcyt_e
dgudbutn_e	dha_e	dimp_e	din_e	dmanur_e	dmgly_e	dms_e	dms_o2_e
duri_e	eca4colipa_e	ecto_L_e	enlipa_e	enter_e	etha_e	ethso3_e	dopa_e
fcmcbtt_e	fe2_e	fe3_e	fe3dcit_e	fe3dhbzs_e	fe3hox_e	fe3hox_un_e	fe3mcbtt_e
fe3pyovd_e	fe3pyovd_kt_e	fecrm_e	fecrm_un_e	feenter_e	feoxam_e	feoxam_un_e	fer_e
for_e	fru_e	frulys_e	fruur_e	fuc_L_e	fum_e	glp_e	g3pc_e
g6p_e	ga_e	gallp_e	gal_bd_e	gal_e	galct_D_e	galctn_D_e	galctn_L_e
am6p_e	gam_e	gbbtn_e	gdp_e	glc_D_e	glcn_e	glcr_e	glcur1p_e
glutar_e	gly_e	glyald_e	glyb_e	glyc2p_e	glyc3p_e	glyc_R_e	glyc_e
glycol_e	glygl_n_e	glyglu_e	glygly_e	glymet_e	glyphe_e	glyser_e	
gmp_e	gsn_e	gthox_e	gthrd_e	gtp_e	gua_e	gudac_e	gudptn_e
hacolipa_e	halipa_e	hco3_e	hcys_L_e	hdca_e	hdcea_e	hg2_e	hgentis_e
hisp_gly_e	hishis_e	hom_L_e	hpta_e	hxa_e	hxan_e	icit_e	idon_L_e
imp_e	ind3ac_e	indole_e	inost_e	ins_e	isetac_e	k_e	kdo2lipid4_e
lac_L_e	lcts_e	leu_D_e	leu_L_e	leuleu_e	lipa_cold_e	lipa_e	lnlc_e
lys_D_e	lys_L_e	lyx_L_e	m_xyl_e	mal_D_e	mal_L_e	malt_e	malthx_e
maltpt_e	malttr_e	maltttr_e	man6p_e	man_e	manglyc_e	manur_e	mcbtt_e
met_D_e	met_L_e	metsox_R_L_e	metsox_S_L_e	mg2_e	minohp_e	mmet_e	mn2_e
mobd_e	mso3_e	mtsoxin_e	n2o_e	n2one_e	nal_e	nac_e	nh4_e
nona_e	o16a4colipa_e	o2_e	o2s_e	o_xyl_e	oaa_e	ocdca_e	ocdcea_e
orot_e	oxa_e	p_xyl_e	pac_e	pacald_e	pb2_e	pea_e	peamn_e
phedca_e	phehpa_e	phehxa_e	pheme_e	phenona_e	pheocta_e	phept_e	phpyr_e
pnto_R_e	ppa_e	ppal_e	ppi_e	pppn_e	ppt_e	pptrn_e	prealg_MG_14_e
prealg_MG_41_e	prealginate_G_e	pro_D_e	pro_L_e	progly_e	psclys_e	pser_L_e	
pta_e	ptrc_e	ptsla_e	pydam_e	pyovd_kt_e	pyr_e	quin_e	r5p_e
sbt_D_e	sel_e	ser_D_e	ser_L_e	sheme_e	skm_e	so2_e	so3_e
sucr_e	sulfac_e	tag160_e	tag180_e	tag181d9_e	tag182d9d12_e	tartr_L_e	taur_e
tcynt_e	thm_e	thr_L_e	thrp_e	thym_e	thymd_e	tma_e	tmanur_e
trp_L_e	tsul_e	tt_dca_e	tt_dcea_e	ttrcyc_e	tungs_e	tym_e	tyr_D_e
tyrp_e	uacgam_e	udpacgal_e	udpg_e	udpgal_e	udpglcur_e	ump_e	und2one_e
urea_e	uri_e	vacc_e	val_D_e	val_L_e	vanln_e	vanlt_e	xan_e
xylu_L_e	zn2_e					xmp_e	xtsn_e
							xyl_D_e

Cycle 1

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FBARunThread-0 starting up.

FBARunThread-2 starting up.

FBARunThread-1 starting up.

Total biomass:

Model iAF1260.cmd: 2.1214319283571758E-8

Model iJN1463.cmd: 2.1065564102505374E-8

Cycle 2

Total biomass:

Model iAF1260.cmd: 2.2510293993338902E-8

Model iJN1463.cmd: 2.2185617194354116E-8

Cycle 3

Total biomass:

Model iAF1260.cmd: 2.422646269708964E-8

Model iJN1463.cmd: 2.355048983756944E-8

Cycle 4

Total biomass:

Model iAF1260.cmd: 2.6137756219803416E-8

Model iJN1463.cmd: 2.5007590732281046E-8

Cycle 5

Total biomass:

Model iAF1260.cmd: 2.8216949899006592E-8

Model iJN1463.cmd: 2.655237956324009E-8

Cycle 6  
Total biomass:  
Model iAF1260.cmd: 3.04760476966929E-8  
Model iJN1463.cmd: 2.8190124777144725E-8  
Cycle 7  
Total biomass:  
Model iAF1260.cmd: 3.292843357166008E-8  
Model iJN1463.cmd: 2.992641203336718E-8  
Cycle 8  
Total biomass:  
Model iAF1260.cmd: 3.5588669726708376E-8  
Model iJN1463.cmd: 3.1767162060541575E-8  
Cycle 9  
Total biomass:  
Model iAF1260.cmd: 3.8472547561001774E-8  
Model iJN1463.cmd: 3.371865036437981E-8  
Cycle 10  
Total biomass:  
Model iAF1260.cmd: 4.159717224059273E-8  
Model iJN1463.cmd: 3.578752830531191E-8  
Cycle 11  
Total biomass:  
Model iAF1260.cmd: 4.498105785924979E-8  
Model iJN1463.cmd: 3.798084549517713E-8  
Cycle 12  
Total biomass:  
Model iAF1260.cmd: 4.8644231047941786E-8  
Model iJN1463.cmd: 4.030607355260847E-8  
Cycle 13  
Total biomass:  
Model iAF1260.cmd: 5.2608343225908574E-8  
Model iJN1463.cmd: 4.277113128086162E-8  
Cycle 14  
Total biomass:  
Model iAF1260.cmd: 5.6896749526470376E-8  
Model iJN1463.cmd: 4.5384411345881225E-8  
Cycle 15  
Total biomass:  
Model iAF1260.cmd: 6.15330935375068E-8  
Model iJN1463.cmd: 4.815480853449788E-8  
Cycle 16  
Total biomass:  
Model iAF1260.cmd: 6.654500943345264E-8  
Model iJN1463.cmd: 5.1091749679467696E-8  
Cycle 17  
Total biomass:  
Model iAF1260.cmd: 7.188913942148017E-8  
Model iJN1463.cmd: 5.419842699416165E-8  
Cycle 18  
Total biomass:  
Model iAF1260.cmd: 7.737060748733934E-8  
Model iJN1463.cmd: 5.746515319781609E-8  
Cycle 19  
Total biomass:  
Model iAF1260.cmd: 8.300674021211872E-8  
Model iJN1463.cmd: 6.090310596649003E-8  
Cycle 20  
Total biomass:  
Model iAF1260.cmd: 8.880183024457715E-8  
Model iJN1463.cmd: 6.452446572608486E-8  
Cycle 21  
Total biomass:  
Model iAF1260.cmd: 9.469710285107822E-8  
Model iJN1463.cmd: 6.834870830229285E-8  
Cycle 22  
Total biomass:  
Model iAF1260.cmd: 1.0074316863197377E-7  
Model iJN1463.cmd: 7.237016370183267E-8  
Cycle 23  
Total biomass:  
Model iAF1260.cmd: 1.0701500395052655E-7  
Model iJN1463.cmd: 7.658702625536538E-8  
Cycle 24  
Total biomass:  
Model iAF1260.cmd: 1.135234464767206E-7  
Model iJN1463.cmd: 8.10121171888075E-8  
Cycle 25  
Total biomass:  
Model iAF1260.cmd: 1.2031218757832722E-7  
Model iJN1463.cmd: 8.565852572965644E-8  
Cycle 26  
Total biomass:  
Model iAF1260.cmd: 1.2743856270326457E-7

Model iJN1463.cmd: 9.052655917752105E-8  
Cycle 27  
Total biomass:  
Model iAF1260.cmd: 1.3483300969118477E-7  
Model iJN1463.cmd: 9.561956855738601E-8  
Cycle 28  
Total biomass:  
Model iAF1260.cmd: 1.4237636980276618E-7  
Model iJN1463.cmd: 1.0093246958842198E-7  
Cycle 29  
Total biomass:  
Model iAF1260.cmd: 1.4996344815685834E-7  
Model iJN1463.cmd: 1.0644336380142639E-7  
Cycle 30  
Total biomass:  
Model iAF1260.cmd: 1.5750811288435054E-7  
Model iJN1463.cmd: 1.1222233250939841E-7  
Cycle 31  
Total biomass:  
Model iAF1260.cmd: 1.6504669825458644E-7  
Model iJN1463.cmd: 1.1825207023250272E-7  
Cycle 32  
Total biomass:  
Model iAF1260.cmd: 1.727363654771523E-7  
Model iJN1463.cmd: 1.2453725633025764E-7  
Cycle 33  
Total biomass:  
Model iAF1260.cmd: 1.8059083331255487E-7  
Model iJN1463.cmd: 1.310816117956692E-7  
Cycle 34  
Total biomass:  
Model iAF1260.cmd: 1.8860807241944665E-7  
Model iJN1463.cmd: 1.3789022997619357E-7  
Cycle 35  
Total biomass:  
Model iAF1260.cmd: 1.9677568820203967E-7  
Model iJN1463.cmd: 1.4499341511117837E-7  
Cycle 36  
Total biomass:  
Model iAF1260.cmd: 2.0506703489543742E-7  
Model iJN1463.cmd: 1.5240244384619286E-7  
Cycle 37  
Total biomass:  
Model iAF1260.cmd: 2.1351885879299135E-7  
Model iJN1463.cmd: 1.6014951143897772E-7  
Cycle 38  
Total biomass:  
Model iAF1260.cmd: 2.2221115087942083E-7  
Model iJN1463.cmd: 1.6825717474801426E-7  
Cycle 39  
Total biomass:  
Model iAF1260.cmd: 2.311669527078988E-7  
Model iJN1463.cmd: 1.7674944898055684E-7  
Cycle 40  
Total biomass:  
Model iAF1260.cmd: 2.4041706295128133E-7  
Model iJN1463.cmd: 1.8567561085813804E-7  
Cycle 41  
Total biomass:  
Model iAF1260.cmd: 2.4995596642774023E-7  
Model iJN1463.cmd: 1.9503540547469684E-7  
Cycle 42  
Total biomass:  
Model iAF1260.cmd: 2.598002026801597E-7  
Model iJN1463.cmd: 2.0485570552353845E-7  
Cycle 43  
Total biomass:  
Model iAF1260.cmd: 2.699578579700893E-7  
Model iJN1463.cmd: 2.1516190677831235E-7  
Cycle 44  
Total biomass:  
Model iAF1260.cmd: 2.8045954171794665E-7  
Model iJN1463.cmd: 2.260047765097204E-7  
Cycle 45  
Total biomass:  
Model iAF1260.cmd: 2.913318530461204E-7  
Model iJN1463.cmd: 2.3738769316379458E-7  
Cycle 46  
Total biomass:  
Model iAF1260.cmd: 3.0259663144075325E-7  
Model iJN1463.cmd: 2.4933736875944584E-7  
Cycle 47  
Total biomass:

Model iAF1260.cmd: 3.142731180827297E-7  
Model iJN1463.cmd: 2.6188115446184314E-7  
Cycle 48  
Total biomass:  
Model iAF1260.cmd: 3.263171068500171E-7  
Model iJN1463.cmd: 2.750473488570091E-7  
Cycle 49  
Total biomass:  
Model iAF1260.cmd: 3.3878358324853206E-7  
Model iJN1463.cmd: 2.888630315199963E-7  
Cycle 50  
Total biomass:  
Model iAF1260.cmd: 3.516823341371541E-7  
Model iJN1463.cmd: 3.033611170248969E-7  
Cycle 51  
Total biomass:  
Model iAF1260.cmd: 3.65036297050376E-7  
Model iJN1463.cmd: 3.1857680113263713E-7  
Cycle 52  
Total biomass:  
Model iAF1260.cmd: 3.788813011799887E-7  
Model iJN1463.cmd: 3.345475262197132E-7  
Cycle 53  
Total biomass:  
Model iAF1260.cmd: 3.932411499399886E-7  
Model iJN1463.cmd: 3.5131281862906955E-7  
Cycle 54  
Total biomass:  
Model iAF1260.cmd: 4.081380104527038E-7  
Model iJN1463.cmd: 3.689133447716319E-7  
Cycle 55  
Total biomass:  
Model iAF1260.cmd: 4.2359455487186456E-7  
Model iJN1463.cmd: 3.8739128574630774E-7  
Cycle 56  
Total biomass:  
Model iAF1260.cmd: 4.396328195016895E-7  
Model iJN1463.cmd: 4.067907816639289E-7  
Cycle 57  
Total biomass:  
Model iAF1260.cmd: 4.562753968977745E-7  
Model iJN1463.cmd: 4.271579979806201E-7  
Cycle 58  
Total biomass:  
Model iAF1260.cmd: 4.735452547190958E-7  
Model iJN1463.cmd: 4.485408874419935E-7  
Cycle 59  
Total biomass:  
Model iAF1260.cmd: 4.914665898653379E-7  
Model iJN1463.cmd: 4.7099053870392594E-7  
Cycle 60  
Total biomass:  
Model iAF1260.cmd: 5.100642323906154E-7  
Model iJN1463.cmd: 4.945601361713655E-7  
Cycle 61  
Total biomass:  
Model iAF1260.cmd: 5.293638303349648E-7  
Model iJN1463.cmd: 5.193055319510387E-7  
Cycle 62  
Total biomass:  
Model iAF1260.cmd: 5.493919235807884E-7  
Model iJN1463.cmd: 5.45285379867309E-7  
Cycle 63  
Total biomass:  
Model iAF1260.cmd: 5.701760387545075E-7  
Model iJN1463.cmd: 5.725612543558189E-7  
Cycle 64  
Total biomass:  
Model iAF1260.cmd: 5.915925799999635E-7  
Model iJN1463.cmd: 6.01197797787319E-7  
Cycle 65  
Total biomass:  
Model iAF1260.cmd: 6.134938991525442E-7  
Model iJN1463.cmd: 6.312628742712777E-7  
Cycle 66  
Total biomass:  
Model iAF1260.cmd: 6.358404627277564E-7  
Model iJN1463.cmd: 6.628276788848511E-7  
Cycle 67  
Total biomass:  
Model iAF1260.cmd: 6.586643301972272E-7  
Model iJN1463.cmd: 6.959924760927594E-7  
Cycle 68

Total biomass:  
Model iAF1260.cmd: 6.819963330956452E-7  
Model iJN1463.cmd: 7.308137771467386E-7  
Cycle 69  
Total biomass:  
Model iAF1260.cmd: 7.059567788715854E-7  
Model iJN1463.cmd: 7.673743166864515E-7  
Cycle 70  
Total biomass:  
Model iAF1260.cmd: 7.305529044692963E-7  
Model iJN1463.cmd: 8.057609773177251E-7  
Cycle 71  
Total biomass:  
Model iAF1260.cmd: 7.557605960882513E-7  
Model iJN1463.cmd: 8.460918380785858E-7  
Cycle 72  
Total biomass:  
Model iAF1260.cmd: 7.813892996374239E-7  
Model iJN1463.cmd: 8.884393140658287E-7  
Cycle 73  
Total biomass:  
Model iAF1260.cmd: 8.074347471652584E-7  
Model iJN1463.cmd: 9.329042871584296E-7  
Cycle 74  
Total biomass:  
Model iAF1260.cmd: 8.339642059676225E-7  
Model iJN1463.cmd: 9.795926970978848E-7  
Cycle 75  
Total biomass:  
Model iAF1260.cmd: 8.610139240872208E-7  
Model iJN1463.cmd: 1.028615790151637E-6  
Cycle 76  
Total biomass:  
Model iAF1260.cmd: 8.885597221909021E-7  
Model iJN1463.cmd: 1.0800903832677367E-6  
Cycle 77  
Total biomass:  
Model iAF1260.cmd: 9.166401334616679E-7  
Model iJN1463.cmd: 1.1341391422261878E-6  
Cycle 78  
Total biomass:  
Model iAF1260.cmd: 9.453299792654129E-7  
Model iJN1463.cmd: 1.1908908975200664E-6  
Cycle 79  
Total biomass:  
Model iAF1260.cmd: 9.74691987907711E-7  
Model iJN1463.cmd: 1.2504809427431673E-6  
Cycle 80  
Total biomass:  
Model iAF1260.cmd: 1.004797050662726E-6  
Model iJN1463.cmd: 1.3130513286695118E-6  
Cycle 81  
Total biomass:  
Model iAF1260.cmd: 1.0356958295240257E-6  
Model iJN1463.cmd: 1.378751212729747E-6  
Cycle 82  
Total biomass:  
Model iAF1260.cmd: 1.0674167375190558E-6  
Model iJN1463.cmd: 1.4473990459136615E-6  
Cycle 83  
Total biomass:  
Model iAF1260.cmd: 1.099984022684612E-6  
Model iJN1463.cmd: 1.518799424622222E-6  
Cycle 84  
Total biomass:  
Model iAF1260.cmd: 1.1334310929352749E-6  
Model iJN1463.cmd: 1.5927951571452798E-6  
Cycle 85  
Total biomass:  
Model iAF1260.cmd: 1.1677898296167833E-6  
Model iJN1463.cmd: 1.6695461789911108E-6  
Cycle 86  
Total biomass:  
Model iAF1260.cmd: 1.2030899096369833E-6  
Model iJN1463.cmd: 1.7492118465211376E-6  
Cycle 87  
Total biomass:  
Model iAF1260.cmd: 1.2393343045033553E-6  
Model iJN1463.cmd: 1.8319101366630702E-6  
Cycle 88  
Total biomass:  
Model iAF1260.cmd: 1.2765383868896208E-6  
Model iJN1463.cmd: 1.917260409780574E-6



Cycle 89  
Total biomass:  
Model iAF1260.cmd: 1.3147320390430815E-6  
Model iJN1463.cmd: 2.005360666501111E-6  
Cycle 90  
Total biomass:  
Model iAF1260.cmd: 1.3539529074653601E-6  
Model iJN1463.cmd: 2.0963858591813116E-6  
Cycle 91  
Total biomass:  
Model iAF1260.cmd: 1.3942416046171284E-6  
Model iJN1463.cmd: 2.190252956400728E-6  
Cycle 92  
Total biomass:  
Model iAF1260.cmd: 1.4356338752047986E-6  
Model iJN1463.cmd: 2.2872545031732893E-6  
Cycle 93  
Total biomass:  
Model iAF1260.cmd: 1.4781656582512588E-6  
Model iJN1463.cmd: 2.387713255830355E-6  
Cycle 94  
Total biomass:  
Model iAF1260.cmd: 1.521880977749923E-6  
Model iJN1463.cmd: 2.491900083264753E-6  
Cycle 95  
Total biomass:  
Model iAF1260.cmd: 1.5668470628777318E-6  
Model iJN1463.cmd: 2.60007079905834E-6  
Cycle 96  
Total biomass:  
Model iAF1260.cmd: 1.6130775971513805E-6  
Model iJN1463.cmd: 2.7125173997659363E-6  
Cycle 97  
Total biomass:  
Model iAF1260.cmd: 1.6606081733372018E-6  
Model iJN1463.cmd: 2.8294684419483994E-6  
Cycle 98  
Total biomass:  
Model iAF1260.cmd: 1.70948476964501E-6  
Model iJN1463.cmd: 2.9510367517149862E-6  
Cycle 99  
Total biomass:  
Model iAF1260.cmd: 1.759890994122327E-6  
Model iJN1463.cmd: 3.077436192727253E-6  
Cycle 100  
Total biomass:  
Model iAF1260.cmd: 1.8114606115627461E-6  
Model iJN1463.cmd: 3.2088402020969726E-6  
Cycle 101  
Total biomass:  
Model iAF1260.cmd: 1.8641922178630585E-6  
Model iJN1463.cmd: 3.3453636685474193E-6  
Cycle 102  
Total biomass:  
Model iAF1260.cmd: 1.917815850553105E-6  
Model iJN1463.cmd: 3.487096266738678E-6  
Cycle 103  
Total biomass:  
Model iAF1260.cmd: 1.971893543871079E-6  
Model iJN1463.cmd: 3.634023489288403E-6  
Cycle 104  
Total biomass:  
Model iAF1260.cmd: 2.0267000071616314E-6  
Model iJN1463.cmd: 3.784888944014144E-6  
Cycle 105  
Total biomass:  
Model iAF1260.cmd: 2.0821581887222613E-6  
Model iJN1463.cmd: 3.938276446483031E-6  
Cycle 106  
Total biomass:  
Model iAF1260.cmd: 2.1377805074410816E-6  
Model iJN1463.cmd: 4.0944423164959834E-6  
Cycle 107  
Total biomass:  
Model iAF1260.cmd: 2.193686165773553E-6  
Model iJN1463.cmd: 4.2537683590362834E-6  
Cycle 108  
Total biomass:  
Model iAF1260.cmd: 2.249659065898077E-6  
Model iJN1463.cmd: 4.414660412398516E-6  
Cycle 109  
Total biomass:  
Model iAF1260.cmd: 2.305585376198958E-6

Model iJN1463.cmd: 4.577868463416074E-6  
Cycle 110  
Total biomass:  
Model iAF1260.cmd: 2.361184386523171E-6  
Model iJN1463.cmd: 4.737623171757147E-6  
Cycle 111  
Total biomass:  
Model iAF1260.cmd: 2.4166911497021006E-6  
Model iJN1463.cmd: 4.888881155565351E-6  
Cycle 112  
Total biomass:  
Model iAF1260.cmd: 2.472431315640555E-6  
Model iJN1463.cmd: 5.030631028917941E-6  
Cycle 113  
Total biomass:  
Model iAF1260.cmd: 2.5282387152603743E-6  
Model iJN1463.cmd: 5.161949634018479E-6  
Cycle 114  
Total biomass:  
Model iAF1260.cmd: 2.5835023564797243E-6  
Model iJN1463.cmd: 5.2790546534835674E-6  
Cycle 115  
Total biomass:  
Model iAF1260.cmd: 2.63653924767102E-6  
Model iJN1463.cmd: 5.382135532000684E-6  
Cycle 116  
Total biomass:  
Model iAF1260.cmd: 2.686706920512131E-6  
Model iJN1463.cmd: 5.4712627826752304E-6  
Cycle 117  
Total biomass:  
Model iAF1260.cmd: 2.734443617924381E-6  
Model iJN1463.cmd: 5.547871904326553E-6  
Cycle 118  
Total biomass:  
Model iAF1260.cmd: 2.778369180104552E-6  
Model iJN1463.cmd: 5.615128386269619E-6  
Cycle 119  
Total biomass:  
Model iAF1260.cmd: 2.82013547161476E-6  
Model iJN1463.cmd: 5.676536812420211E-6  
Cycle 120  
Total biomass:  
Model iAF1260.cmd: 2.860002136555773E-6  
Model iJN1463.cmd: 5.731805681149088E-6  
Cycle 121  
Total biomass:  
Model iAF1260.cmd: 2.898417096210741E-6  
Model iJN1463.cmd: 5.782818489875374E-6  
Cycle 122  
Total biomass:  
Model iAF1260.cmd: 2.9359998261469034E-6  
Model iJN1463.cmd: 5.83123305675917E-6  
Cycle 123  
Total biomass:  
Model iAF1260.cmd: 2.9729041996873224E-6  
Model iJN1463.cmd: 5.8781888404768695E-6  
Cycle 124  
Total biomass:  
Model iAF1260.cmd: 3.0095192822172673E-6  
Model iJN1463.cmd: 5.9242866527047675E-6  
Cycle 125  
Total biomass:  
Model iAF1260.cmd: 3.045983843629224E-6  
Model iJN1463.cmd: 5.969980612956231E-6  
Cycle 126  
Total biomass:  
Model iAF1260.cmd: 3.082465414928351E-6  
Model iJN1463.cmd: 6.015495297266723E-6  
Cycle 127  
Total biomass:  
Model iAF1260.cmd: 3.1190172623246633E-6  
Model iJN1463.cmd: 6.060978132034114E-6  
Cycle 128  
Total biomass:  
Model iAF1260.cmd: 3.1556710799879885E-6  
Model iJN1463.cmd: 6.106466989000839E-6  
Cycle 129  
Total biomass:  
Model iAF1260.cmd: 3.192250161014749E-6  
Model iJN1463.cmd: 6.151153122061936E-6  
Cycle 130  
Total biomass:

Model iAF1260.cmd: 3.2286343378163393E-6  
Model iJN1463.cmd: 6.1952845954326915E-6  
Cycle 131  
Total biomass:  
Model iAF1260.cmd: 3.2649257998471926E-6  
Model iJN1463.cmd: 6.2390723173043935E-6  
Cycle 132  
Total biomass:  
Model iAF1260.cmd: 3.301141969300022E-6  
Model iJN1463.cmd: 6.282644094753969E-6  
Cycle 133  
Total biomass:  
Model iAF1260.cmd: 3.3373687134600726E-6  
Model iJN1463.cmd: 6.326085484858378E-6  
Cycle 134  
Total biomass:  
Model iAF1260.cmd: 3.373606696029007E-6  
Model iJN1463.cmd: 6.369431424910019E-6  
Cycle 135  
Total biomass:  
Model iAF1260.cmd: 3.4096120107080095E-6  
Model iJN1463.cmd: 6.412715024974758E-6  
Cycle 136  
Total biomass:  
Model iAF1260.cmd: 3.4457550308865807E-6  
Model iJN1463.cmd: 6.45589612677488E-6  
Cycle 137  
Total biomass:  
Model iAF1260.cmd: 3.4819613334787253E-6  
Model iJN1463.cmd: 6.499057036144015E-6  
Cycle 138  
Total biomass:  
Model iAF1260.cmd: 3.5181521917970914E-6  
Model iJN1463.cmd: 6.542269580947793E-6  
Cycle 139  
Total biomass:  
Model iAF1260.cmd: 3.5541548846630265E-6  
Model iJN1463.cmd: 6.585436649164551E-6  
Cycle 140  
Total biomass:  
Model iAF1260.cmd: 3.5902413664686996E-6  
Model iJN1463.cmd: 6.628620813362158E-6  
Cycle 141  
Total biomass:  
Model iAF1260.cmd: 3.6263541649583884E-6  
Model iJN1463.cmd: 6.672031075213097E-6  
Cycle 142  
Total biomass:  
Model iAF1260.cmd: 3.6625779221457723E-6  
Model iJN1463.cmd: 6.715701703371651E-6  
Cycle 143  
Total biomass:  
Model iAF1260.cmd: 3.698919055552134E-6  
Model iJN1463.cmd: 6.759666958024455E-6  
Cycle 144  
Total biomass:  
Model iAF1260.cmd: 3.735369013155519E-6  
Model iJN1463.cmd: 6.803920130684859E-6  
Cycle 145  
Total biomass:  
Model iAF1260.cmd: 3.7718305968090842E-6  
Model iJN1463.cmd: 6.84850262275116E-6  
Cycle 146  
Total biomass:  
Model iAF1260.cmd: 3.808230977918241E-6  
Model iJN1463.cmd: 6.892055385106244E-6  
Cycle 147  
Total biomass:  
Model iAF1260.cmd: 3.844495621790651E-6  
Model iJN1463.cmd: 6.935501951198295E-6  
Cycle 148  
Total biomass:  
Model iAF1260.cmd: 3.8806745415603706E-6  
Model iJN1463.cmd: 6.97897922839947E-6  
Cycle 149  
Total biomass:  
Model iAF1260.cmd: 3.916858430654211E-6  
Model iJN1463.cmd: 7.02259335371223E-6  
Cycle 150  
Total biomass:  
Model iAF1260.cmd: 3.9530927320179315E-6  
Model iJN1463.cmd: 7.066324892453503E-6  
Cycle 151

Total biomass:  
Model iAF1260.cmd: 3.9894303384479E-6  
Model iJN1463.cmd: 7.110217648001731E-6  
Cycle 152  
Total biomass:  
Model iAF1260.cmd: 4.025839698982593E-6  
Model iJN1463.cmd: 7.154273127892217E-6  
Cycle 153  
Total biomass:  
Model iAF1260.cmd: 4.062175273912338E-6  
Model iJN1463.cmd: 7.1972078613325976E-6  
Cycle 154  
Total biomass:  
Model iAF1260.cmd: 4.098483471063785E-6  
Model iJN1463.cmd: 7.2401107697190614E-6  
Cycle 155  
Total biomass:  
Model iAF1260.cmd: 4.134802253362492E-6  
Model iJN1463.cmd: 7.282963907746417E-6  
Cycle 156  
Total biomass:  
Model iAF1260.cmd: 4.170984496926802E-6  
Model iJN1463.cmd: 7.3257096240774436E-6  
Cycle 157  
Total biomass:  
Model iAF1260.cmd: 4.2074525840270186E-6  
Model iJN1463.cmd: 7.368190352227809E-6  
Cycle 158  
Total biomass:  
Model iAF1260.cmd: 4.244121371411298E-6  
Model iJN1463.cmd: 7.41054137900193E-6  
Cycle 159  
Total biomass:  
Model iAF1260.cmd: 4.2809025204608535E-6  
Model iJN1463.cmd: 7.452747305722184E-6  
Cycle 160  
Total biomass:  
Model iAF1260.cmd: 4.317549430453585E-6  
Model iJN1463.cmd: 7.495094271445709E-6  
Cycle 161  
Total biomass:  
Model iAF1260.cmd: 4.3541961394551805E-6  
Model iJN1463.cmd: 7.537499417705729E-6  
Cycle 162  
Total biomass:  
Model iAF1260.cmd: 4.390853765260069E-6  
Model iJN1463.cmd: 7.579995358042146E-6  
Cycle 163  
Total biomass:  
Model iAF1260.cmd: 4.427696418425792E-6  
Model iJN1463.cmd: 7.6224627854034124E-6  
Cycle 164  
Total biomass:  
Model iAF1260.cmd: 4.464603135149258E-6  
Model iJN1463.cmd: 7.664879643389738E-6  
Cycle 165  
Total biomass:  
Model iAF1260.cmd: 4.501678554191275E-6  
Model iJN1463.cmd: 7.707203635811758E-6  
Cycle 166  
Total biomass:  
Model iAF1260.cmd: 4.53882791439428E-6  
Model iJN1463.cmd: 7.749488423800257E-6  
Cycle 167  
Total biomass:  
Model iAF1260.cmd: 4.576067634874176E-6  
Model iJN1463.cmd: 7.791714837631627E-6  
Cycle 168  
Total biomass:  
Model iAF1260.cmd: 4.6134212567757795E-6  
Model iJN1463.cmd: 7.833861182140472E-6  
Cycle 169  
Total biomass:  
Model iAF1260.cmd: 4.650932354520743E-6  
Model iJN1463.cmd: 7.875924587218172E-6  
Cycle 170  
Total biomass:  
Model iAF1260.cmd: 4.688565152988449E-6  
Model iJN1463.cmd: 7.917890656425632E-6  
Cycle 171  
Total biomass:  
Model iAF1260.cmd: 4.726348638710223E-6  
Model iJN1463.cmd: 7.959783175322476E-6

Cycle 172  
Total biomass:  
Model iAF1260.cmd: 4.764261812406255E-6  
Model iJN1463.cmd: 8.001609477382618E-6  
Cycle 173  
Total biomass:  
Model iAF1260.cmd: 4.802266672752328E-6  
Model iJN1463.cmd: 8.043369299934985E-6  
Cycle 174  
Total biomass:  
Model iAF1260.cmd: 4.840384626207107E-6  
Model iJN1463.cmd: 8.08512659986527E-6  
Cycle 175  
Total biomass:  
Model iAF1260.cmd: 4.878482185965154E-6  
Model iJN1463.cmd: 8.126912486339618E-6  
Cycle 176  
Total biomass:  
Model iAF1260.cmd: 4.916540728876528E-6  
Model iJN1463.cmd: 8.168732589426616E-6  
Cycle 177  
Total biomass:  
Model iAF1260.cmd: 4.954541914099473E-6  
Model iJN1463.cmd: 8.210628504794142E-6  
Cycle 178  
Total biomass:  
Model iAF1260.cmd: 4.9925237390984285E-6  
Model iJN1463.cmd: 8.252575818534574E-6  
Cycle 179  
Total biomass:  
Model iAF1260.cmd: 5.030453474241052E-6  
Model iJN1463.cmd: 8.29452246971548E-6  
Cycle 180  
Total biomass:  
Model iAF1260.cmd: 5.068291152141674E-6  
Model iJN1463.cmd: 8.336537428781354E-6  
Cycle 181  
Total biomass:  
Model iAF1260.cmd: 5.1061547948798585E-6  
Model iJN1463.cmd: 8.378550750226414E-6  
Cycle 182  
Total biomass:  
Model iAF1260.cmd: 5.144010465711847E-6  
Model iJN1463.cmd: 8.420639575998283E-6  
Cycle 183  
Total biomass:  
Model iAF1260.cmd: 5.181837414763704E-6  
Model iJN1463.cmd: 8.462785400707639E-6  
Cycle 184  
Total biomass:  
Model iAF1260.cmd: 5.219515565346628E-6  
Model iJN1463.cmd: 8.505117390159892E-6  
Cycle 185  
Total biomass:  
Model iAF1260.cmd: 5.257217690595964E-6  
Model iJN1463.cmd: 8.547580844703816E-6  
Cycle 186  
Total biomass:  
Model iAF1260.cmd: 5.295057170036561E-6  
Model iJN1463.cmd: 8.588577868801817E-6  
Cycle 187  
Total biomass:  
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Model iJN1463.cmd: 8.631207114411016E-6  
Cycle 188  
Total biomass:  
Model iAF1260.cmd: 5.371240757627254E-6  
Model iJN1463.cmd: 8.672819306294496E-6  
Cycle 189  
Total biomass:  
Model iAF1260.cmd: 5.409208222055761E-6  
Model iJN1463.cmd: 8.714533816590263E-6  
Cycle 190  
Total biomass:  
Model iAF1260.cmd: 5.447151870180765E-6  
Model iJN1463.cmd: 8.756278197099296E-6  
Cycle 191  
Total biomass:  
Model iAF1260.cmd: 5.485109152356287E-6  
Model iJN1463.cmd: 8.798045639791098E-6  
Cycle 192  
Total biomass:  
Model iAF1260.cmd: 5.523007628134711E-6

Model iJN1463.cmd: 8.839767830463674E-6  
Cycle 193  
Total biomass:  
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Cycle 194  
Total biomass:  
Model iAF1260.cmd: 5.598690058781688E-6  
Model iJN1463.cmd: 8.92312324288679E-6  
Cycle 195  
Total biomass:  
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Model iJN1463.cmd: 8.964407337428167E-6  
Cycle 196  
Total biomass:  
Model iAF1260.cmd: 5.675081099088143E-6  
Model iJN1463.cmd: 9.005869307980944E-6  
Cycle 197  
Total biomass:  
Model iAF1260.cmd: 5.7136264922685965E-6  
Model iJN1463.cmd: 9.046866165545637E-6  
Cycle 198  
Total biomass:  
Model iAF1260.cmd: 5.751872762947792E-6  
Model iJN1463.cmd: 9.088203873901844E-6  
Cycle 199  
Total biomass:  
Model iAF1260.cmd: 5.790484949988361E-6  
Model iJN1463.cmd: 9.129262967936608E-6  
Cycle 200  
Total biomass:  
Model iAF1260.cmd: 5.8287576387612275E-6  
Model iJN1463.cmd: 9.170634041745539E-6  
Cycle 201  
Total biomass:  
Model iAF1260.cmd: 5.867393115874801E-6  
Model iJN1463.cmd: 9.21153168501973E-6  
Cycle 202  
Total biomass:  
Model iAF1260.cmd: 5.90549270316411E-6  
Model iJN1463.cmd: 9.252932338425112E-6  
Cycle 203  
Total biomass:  
Model iAF1260.cmd: 5.94407828064852E-6  
Model iJN1463.cmd: 9.293917018833387E-6  
Cycle 204  
Total biomass:  
Model iAF1260.cmd: 5.982833313194773E-6  
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Cycle 205  
Total biomass:  
Model iAF1260.cmd: 6.0208587616013155E-6  
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Cycle 206  
Total biomass:  
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Cycle 207  
Total biomass:  
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Cycle 208  
Total biomass:  
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Cycle 209  
Total biomass:  
Model iAF1260.cmd: 6.174439027267431E-6  
Model iJN1463.cmd: 9.540842452081432E-6  
Cycle 210  
Total biomass:  
Model iAF1260.cmd: 6.21259510089001E-6  
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Cycle 211  
Total biomass:  
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Model iJN1463.cmd: 9.623324453459284E-6  
Cycle 212  
Total biomass:  
Model iAF1260.cmd: 6.289001399287063E-6  
Model iJN1463.cmd: 9.66447055954182E-6  
Cycle 213  
Total biomass:

Model iAF1260.cmd: 6.327286488451596E-6  
Model iJN1463.cmd: 9.705548546350036E-6  
Cycle 214  
Total biomass:  
Model iAF1260.cmd: 6.365908803068323E-6  
Model iJN1463.cmd: 9.746308907652333E-6  
Cycle 215  
Total biomass:  
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Cycle 216  
Total biomass:  
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Model iJN1463.cmd: 9.82787360719668E-6  
Cycle 217  
Total biomass:  
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Model iJN1463.cmd: 9.868868142088844E-6  
Cycle 218  
Total biomass:  
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Model iJN1463.cmd: 9.909984857559513E-6  
Cycle 219  
Total biomass:  
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Cycle 220  
Total biomass:  
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Model iJN1463.cmd: 9.992506288081304E-6  
Cycle 221  
Total biomass:  
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Model iJN1463.cmd: 1.003389570538112E-5  
Cycle 222  
Total biomass:  
Model iAF1260.cmd: 6.671656167907564E-6  
Model iJN1463.cmd: 1.0075368044502172E-5  
Cycle 223  
Total biomass:  
Model iAF1260.cmd: 6.709874713175942E-6  
Model iJN1463.cmd: 1.0116600883372782E-5  
Cycle 224  
Total biomass:  
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Cycle 225  
Total biomass:  
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Model iJN1463.cmd: 1.0199596811753466E-5  
Cycle 226  
Total biomass:  
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Cycle 227  
Total biomass:  
Model iAF1260.cmd: 6.859845027465218E-6  
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Cycle 228  
Total biomass:  
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Cycle 229  
Total biomass:  
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Cycle 230  
Total biomass:  
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Cycle 231  
Total biomass:  
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Cycle 232  
Total biomass:  
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Cycle 233  
Total biomass:  
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Cycle 234

Total biomass:  
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Cycle 235  
Total biomass:  
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Cycle 236  
Total biomass:  
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Cycle 237  
Total biomass:  
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Cycle 238  
Total biomass:  
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Cycle 239  
Total biomass:  
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Cycle 240  
Total biomass:  
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Cycle 241  
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Cycle 242  
Total biomass:  
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Cycle 243  
Total biomass:  
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Cycle 244  
Total biomass:  
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Total biomass:  
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Cycle 246  
Total biomass:  
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Cycle 247  
Total biomass:  
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Cycle 248  
Total biomass:  
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Cycle 249  
Total biomass:  
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Cycle 250  
Total biomass:  
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Model iJN1463.cmd: 1.1224987781780473E-5  
Cycle 251  
Total biomass:  
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Cycle 252  
Total biomass:  
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Cycle 253  
Total biomass:  
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Cycle 254  
Total biomass:  
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Cycle 255  
Total biomass:  
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Cycle 256  
Total biomass:  
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Cycle 257  
Total biomass:  
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Cycle 258  
Total biomass:  
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Cycle 259  
Total biomass:  
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Cycle 260  
Total biomass:  
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Cycle 261  
Total biomass:  
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Cycle 262  
Total biomass:  
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Cycle 263  
Total biomass:  
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Cycle 264  
Total biomass:  
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Cycle 265  
Total biomass:  
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Cycle 266  
Total biomass:  
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Cycle 267  
Total biomass:  
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Cycle 268  
Total biomass:  
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Cycle 269  
Total biomass:  
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Cycle 270  
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Cycle 271  
Total biomass:  
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Cycle 272  
Total biomass:  
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Cycle 273  
Total biomass:  
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Cycle 274  
Total biomass:  
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Cycle 275  
Total biomass:  
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Cycle 276  
Total biomass:  
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Total biomass:  
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Cycle 278  
Total biomass:  
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Cycle 279  
Total biomass:  
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Cycle 280  
Total biomass:  
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Cycle 281  
Total biomass:  
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Cycle 282  
Total biomass:  
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Cycle 283  
Total biomass:  
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Cycle 284  
Total biomass:  
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Cycle 285  
Total biomass:  
Model iAF1260.cmd: 9.033058462380629E-6  
Model iJN1463.cmd: 1.2580320866130591E-5  
Cycle 286  
Total biomass:  
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Cycle 287  
Total biomass:  
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Cycle 288  
Total biomass:  
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Cycle 289  
Total biomass:  
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Cycle 290  
Total biomass:  
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Cycle 291  
Total biomass:  
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Cycle 292  
Total biomass:  
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Cycle 293  
Total biomass:  
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Model iJN1463.cmd: 1.2882041787026032E-5  
Cycle 294  
Total biomass:  
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Model iJN1463.cmd: 1.2919517704761736E-5  
Cycle 295  
Total biomass:  
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Model iJN1463.cmd: 1.2956986013925918E-5  
Cycle 296  
Total biomass:

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Model iJN1463.cmd: 1.2994354027553651E-5  
Cycle 297  
Total biomass:  
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Model iJN1463.cmd: 1.303171760966175E-5  
Cycle 298  
Total biomass:  
Model iAF1260.cmd: 9.516671946514027E-6  
Model iJN1463.cmd: 1.3067614481759794E-5  
Cycle 299  
Total biomass:  
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Cycle 300  
Total biomass:  
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Cycle 301  
Total biomass:  
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Model iJN1463.cmd: 1.3175049282196644E-5  
Cycle 302  
Total biomass:  
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Model iJN1463.cmd: 1.3210836841359288E-5  
Cycle 303  
Total biomass:  
Model iAF1260.cmd: 9.707608955250438E-6  
Model iJN1463.cmd: 1.3246585818098554E-5  
Cycle 304  
Total biomass:  
Model iAF1260.cmd: 9.745616166285301E-6  
Model iJN1463.cmd: 1.3282289693440063E-5  
Cycle 305  
Total biomass:  
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Model iJN1463.cmd: 1.3318353552509753E-5  
Cycle 306  
Total biomass:  
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Model iJN1463.cmd: 1.3354837876282026E-5  
Cycle 307  
Total biomass:  
Model iAF1260.cmd: 9.858919217456248E-6  
Model iJN1463.cmd: 1.3390306453912652E-5  
Cycle 308  
Total biomass:  
Model iAF1260.cmd: 9.897007854006826E-6  
Model iJN1463.cmd: 1.3425695630240721E-5  
Cycle 309  
Total biomass:  
Model iAF1260.cmd: 9.934953766263565E-6  
Model iJN1463.cmd: 1.3461079587881653E-5  
Cycle 310  
Total biomass:  
Model iAF1260.cmd: 9.972801210980977E-6  
Model iJN1463.cmd: 1.3496445361862854E-5  
Cycle 311  
Total biomass:  
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Model iJN1463.cmd: 1.3531777375684386E-5  
Cycle 312  
Total biomass:  
Model iAF1260.cmd: 1.0048309536700253E-5  
Model iJN1463.cmd: 1.3567066226770506E-5  
Cycle 313  
Total biomass:  
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Model iJN1463.cmd: 1.3602608087724554E-5  
Cycle 314  
Total biomass:  
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Model iJN1463.cmd: 1.3638529876042205E-5  
Cycle 315  
Total biomass:  
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Model iJN1463.cmd: 1.3674551600394714E-5  
Cycle 316  
Total biomass:  
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Model iJN1463.cmd: 1.3710565495832682E-5  
Cycle 317

Total biomass:  
Model iAF1260.cmd: 1.0234138103060403E-5  
Model iJN1463.cmd: 1.3746530218878775E-5  
Cycle 318  
Total biomass:  
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Model iJN1463.cmd: 1.3782427512139497E-5  
Cycle 319  
Total biomass:  
Model iAF1260.cmd: 1.030800043587394E-5  
Model iJN1463.cmd: 1.3818252760922136E-5  
Cycle 320  
Total biomass:  
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Model iJN1463.cmd: 1.3854003941593432E-5  
Cycle 321  
Total biomass:  
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Model iJN1463.cmd: 1.3889679285332834E-5  
Cycle 322  
Total biomass:  
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Model iJN1463.cmd: 1.3925279190384546E-5  
Cycle 323  
Total biomass:  
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Model iJN1463.cmd: 1.3960805654063191E-5  
Cycle 324  
Total biomass:  
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Cycle 325  
Total biomass:  
Model iAF1260.cmd: 1.052957927136607E-5  
Model iJN1463.cmd: 1.4031803466284258E-5  
Cycle 326  
Total biomass:  
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Cycle 327  
Total biomass:  
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Model iJN1463.cmd: 1.4102258852219192E-5  
Cycle 328  
Total biomass:  
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Model iJN1463.cmd: 1.413739768502795E-5  
Cycle 329  
Total biomass:  
Model iAF1260.cmd: 1.0676827611822706E-5  
Model iJN1463.cmd: 1.4172479194694973E-5  
Cycle 330  
Total biomass:  
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Model iJN1463.cmd: 1.4207484738786093E-5  
Cycle 331  
Total biomass:  
Model iAF1260.cmd: 1.0750151617711025E-5  
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Cycle 332  
Total biomass:  
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Model iJN1463.cmd: 1.4277288934569842E-5  
Cycle 333  
Total biomass:  
Model iAF1260.cmd: 1.0823465596755338E-5  
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Cycle 334  
Total biomass:  
Model iAF1260.cmd: 1.086014362761915E-5  
Model iJN1463.cmd: 1.434670800787228E-5  
Cycle 335  
Total biomass:  
Model iAF1260.cmd: 1.0896840330960902E-5  
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Cycle 336  
Total biomass:  
Model iAF1260.cmd: 1.0933559868814338E-5  
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Cycle 337  
Total biomass:  
Model iAF1260.cmd: 1.0970305423300439E-5  
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Cycle 338  
Total biomass:  
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Cycle 339  
Total biomass:  
Model iAF1260.cmd: 1.1043868018051594E-5  
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Cycle 340  
Total biomass:  
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Cycle 341  
Total biomass:  
Model iAF1260.cmd: 1.1117434398061197E-5  
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Cycle 342  
Total biomass:  
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Cycle 343  
Total biomass:  
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Cycle 344  
Total biomass:  
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Cycle 345  
Total biomass:  
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Cycle 346  
Total biomass:  
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Cycle 347  
Total biomass:  
Model iAF1260.cmd: 1.1337761005766655E-5  
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Cycle 348  
Total biomass:  
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Cycle 349  
Total biomass:  
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Cycle 350  
Total biomass:  
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Cycle 351  
Total biomass:  
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Cycle 352  
Total biomass:  
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Cycle 353  
Total biomass:  
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Cycle 354  
Total biomass:  
Model iAF1260.cmd: 1.159182189617921E-5  
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Cycle 355  
Total biomass:  
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Cycle 356  
Total biomass:  
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Cycle 357  
Total biomass:  
Model iAF1260.cmd: 1.1702310126916363E-5  
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Cycle 358  
Total biomass:  
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Cycle 359  
Total biomass:  
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Cycle 360  
Total biomass:  
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Cycle 361  
Total biomass:  
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Cycle 362  
Total biomass:  
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Cycle 363  
Total biomass:  
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Cycle 364  
Total biomass:  
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Cycle 365  
Total biomass:  
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Cycle 366  
Total biomass:  
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Cycle 367  
Total biomass:  
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Cycle 368  
Total biomass:  
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Cycle 369  
Total biomass:  
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Cycle 370  
Total biomass:  
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Cycle 371  
Total biomass:  
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Cycle 372  
Total biomass:  
Model iAF1260.cmd: 1.2243741050484036E-5  
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Cycle 373  
Total biomass:  
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Cycle 374  
Total biomass:  
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Cycle 375  
Total biomass:  
Model iAF1260.cmd: 1.2352332992038054E-5  
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Cycle 376  
Total biomass:  
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Cycle 377  
Total biomass:  
Model iAF1260.cmd: 1.2424646644238747E-5  
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Cycle 378  
Total biomass:  
Model iAF1260.cmd: 1.246077857785246E-5  
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Cycle 379  
Total biomass:

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Cycle 380  
Total biomass:  
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Total biomass:  
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Cycle 382  
Total biomass:  
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Cycle 383  
Total biomass:  
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Cycle 384  
Total biomass:  
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Cycle 385  
Total biomass:  
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Cycle 386  
Total biomass:  
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Cycle 387  
Total biomass:  
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Cycle 388  
Total biomass:  
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Cycle 389  
Total biomass:  
Model iAF1260.cmd: 1.2856943587972333E-5  
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Cycle 390  
Total biomass:  
Model iAF1260.cmd: 1.2892813205405E-5  
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Cycle 391  
Total biomass:  
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Cycle 392  
Total biomass:  
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Cycle 393  
Total biomass:  
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Cycle 394  
Total biomass:  
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Cycle 395  
Total biomass:  
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Cycle 396  
Total biomass:  
Model iAF1260.cmd: 1.3107849481213177E-5  
Model iJN1463.cmd: 1.632688229562348E-5  
Cycle 397  
Total biomass:  
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Model iJN1463.cmd: 1.6356284174163815E-5  
Cycle 398  
Total biomass:  
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Cycle 399  
Total biomass:  
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Cycle 400

Total biomass:  
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Model iJN1463.cmd: 1.6444081192489598E-5  
Cycle 401  
Total biomass:  
Model iAF1260.cmd: 1.3286811490821776E-5  
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Cycle 402  
Total biomass:  
Model iAF1260.cmd: 1.3322479612583132E-5  
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Cycle 403  
Total biomass:  
Model iAF1260.cmd: 1.3358099654774909E-5  
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Cycle 404  
Total biomass:  
Model iAF1260.cmd: 1.3393679629885752E-5  
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Cycle 405  
Total biomass:  
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Cycle 406  
Total biomass:  
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Cycle 407  
Total biomass:  
Model iAF1260.cmd: 1.3500982551535965E-5  
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Cycle 408  
Total biomass:  
Model iAF1260.cmd: 1.3536998124476732E-5  
Model iJN1463.cmd: 1.6674634773359378E-5  
Cycle 409  
Total biomass:  
Model iAF1260.cmd: 1.35728546903806E-5  
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Cycle 410  
Total biomass:  
Model iAF1260.cmd: 1.3608611115412619E-5  
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Cycle 411  
Total biomass:  
Model iAF1260.cmd: 1.3644309738491042E-5  
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Cycle 412  
Total biomass:  
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Cycle 413  
Total biomass:  
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Cycle 414  
Total biomass:  
Model iAF1260.cmd: 1.3751207639179667E-5  
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Cycle 415  
Total biomass:  
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Cycle 416  
Total biomass:  
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Cycle 417  
Total biomass:  
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Cycle 418  
Total biomass:  
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Cycle 419  
Total biomass:  
Model iAF1260.cmd: 1.391540379834552E-5  
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Cycle 420  
Total biomass:  
Model iAF1260.cmd: 1.3947537233647023E-5  
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Cycle 421  
Total biomass:  
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Cycle 422  
Total biomass:  
Model iAF1260.cmd: 1.4011766889471389E-5  
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Cycle 423  
Total biomass:  
Model iAF1260.cmd: 1.404388519373578E-5  
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Cycle 424  
Total biomass:  
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Cycle 425  
Total biomass:  
Model iAF1260.cmd: 1.4108140527179379E-5  
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Cycle 426  
Total biomass:  
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Cycle 427  
Total biomass:  
Model iAF1260.cmd: 1.4172422975163859E-5  
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Cycle 428  
Total biomass:  
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Cycle 429  
Total biomass:  
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Cycle 430  
Total biomass:  
Model iAF1260.cmd: 1.426900975700829E-5  
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Cycle 431  
Total biomass:  
Model iAF1260.cmd: 1.4301248801891474E-5  
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Cycle 432  
Total biomass:  
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Cycle 433  
Total biomass:  
Model iAF1260.cmd: 1.4365700821988794E-5  
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Cycle 434  
Total biomass:  
Model iAF1260.cmd: 1.439791748465375E-5  
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Cycle 435  
Total biomass:  
Model iAF1260.cmd: 1.4430145784399042E-5  
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Cycle 436  
Total biomass:  
Model iAF1260.cmd: 1.4463246021129084E-5  
Model iJN1463.cmd: 1.7476642113848404E-5  
Cycle 437  
Total biomass:  
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Cycle 438  
Total biomass:  
Model iAF1260.cmd: 1.4530593518476236E-5  
Model iJN1463.cmd: 1.7528638745576504E-5  
Cycle 439  
Total biomass:  
Model iAF1260.cmd: 1.456390853441008E-5  
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Cycle 440  
Total biomass:  
Model iAF1260.cmd: 1.4596863468824443E-5  
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Cycle 441  
Total biomass:  
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Cycle 442  
Total biomass:  
Model iAF1260.cmd: 1.4661878738049615E-5  
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Cycle 443  
Total biomass:  
Model iAF1260.cmd: 1.4694212990848642E-5  
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Cycle 444  
Total biomass:  
Model iAF1260.cmd: 1.4726517066145E-5  
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Cycle 445  
Total biomass:  
Model iAF1260.cmd: 1.4760428634370894E-5  
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Cycle 446  
Total biomass:  
Model iAF1260.cmd: 1.4794782071385636E-5  
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Cycle 447  
Total biomass:  
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Cycle 448  
Total biomass:  
Model iAF1260.cmd: 1.4862484360275395E-5  
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Cycle 449  
Total biomass:  
Model iAF1260.cmd: 1.489520138802332E-5  
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Cycle 450  
Total biomass:  
Model iAF1260.cmd: 1.4927678382596467E-5  
Model iJN1463.cmd: 1.7859654691306843E-5  
Cycle 451  
Total biomass:  
Model iAF1260.cmd: 1.4960071133023753E-5  
Model iJN1463.cmd: 1.7888198607916482E-5  
Cycle 452  
Total biomass:  
Model iAF1260.cmd: 1.4992425357018262E-5  
Model iJN1463.cmd: 1.7916842535753166E-5  
Cycle 453  
Total biomass:  
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Cycle 454  
Total biomass:  
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Model iJN1463.cmd: 1.797157407897503E-5  
Cycle 455  
Total biomass:  
Model iAF1260.cmd: 1.5092392860011978E-5  
Model iJN1463.cmd: 1.7996849509407757E-5  
Cycle 456  
Total biomass:  
Model iAF1260.cmd: 1.5126417631975108E-5  
Model iJN1463.cmd: 1.802181531596863E-5  
Cycle 457  
Total biomass:  
Model iAF1260.cmd: 1.5160395850447436E-5  
Model iJN1463.cmd: 1.804662893525735E-5  
Cycle 458  
Total biomass:  
Model iAF1260.cmd: 1.5194330140879043E-5  
Model iJN1463.cmd: 1.8071338518168833E-5  
Cycle 459  
Total biomass:  
Model iAF1260.cmd: 1.5228279782970065E-5  
Model iJN1463.cmd: 1.8095997129729905E-5  
Cycle 460  
Total biomass:  
Model iAF1260.cmd: 1.5261524918007117E-5  
Model iJN1463.cmd: 1.8122467556823682E-5  
Cycle 461  
Total biomass:  
Model iAF1260.cmd: 1.5294214880339755E-5  
Model iJN1463.cmd: 1.8149987596290112E-5  
Cycle 462  
Total biomass:

Model iAF1260.cmd: 1.5326691281078233E-5  
Model iJN1463.cmd: 1.8178071838550118E-5  
Cycle 463  
Total biomass:  
Model iAF1260.cmd: 1.5359110041168353E-5  
Model iJN1463.cmd: 1.8206440079406674E-5  
Cycle 464  
Total biomass:  
Model iAF1260.cmd: 1.5391516345998167E-5  
Model iJN1463.cmd: 1.8234935918907538E-5  
Cycle 465  
Total biomass:  
Model iAF1260.cmd: 1.542392405170216E-5  
Model iJN1463.cmd: 1.8263484042627856E-5  
Cycle 466  
Total biomass:  
Model iAF1260.cmd: 1.5456336556686643E-5  
Model iJN1463.cmd: 1.8292048307557577E-5  
Cycle 467  
Total biomass:  
Model iAF1260.cmd: 1.5488754215397826E-5  
Model iJN1463.cmd: 1.832061195542115E-5  
Cycle 468  
Total biomass:  
Model iAF1260.cmd: 1.552117670953891E-5  
Model iJN1463.cmd: 1.8349167212377286E-5  
Cycle 469  
Total biomass:  
Model iAF1260.cmd: 1.5553603692207228E-5  
Model iJN1463.cmd: 1.8377710343900865E-5  
Cycle 470  
Total biomass:  
Model iAF1260.cmd: 1.558603490932077E-5  
Model iJN1463.cmd: 1.8406239506039048E-5  
Cycle 471  
Total biomass:  
Model iAF1260.cmd: 1.561846991135434E-5  
Model iJN1463.cmd: 1.8434753994785285E-5  
Cycle 472  
Total biomass:  
Model iAF1260.cmd: 1.5650909123414548E-5  
Model iJN1463.cmd: 1.8463253485495367E-5  
Cycle 473  
Total biomass:  
Model iAF1260.cmd: 1.568335280576226E-5  
Model iJN1463.cmd: 1.8491738040092582E-5  
Cycle 474  
Total biomass:  
Model iAF1260.cmd: 1.5715822558405528E-5  
Model iJN1463.cmd: 1.8520223499599144E-5  
Cycle 475  
Total biomass:  
Model iAF1260.cmd: 1.574827745631697E-5  
Model iJN1463.cmd: 1.8548679351560916E-5  
Cycle 476  
Total biomass:  
Model iAF1260.cmd: 1.578072557727701E-5  
Model iJN1463.cmd: 1.857711373487145E-5  
Cycle 477  
Total biomass:  
Model iAF1260.cmd: 1.581314786465962E-5  
Model iJN1463.cmd: 1.860551279846705E-5  
Cycle 478  
Total biomass:  
Model iAF1260.cmd: 1.5845540593172598E-5  
Model iJN1463.cmd: 1.8633873734843864E-5  
Cycle 479  
Total biomass:  
Model iAF1260.cmd: 1.5877898924135446E-5  
Model iJN1463.cmd: 1.8662193302007297E-5  
Cycle 480  
Total biomass:  
Model iAF1260.cmd: 1.5910243120773708E-5  
Model iJN1463.cmd: 1.86904048666765E-5  
Cycle 481  
Total biomass:  
Model iAF1260.cmd: 1.5943752061261966E-5  
Model iJN1463.cmd: 1.8713695324781746E-5  
Cycle 482  
Total biomass:  
Model iAF1260.cmd: 1.597655384549771E-5  
Model iJN1463.cmd: 1.8736130018704636E-5  
Cycle 483

Total biomass:  
Model iAF1260.cmd: 1.6009006795760073E-5  
Model iJN1463.cmd: 1.875819078465081E-5  
Cycle 484  
Total biomass:  
Model iAF1260.cmd: 1.6042303961034433E-5  
Model iJN1463.cmd: 1.8779191660396166E-5  
Cycle 485  
Total biomass:  
Model iAF1260.cmd: 1.6074668699614418E-5  
Model iJN1463.cmd: 1.880157258182815E-5  
Cycle 486  
Total biomass:  
Model iAF1260.cmd: 1.6108057774567173E-5  
Model iJN1463.cmd: 1.8826851515139215E-5  
Cycle 487  
Total biomass:  
Model iAF1260.cmd: 1.6141037251384164E-5  
Model iJN1463.cmd: 1.8853819625603747E-5  
Cycle 488  
Total biomass:  
Model iAF1260.cmd: 1.617378007235628E-5  
Model iJN1463.cmd: 1.888154576603499E-5  
Cycle 489  
Total biomass:  
Model iAF1260.cmd: 1.6206440138668703E-5  
Model iJN1463.cmd: 1.8909621796469E-5  
Cycle 490  
Total biomass:  
Model iAF1260.cmd: 1.6239085557403533E-5  
Model iJN1463.cmd: 1.893786230100648E-5  
Cycle 491  
Total biomass:  
Model iAF1260.cmd: 1.6271743172916016E-5  
Model iJN1463.cmd: 1.8966182045400955E-5  
Cycle 492  
Total biomass:  
Model iAF1260.cmd: 1.6304423376777398E-5  
Model iJN1463.cmd: 1.899454200350371E-5  
Cycle 493  
Total biomass:  
Model iAF1260.cmd: 1.633712651200089E-5  
Model iJN1463.cmd: 1.902292113653725E-5  
Cycle 494  
Total biomass:  
Model iAF1260.cmd: 1.63698567828195E-5  
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Cycle 495  
Total biomass:  
Model iAF1260.cmd: 1.6402615196769747E-5  
Model iJN1463.cmd: 1.9079717120188994E-5  
Cycle 496  
Total biomass:  
Model iAF1260.cmd: 1.6435401594481002E-5  
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Cycle 497  
Total biomass:  
Model iAF1260.cmd: 1.646821604253684E-5  
Model iJN1463.cmd: 1.9136548641585838E-5  
Cycle 498  
Total biomass:  
Model iAF1260.cmd: 1.6501059094000628E-5  
Model iJN1463.cmd: 1.9164975504778106E-5  
Cycle 499  
Total biomass:  
Model iAF1260.cmd: 1.6533931860851937E-5  
Model iJN1463.cmd: 1.919340895595008E-5  
Cycle 500  
Total biomass:  
Model iAF1260.cmd: 1.6566835734187028E-5  
Model iJN1463.cmd: 1.9221849735673804E-5  
Cycle 501  
Total biomass:  
Model iAF1260.cmd: 1.659977091762984E-5  
Model iJN1463.cmd: 1.9250297823968477E-5  
Cycle 502  
Total biomass:  
Model iAF1260.cmd: 1.6632725672904165E-5  
Model iJN1463.cmd: 1.927874430228021E-5  
Cycle 503  
Total biomass:  
Model iAF1260.cmd: 1.6665707918256906E-5  
Model iJN1463.cmd: 1.930719508281601E-5

Cycle 504  
Total biomass:  
Model iAF1260.cmd: 1.6698719951870058E-5  
Model iJN1463.cmd: 1.9335651872126706E-5  
Cycle 505  
Total biomass:  
Model iAF1260.cmd: 1.6731762756850865E-5  
Model iJN1463.cmd: 1.9364115377099974E-5  
Cycle 506  
Total biomass:  
Model iAF1260.cmd: 1.6764854342733827E-5  
Model iJN1463.cmd: 1.9392503792570544E-5  
Cycle 507  
Total biomass:  
Model iAF1260.cmd: 1.6798083301763275E-5  
Model iJN1463.cmd: 1.9414742395741837E-5  
Cycle 508  
Total biomass:  
Model iAF1260.cmd: 1.6831027496661878E-5  
Model iJN1463.cmd: 1.9435035416882137E-5  
Cycle 509  
Total biomass:  
Model iAF1260.cmd: 1.6863336775982096E-5  
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Cycle 510  
Total biomass:  
Model iAF1260.cmd: 1.6895282243976397E-5  
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Cycle 511  
Total biomass:  
Model iAF1260.cmd: 1.6929711538157994E-5  
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Cycle 512  
Total biomass:  
Model iAF1260.cmd: 1.696378517009345E-5  
Model iJN1463.cmd: 1.9522324018000545E-5  
Cycle 513  
Total biomass:  
Model iAF1260.cmd: 1.6997560463051654E-5  
Model iJN1463.cmd: 1.954987987402128E-5  
Cycle 514  
Total biomass:  
Model iAF1260.cmd: 1.7031209766247402E-5  
Model iJN1463.cmd: 1.9578075658742083E-5  
Cycle 515  
Total biomass:  
Model iAF1260.cmd: 1.7064845613788693E-5  
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Cycle 516  
Total biomass:  
Model iAF1260.cmd: 1.7098512986649203E-5  
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Cycle 517  
Total biomass:  
Model iAF1260.cmd: 1.7132228956854006E-5  
Model iJN1463.cmd: 1.9663976522302438E-5  
Cycle 518  
Total biomass:  
Model iAF1260.cmd: 1.716600020024394E-5  
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Cycle 519  
Total biomass:  
Model iAF1260.cmd: 1.719982949962006E-5  
Model iJN1463.cmd: 1.972160997368422E-5  
Cycle 520  
Total biomass:  
Model iAF1260.cmd: 1.72337180898068E-5  
Model iJN1463.cmd: 1.9750480919181437E-5  
Cycle 521  
Total biomass:  
Model iAF1260.cmd: 1.726766656367888E-5  
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Cycle 522  
Total biomass:  
Model iAF1260.cmd: 1.7301675239866265E-5  
Model iJN1463.cmd: 1.9808315701728215E-5  
Cycle 523  
Total biomass:  
Model iAF1260.cmd: 1.7335744317647324E-5  
Model iJN1463.cmd: 1.9837277872191944E-5  
Cycle 524  
Total biomass:  
Model iAF1260.cmd: 1.736987394391471E-5

Model iJN1463.cmd: 1.9866269545317045E-5  
Cycle 525  
Total biomass:  
Model iAF1260.cmd: 1.7404059291892656E-5  
Model iJN1463.cmd: 1.989528797232362E-5  
Cycle 526  
Total biomass:  
Model iAF1260.cmd: 1.743829694550056E-5  
Model iJN1463.cmd: 1.9924330210780653E-5  
Cycle 527  
Total biomass:  
Model iAF1260.cmd: 1.747257734992961E-5  
Model iJN1463.cmd: 1.9953389266436115E-5  
Cycle 528  
Total biomass:  
Model iAF1260.cmd: 1.7506896838808934E-5  
Model iJN1463.cmd: 1.99824630088282E-5  
Cycle 529  
Total biomass:  
Model iAF1260.cmd: 1.7535860134512664E-5  
Model iJN1463.cmd: 2.000742997955371E-5  
Cycle 530  
Total biomass:  
Model iAF1260.cmd: 1.7562790582284658E-5  
Model iJN1463.cmd: 2.0030855484797368E-5  
Cycle 531  
Total biomass:  
Model iAF1260.cmd: 1.758810086265907E-5  
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Cycle 532  
Total biomass:  
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Model iJN1463.cmd: 2.007176255093149E-5  
Cycle 533  
Total biomass:  
Model iAF1260.cmd: 1.764688112028202E-5  
Model iJN1463.cmd: 2.008976794172299E-5  
Cycle 534  
Total biomass:  
Model iAF1260.cmd: 1.767666110605876E-5  
Model iJN1463.cmd: 2.010752975048512E-5  
Cycle 535  
Total biomass:  
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Model iJN1463.cmd: 2.0124778250882066E-5  
Cycle 536  
Total biomass:  
Model iAF1260.cmd: 1.7736788979339964E-5  
Model iJN1463.cmd: 2.0141832444634745E-5  
Cycle 537  
Total biomass:  
Model iAF1260.cmd: 1.7766801596623377E-5  
Model iJN1463.cmd: 2.015878916337914E-5  
Cycle 538  
Total biomass:  
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Cycle 539  
Total biomass:  
Model iAF1260.cmd: 1.7824124826164698E-5  
Model iJN1463.cmd: 2.019447432307043E-5  
Cycle 540  
Total biomass:  
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Model iJN1463.cmd: 2.0214381766068878E-5  
Cycle 541  
Total biomass:  
Model iAF1260.cmd: 1.7877533545502608E-5  
Model iJN1463.cmd: 2.0232516849854116E-5  
Cycle 542  
Total biomass:  
Model iAF1260.cmd: 1.7907004181027137E-5  
Model iJN1463.cmd: 2.0249962046926185E-5  
Cycle 543  
Total biomass:  
Model iAF1260.cmd: 1.7936958266319562E-5  
Model iJN1463.cmd: 2.0267186401383743E-5  
Cycle 544  
Total biomass:  
Model iAF1260.cmd: 1.796706045322098E-5  
Model iJN1463.cmd: 2.0284321948519636E-5  
Cycle 545  
Total biomass:

Model iAF1260.cmd: 1.7997195277745858E-5  
Model iJN1463.cmd: 2.030140072084496E-5  
Cycle 546  
Total biomass:  
Model iAF1260.cmd: 1.802732178843522E-5  
Model iJN1463.cmd: 2.0318428386196424E-5  
Cycle 547  
Total biomass:  
Model iAF1260.cmd: 1.8057424910296737E-5  
Model iJN1463.cmd: 2.033540481434117E-5  
Cycle 548  
Total biomass:  
Model iAF1260.cmd: 1.8087498870172512E-5  
Model iJN1463.cmd: 2.035232913477597E-5  
Cycle 549  
Total biomass:  
Model iAF1260.cmd: 1.811754136508485E-5  
Model iJN1463.cmd: 2.0369200708877237E-5  
Cycle 550  
Total biomass:  
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Model iJN1463.cmd: 2.0386019170782692E-5  
Cycle 551  
Total biomass:  
Model iAF1260.cmd: 1.817752865285176E-5  
Model iJN1463.cmd: 2.040278432708885E-5  
Cycle 552  
Total biomass:  
Model iAF1260.cmd: 1.82074728167165E-5  
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Cycle 553  
Total biomass:  
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Model iJN1463.cmd: 2.0436154362909257E-5  
Cycle 554  
Total biomass:  
Model iAF1260.cmd: 1.826726157223562E-5  
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Cycle 555  
Total biomass:  
Model iAF1260.cmd: 1.8297098327679963E-5  
Model iJN1463.cmd: 2.046930428813371E-5  
Cycle 556  
Total biomass:  
Model iAF1260.cmd: 1.8326984061193494E-5  
Model iJN1463.cmd: 2.0485665003575374E-5  
Cycle 557  
Total biomass:  
Model iAF1260.cmd: 1.8356803185855646E-5  
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Cycle 558  
Total biomass:  
Model iAF1260.cmd: 1.838656746710705E-5  
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Cycle 559  
Total biomass:  
Model iAF1260.cmd: 1.8416287506148095E-5  
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Cycle 560  
Total biomass:  
Model iAF1260.cmd: 1.844596898733876E-5  
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Cycle 561  
Total biomass:  
Model iAF1260.cmd: 1.847561256687853E-5  
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Cycle 562  
Total biomass:  
Model iAF1260.cmd: 1.8505218178525122E-5  
Model iJN1463.cmd: 2.0583486143675062E-5  
Cycle 563  
Total biomass:  
Model iAF1260.cmd: 1.8534785840004207E-5  
Model iJN1463.cmd: 2.0599618078238107E-5  
Cycle 564  
Total biomass:  
Model iAF1260.cmd: 1.8564315568028652E-5  
Model iJN1463.cmd: 2.0615699981448667E-5  
Cycle 565  
Total biomass:  
Model iAF1260.cmd: 1.8593807363354922E-5  
Model iJN1463.cmd: 2.0631731869770028E-5  
Cycle 566

Total biomass:  
Model iAF1260.cmd: 1.862326121500442E-5  
Model iJN1463.cmd: 2.0647713734972336E-5  
Cycle 567  
Total biomass:  
Model iAF1260.cmd: 1.865267710548987E-5  
Model iJN1463.cmd: 2.0663645559617978E-5  
Cycle 568  
Total biomass:  
Model iAF1260.cmd: 1.868205501416785E-5  
Model iJN1463.cmd: 2.0679527322899993E-5  
Cycle 569  
Total biomass:  
Model iAF1260.cmd: 1.8711385846412883E-5  
Model iJN1463.cmd: 2.069536602335561E-5  
Cycle 570  
Total biomass:  
Model iAF1260.cmd: 1.8740628070075125E-5  
Model iJN1463.cmd: 2.0711133406740863E-5  
Cycle 571  
Total biomass:  
Model iAF1260.cmd: 1.8769813433288703E-5  
Model iJN1463.cmd: 2.0726854270025048E-5  
Cycle 572  
Total biomass:  
Model iAF1260.cmd: 1.879894861909066E-5  
Model iJN1463.cmd: 2.0742534576557444E-5  
Cycle 573  
Total biomass:  
Model iAF1260.cmd: 1.8828034128658297E-5  
Model iJN1463.cmd: 2.0758175172823953E-5  
Cycle 574  
Total biomass:  
Model iAF1260.cmd: 1.885706941882778E-5  
Model iJN1463.cmd: 2.0773775877743634E-5  
Cycle 575  
Total biomass:  
Model iAF1260.cmd: 1.8886053991974423E-5  
Model iJN1463.cmd: 2.078933642751428E-5  
Cycle 576  
Total biomass:  
Model iAF1260.cmd: 1.8914987531359887E-5  
Model iJN1463.cmd: 2.080485663971069E-5  
Cycle 577  
Total biomass:  
Model iAF1260.cmd: 1.8943869852402874E-5  
Model iJN1463.cmd: 2.082033640629076E-5  
Cycle 578  
Total biomass:  
Model iAF1260.cmd: 1.8972700846272534E-5  
Model iJN1463.cmd: 2.0835775664887592E-5  
Cycle 579  
Total biomass:  
Model iAF1260.cmd: 1.9001480443557188E-5  
Model iJN1463.cmd: 2.085117437762497E-5  
Cycle 580  
Total biomass:  
Model iAF1260.cmd: 1.9030208594430133E-5  
Model iJN1463.cmd: 2.0866532519123808E-5  
Cycle 581  
Total biomass:  
Model iAF1260.cmd: 1.9058885258605475E-5  
Model iJN1463.cmd: 2.0881850070134434E-5  
Cycle 582  
Total biomass:  
Model iAF1260.cmd: 1.908751040051401E-5  
Model iJN1463.cmd: 2.089712701451562E-5  
Cycle 583  
Total biomass:  
Model iAF1260.cmd: 1.9116083986977462E-5  
Model iJN1463.cmd: 2.0912363337714498E-5  
Cycle 584  
Total biomass:  
Model iAF1260.cmd: 1.914460598619192E-5  
Model iJN1463.cmd: 2.092755902613958E-5  
Cycle 585  
Total biomass:  
Model iAF1260.cmd: 1.917307636720133E-5  
Model iJN1463.cmd: 2.0942714066766034E-5  
Cycle 586  
Total biomass:  
Model iAF1260.cmd: 1.9201495099704996E-5  
Model iJN1463.cmd: 2.0957828447082476E-5



Cycle 587  
Total biomass:  
Model iAF1260.cmd: 1.922986215392345E-5  
Model iJN1463.cmd: 2.0972902154944745E-5  
Cycle 588  
Total biomass:  
Model iAF1260.cmd: 1.925817750058153E-5  
Model iJN1463.cmd: 2.0987935178559182E-5  
Cycle 589  
Total biomass:  
Model iAF1260.cmd: 1.9286441110859212E-5  
Model iJN1463.cmd: 2.1002927506514317E-5  
Cycle 590  
Total biomass:  
Model iAF1260.cmd: 1.9314652956422836E-5  
Model iJN1463.cmd: 2.101787912774314E-5  
Cycle 591  
Total biomass:  
Model iAF1260.cmd: 1.9342813009363732E-5  
Model iJN1463.cmd: 2.1032790031470373E-5  
Cycle 592  
Total biomass:  
Model iAF1260.cmd: 1.9370921242227237E-5  
Model iJN1463.cmd: 2.104766020731568E-5  
Cycle 593  
Total biomass:  
Model iAF1260.cmd: 1.9398977628012232E-5  
Model iJN1463.cmd: 2.106248964519096E-5  
Cycle 594  
Total biomass:  
Model iAF1260.cmd: 1.9426982140141814E-5  
Model iJN1463.cmd: 2.107727833535356E-5  
Cycle 595  
Total biomass:  
Model iAF1260.cmd: 1.9454934752503442E-5  
Model iJN1463.cmd: 2.1092026268388995E-5  
Cycle 596  
Total biomass:  
Model iAF1260.cmd: 1.9482835439388622E-5  
Model iJN1463.cmd: 2.1106733435218294E-5  
Cycle 597  
Total biomass:  
Model iAF1260.cmd: 1.95106841755418E-5  
Model iJN1463.cmd: 2.1121399827075914E-5  
Cycle 598  
Total biomass:  
Model iAF1260.cmd: 1.9538480936132192E-5  
Model iJN1463.cmd: 2.1136025435501425E-5  
Cycle 599  
Total biomass:  
Model iAF1260.cmd: 1.9566225696757597E-5  
Model iJN1463.cmd: 2.1150610252417286E-5  
Cycle 600  
Total biomass:  
Model iAF1260.cmd: 1.959391845842944E-5  
Model iJN1463.cmd: 2.116515428382995E-5  
Cycle 601  
Total biomass:  
Model iAF1260.cmd: 1.9621559275044432E-5  
Model iJN1463.cmd: 2.1179657566378425E-5  
Cycle 602  
Total biomass:  
Model iAF1260.cmd: 1.964914817702886E-5  
Model iJN1463.cmd: 2.1194120126184317E-5  
Cycle 603  
Total biomass:  
Model iAF1260.cmd: 1.967668517556135E-5  
Model iJN1463.cmd: 2.1208541977489974E-5  
Cycle 604  
Total biomass:  
Model iAF1260.cmd: 1.9704170271910856E-5  
Model iJN1463.cmd: 2.122292312832074E-5  
Cycle 605  
Total biomass:  
Model iAF1260.cmd: 1.9731603462770715E-5  
Model iJN1463.cmd: 2.123726358378151E-5  
Cycle 606  
Total biomass:  
Model iAF1260.cmd: 1.97589847431713E-5  
Model iJN1463.cmd: 2.125156334791063E-5  
Cycle 607  
Total biomass:  
Model iAF1260.cmd: 1.9786314108099387E-5

Model iJN1463.cmd: 2.126582242466662E-5  
Cycle 608  
Total biomass:  
Model iAF1260.cmd: 1.9813591553305508E-5  
Model iJN1463.cmd: 2.1280040818536772E-5  
Cycle 609  
Total biomass:  
Model iAF1260.cmd: 1.9840817075770927E-5  
Model iJN1463.cmd: 2.1294218534753217E-5  
Cycle 610  
Total biomass:  
Model iAF1260.cmd: 1.986798979234184E-5  
Model iJN1463.cmd: 2.130835525375648E-5  
Cycle 611  
Total biomass:  
Model iAF1260.cmd: 1.9895109829410898E-5  
Model iJN1463.cmd: 2.1322451245971945E-5  
Cycle 612  
Total biomass:  
Model iAF1260.cmd: 1.992217774159811E-5  
Model iJN1463.cmd: 2.1336506940080907E-5  
Cycle 613  
Total biomass:  
Model iAF1260.cmd: 1.994919387686037E-5  
Model iJN1463.cmd: 2.1350522591643113E-5  
Cycle 614  
Total biomass:  
Model iAF1260.cmd: 1.997615842211946E-5  
Model iJN1463.cmd: 2.136449833773416E-5  
Cycle 615  
Total biomass:  
Model iAF1260.cmd: 2.0003071471727453E-5  
Model iJN1463.cmd: 2.137843425024692E-5  
Cycle 616  
Total biomass:  
Model iAF1260.cmd: 2.002993307425567E-5  
Model iJN1463.cmd: 2.1392330369254175E-5  
Cycle 617  
Total biomass:  
Model iAF1260.cmd: 2.0056743258342394E-5  
Model iJN1463.cmd: 2.1406186721065176E-5  
Cycle 618  
Total biomass:  
Model iAF1260.cmd: 2.0083502046049726E-5  
Model iJN1463.cmd: 2.1420003327220293E-5  
Cycle 619  
Total biomass:  
Model iAF1260.cmd: 2.0110209459839775E-5  
Model iJN1463.cmd: 2.1433780209060674E-5  
Cycle 620  
Total biomass:  
Model iAF1260.cmd: 2.013686552662727E-5  
Model iJN1463.cmd: 2.1447517390452198E-5  
Cycle 621  
Total biomass:  
Model iAF1260.cmd: 2.01634702543932E-5  
Model iJN1463.cmd: 2.1461214884993256E-5  
Cycle 622  
Total biomass:  
Model iAF1260.cmd: 2.019002339439634E-5  
Model iJN1463.cmd: 2.1474872563170404E-5  
Cycle 623  
Total biomass:  
Model iAF1260.cmd: 2.0216524776138683E-5  
Model iJN1463.cmd: 2.148849032785605E-5  
Cycle 624  
Total biomass:  
Model iAF1260.cmd: 2.0242974310747472E-5  
Model iJN1463.cmd: 2.1502068132070994E-5  
Cycle 625  
Total biomass:  
Model iAF1260.cmd: 2.02693719481372E-5  
Model iJN1463.cmd: 2.1515605952835014E-5  
Cycle 626  
Total biomass:  
Model iAF1260.cmd: 2.0295717657965215E-5  
Model iJN1463.cmd: 2.1529103779679972E-5  
Cycle 627  
Total biomass:  
Model iAF1260.cmd: 2.0322011419654925E-5  
Model iJN1463.cmd: 2.1542561608361644E-5  
Cycle 628  
Total biomass:

Model iAF1260.cmd: 2.034825321739076E-5  
Model iJN1463.cmd: 2.1555979437780713E-5  
Cycle 629  
Total biomass:  
Model iAF1260.cmd: 2.0374443037769687E-5  
Model iJN1463.cmd: 2.156935726838369E-5  
Cycle 630  
Total biomass:  
Model iAF1260.cmd: 2.0400589728000182E-5  
Model iJN1463.cmd: 2.1582701499010516E-5  
Cycle 631  
Total biomass:  
Model iAF1260.cmd: 2.0426704401138253E-5  
Model iJN1463.cmd: 2.1596020118559082E-5  
Cycle 632  
Total biomass:  
Model iAF1260.cmd: 2.045279145857017E-5  
Model iJN1463.cmd: 2.1609316242386664E-5  
Cycle 633  
Total biomass:  
Model iAF1260.cmd: 2.047884621528845E-5  
Model iJN1463.cmd: 2.1622586851502364E-5  
Cycle 634  
Total biomass:  
Model iAF1260.cmd: 2.0504857640974903E-5  
Model iJN1463.cmd: 2.1635824696206215E-5  
Cycle 635  
Total biomass:  
Model iAF1260.cmd: 2.0530820795821255E-5  
Model iJN1463.cmd: 2.16490265328209E-5  
Cycle 636  
Total biomass:  
Model iAF1260.cmd: 2.0556733473919602E-5  
Model iJN1463.cmd: 2.166219091776477E-5  
Cycle 637  
Total biomass:  
Model iAF1260.cmd: 2.058259469094841E-5  
Model iJN1463.cmd: 2.16753172123292E-5  
Cycle 638  
Total biomass:  
Model iAF1260.cmd: 2.060840400527926E-5  
Model iJN1463.cmd: 2.1688405135640703E-5  
Cycle 639  
Total biomass:  
Model iAF1260.cmd: 2.0634161216150373E-5  
Model iJN1463.cmd: 2.170145456570332E-5  
Cycle 640  
Total biomass:  
Model iAF1260.cmd: 2.0659867075421177E-5  
Model iJN1463.cmd: 2.171446632588532E-5  
Cycle 641  
Total biomass:  
Model iAF1260.cmd: 2.0685521757565497E-5  
Model iJN1463.cmd: 2.172744075847168E-5  
Cycle 642  
Total biomass:  
Model iAF1260.cmd: 2.0711125158649468E-5  
Model iJN1463.cmd: 2.174037772981855E-5  
Cycle 643  
Total biomass:  
Model iAF1260.cmd: 2.073667687926947E-5  
Model iJN1463.cmd: 2.175327711984836E-5  
Cycle 644  
Total biomass:  
Model iAF1260.cmd: 2.076217680357289E-5  
Model iJN1463.cmd: 2.1766138865020887E-5  
Cycle 645  
Total biomass:  
Model iAF1260.cmd: 2.07876248727222E-5  
Model iJN1463.cmd: 2.1778962938146877E-5  
Cycle 646  
Total biomass:  
Model iAF1260.cmd: 2.081302108824624E-5  
Model iJN1463.cmd: 2.17917490798535E-5  
Cycle 647  
Total biomass:  
Model iAF1260.cmd: 2.0838365468778212E-5  
Model iJN1463.cmd: 2.1804496972703533E-5  
Cycle 648  
Total biomass:  
Model iAF1260.cmd: 2.086365782742642E-5  
Model iJN1463.cmd: 2.1817206509621264E-5  
Cycle 649

Total biomass:  
Model iAF1260.cmd: 2.0888898343499996E-5  
Model iJN1463.cmd: 2.182987766115386E-5  
Cycle 650  
Total biomass:  
Model iAF1260.cmd: 2.0914087012018006E-5  
Model iJN1463.cmd: 2.1842510422677935E-5  
Cycle 651  
Total biomass:  
Model iAF1260.cmd: 2.093922382856435E-5  
Model iJN1463.cmd: 2.185510479767658E-5  
Cycle 652  
Total biomass:  
Model iAF1260.cmd: 2.0964308789220266E-5  
Model iJN1463.cmd: 2.1867660793162507E-5  
Cycle 653  
Total biomass:  
Model iAF1260.cmd: 2.098934189050795E-5  
Model iJN1463.cmd: 2.1880178416155572E-5  
Cycle 654  
Total biomass:  
Model iAF1260.cmd: 2.10143231292781E-5  
Model iJN1463.cmd: 2.189265767492763E-5  
Cycle 655  
Total biomass:  
Model iAF1260.cmd: 2.1039252502754917E-5  
Model iJN1463.cmd: 2.1905098578069388E-5  
Cycle 656  
Total biomass:  
Model iAF1260.cmd: 2.1064070436355855E-5  
Model iJN1463.cmd: 2.1917461733301232E-5  
Cycle 657  
Total biomass:  
Model iAF1260.cmd: 2.108880748253256E-5  
Model iJN1463.cmd: 2.1929766797734676E-5  
Cycle 658  
Total biomass:  
Model iAF1260.cmd: 2.1113477590366197E-5  
Model iJN1463.cmd: 2.1942023640117588E-5  
Cycle 659  
Total biomass:  
Model iAF1260.cmd: 2.113808804066357E-5  
Model iJN1463.cmd: 2.195423741369079E-5  
Cycle 660  
Total biomass:  
Model iAF1260.cmd: 2.1162642756019506E-5  
Model iJN1463.cmd: 2.1966411030753774E-5  
Cycle 661  
Total biomass:  
Model iAF1260.cmd: 2.1187143622609254E-5  
Model iJN1463.cmd: 2.1978545928117876E-5  
Cycle 662  
Total biomass:  
Model iAF1260.cmd: 2.1211591572136313E-5  
Model iJN1463.cmd: 2.1990642053301894E-5  
Cycle 663  
Total biomass:  
Model iAF1260.cmd: 2.123598772149087E-5  
Model iJN1463.cmd: 2.2002699543113137E-5  
Cycle 664  
Total biomass:  
Model iAF1260.cmd: 2.1260338005052976E-5  
Model iJN1463.cmd: 2.2014722386051625E-5  
Cycle 665  
Total biomass:  
Model iAF1260.cmd: 2.128464486587444E-5  
Model iJN1463.cmd: 2.2026712221491055E-5  
Cycle 666  
Total biomass:  
Model iAF1260.cmd: 2.1308909324572888E-5  
Model iJN1463.cmd: 2.20386697387339E-5  
Cycle 667  
Total biomass:  
Model iAF1260.cmd: 2.133313181159026E-5  
Model iJN1463.cmd: 2.2050595231791462E-5  
Cycle 668  
Total biomass:  
Model iAF1260.cmd: 2.1357312510408555E-5  
Model iJN1463.cmd: 2.2062488829503487E-5  
Cycle 669  
Total biomass:  
Model iAF1260.cmd: 2.138145150020192E-5  
Model iJN1463.cmd: 2.2074350590874043E-5

Cycle 670  
Total biomass:  
Model iAF1260.cmd: 2.1405548815604828E-5  
Model iJN1463.cmd: 2.208618054551589E-5  
Cycle 671  
Total biomass:  
Model iAF1260.cmd: 2.142960447212428E-5  
Model iJN1463.cmd: 2.2097978709920557E-5  
Cycle 672  
Total biomass:  
Model iAF1260.cmd: 2.1453618477097918E-5  
Model iJN1463.cmd: 2.2109745095555456E-5  
Cycle 673  
Total biomass:  
Model iAF1260.cmd: 2.1477590834321065E-5  
Model iJN1463.cmd: 2.2121479711322335E-5  
Cycle 674  
Total biomass:  
Model iAF1260.cmd: 2.150152154617782E-5  
Model iJN1463.cmd: 2.213318256492433E-5  
Cycle 675  
Total biomass:  
Model iAF1260.cmd: 2.152541061451214E-5  
Model iJN1463.cmd: 2.2144853664321388E-5  
Cycle 676  
Total biomass:  
Model iAF1260.cmd: 2.1549258041016228E-5  
Model iJN1463.cmd: 2.21564930172732E-5  
Cycle 677  
Total biomass:  
Model iAF1260.cmd: 2.157306382739082E-5  
Model iJN1463.cmd: 2.21681009943921E-5  
Cycle 678  
Total biomass:  
Model iAF1260.cmd: 2.15968279754569E-5  
Model iJN1463.cmd: 2.2179677326566635E-5  
Cycle 679  
Total biomass:  
Model iAF1260.cmd: 2.162055048717487E-5  
Model iJN1463.cmd: 2.2191222136014913E-5  
Cycle 680  
Total biomass:  
Model iAF1260.cmd: 2.16442313646259E-5  
Model iJN1463.cmd: 2.220273522792232E-5  
Cycle 681  
Total biomass:  
Model iAF1260.cmd: 2.16678704164792E-5  
Model iJN1463.cmd: 2.2214216380696653E-5  
Cycle 682  
Total biomass:  
Model iAF1260.cmd: 2.169146754198565E-5  
Model iJN1463.cmd: 2.222566558618937E-5  
Cycle 683  
Total biomass:  
Model iAF1260.cmd: 2.17150227505455E-5  
Model iJN1463.cmd: 2.2237082847624283E-5  
Cycle 684  
Total biomass:  
Model iAF1260.cmd: 2.1738536067151038E-5  
Model iJN1463.cmd: 2.2248468259099184E-5  
Cycle 685  
Total biomass:  
Model iAF1260.cmd: 2.1762007511036907E-5  
Model iJN1463.cmd: 2.225982176431315E-5  
Cycle 686  
Total biomass:  
Model iAF1260.cmd: 2.1785437094809012E-5  
Model iJN1463.cmd: 2.2271143303778245E-5  
Cycle 687  
Total biomass:  
Model iAF1260.cmd: 2.1808824826855643E-5  
Model iJN1463.cmd: 2.228243296428486E-5  
Cycle 688  
Total biomass:  
Model iAF1260.cmd: 2.183217071338686E-5  
Model iJN1463.cmd: 2.229369075674666E-5  
Cycle 689  
Total biomass:  
Model iAF1260.cmd: 2.1855474759576856E-5  
Model iJN1463.cmd: 2.2304916691425295E-5  
Cycle 690  
Total biomass:  
Model iAF1260.cmd: 2.1878736970186106E-5

Model iJN1463.cmd: 2.231611128511541E-5  
Cycle 691  
Total biomass:  
Model iAF1260.cmd: 2.1901957349884923E-5  
Model iJN1463.cmd: 2.2327274160896864E-5  
Cycle 692  
Total biomass:  
Model iAF1260.cmd: 2.192513590335181E-5  
Model iJN1463.cmd: 2.2338405134329983E-5  
Cycle 693  
Total biomass:  
Model iAF1260.cmd: 2.1948272635391426E-5  
Model iJN1463.cmd: 2.234950428790405E-5  
Cycle 694  
Total biomass:  
Model iAF1260.cmd: 2.1971367550913E-5  
Model iJN1463.cmd: 2.236057163166348E-5  
Cycle 695  
Total biomass:  
Model iAF1260.cmd: 2.199442065496292E-5  
Model iJN1463.cmd: 2.2371607176045888E-5  
Cycle 696  
Total biomass:  
Model iAF1260.cmd: 2.2017431952755275E-5  
Model iJN1463.cmd: 2.2382611216714984E-5  
Cycle 697  
Total biomass:  
Model iAF1260.cmd: 2.2040401449626945E-5  
Model iJN1463.cmd: 2.239358371028006E-5  
Cycle 698  
Total biomass:  
Model iAF1260.cmd: 2.2063329151089307E-5  
Model iJN1463.cmd: 2.2404524634533673E-5  
Cycle 699  
Total biomass:  
Model iAF1260.cmd: 2.208621506277602E-5  
Model iJN1463.cmd: 2.241543372449032E-5  
Cycle 700  
Total biomass:  
Model iAF1260.cmd: 2.2109059190485017E-5  
Model iJN1463.cmd: 2.242631114022062E-5  
Cycle 701  
Total biomass:  
Model iAF1260.cmd: 2.213186154015119E-5  
Model iJN1463.cmd: 2.243715681379135E-5  
Cycle 702  
Total biomass:  
Model iAF1260.cmd: 2.215462211786542E-5  
Model iJN1463.cmd: 2.244797062029348E-5  
Cycle 703  
Total biomass:  
Model iAF1260.cmd: 2.2177340929857406E-5  
Model iJN1463.cmd: 2.24587529172897E-5  
Cycle 704  
Total biomass:  
Model iAF1260.cmd: 2.2200017982486788E-5  
Model iJN1463.cmd: 2.2469503900594266E-5  
Cycle 705  
Total biomass:  
Model iAF1260.cmd: 2.222265328232022E-5  
Model iJN1463.cmd: 2.2480223309402594E-5  
Cycle 706  
Total biomass:  
Model iAF1260.cmd: 2.2245246836000246E-5  
Model iJN1463.cmd: 2.2490911041092958E-5  
Cycle 707  
Total biomass:  
Model iAF1260.cmd: 2.2267798650341792E-5  
Model iJN1463.cmd: 2.2501567031705742E-5  
Cycle 708  
Total biomass:  
Model iAF1260.cmd: 2.2290308732300604E-5  
Model iJN1463.cmd: 2.2512191286876584E-5  
Cycle 709  
Total biomass:  
Model iAF1260.cmd: 2.2312776780436017E-5  
Model iJN1463.cmd: 2.2522783920187013E-5  
Cycle 710  
Total biomass:  
Model iAF1260.cmd: 2.2335202639053912E-5  
Model iJN1463.cmd: 2.253334479510539E-5  
Cycle 711  
Total biomass:

Model iAF1260.cmd: 2.2357587069364472E-5  
Model iJN1463.cmd: 2.2543874672936385E-5  
Cycle 712  
Total biomass:  
Model iAF1260.cmd: 2.2379930567990087E-5  
Model iJN1463.cmd: 2.2554373838143392E-5  
Cycle 713  
Total biomass:  
Model iAF1260.cmd: 2.2402233400696285E-5  
Model iJN1463.cmd: 2.2564842334967615E-5  
Cycle 714  
Total biomass:  
Model iAF1260.cmd: 2.242449570085216E-5  
Model iJN1463.cmd: 2.2575280185630163E-5  
Cycle 715  
Total biomass:  
Model iAF1260.cmd: 2.244671753535684E-5  
Model iJN1463.cmd: 2.2585687652234852E-5  
Cycle 716  
Total biomass:  
Model iAF1260.cmd: 2.24688989396861E-5  
Model iJN1463.cmd: 2.259606468853692E-5  
Cycle 717  
Total biomass:  
Model iAF1260.cmd: 2.249104139867457E-5  
Model iJN1463.cmd: 2.260640625602059E-5  
Cycle 718  
Total biomass:  
Model iAF1260.cmd: 2.251314694603454E-5  
Model iJN1463.cmd: 2.2616702334314596E-5  
Cycle 719  
Total biomass:  
Model iAF1260.cmd: 2.253521533642988E-5  
Model iJN1463.cmd: 2.2626949422088314E-5  
Cycle 720  
Total biomass:  
Model iAF1260.cmd: 2.2557247063173503E-5  
Model iJN1463.cmd: 2.2637146473816976E-5  
Cycle 721  
Total biomass:  
Model iAF1260.cmd: 2.2579242579552665E-5  
Model iJN1463.cmd: 2.2647293021188922E-5  
Cycle 722  
Total biomass:  
Model iAF1260.cmd: 2.2601202211287922E-5  
Model iJN1463.cmd: 2.2657388865929664E-5  
Cycle 723  
Total biomass:  
Model iAF1260.cmd: 2.2623126166868457E-5  
Model iJN1463.cmd: 2.266743445982293E-5  
Cycle 724  
Total biomass:  
Model iAF1260.cmd: 2.264501457421362E-5  
Model iJN1463.cmd: 2.267742961435267E-5  
Cycle 725  
Total biomass:  
Model iAF1260.cmd: 2.2667076882340184E-5  
Model iJN1463.cmd: 2.2687714209797326E-5  
Cycle 726  
Total biomass:  
Model iAF1260.cmd: 2.2688726353267626E-5  
Model iJN1463.cmd: 2.2697716133460024E-5  
Cycle 727  
Total biomass:  
Model iAF1260.cmd: 2.271038515553681E-5  
Model iJN1463.cmd: 2.2707599229812446E-5  
Cycle 728  
Total biomass:  
Model iAF1260.cmd: 2.2732255983628787E-5  
Model iJN1463.cmd: 2.271776330137834E-5  
Cycle 729  
Total biomass:  
Model iAF1260.cmd: 2.275374519844922E-5  
Model iJN1463.cmd: 2.2727655454587288E-5  
Cycle 730  
Total biomass:  
Model iAF1260.cmd: 2.277547184729818E-5  
Model iJN1463.cmd: 2.2737761001234098E-5  
Cycle 731  
Total biomass:  
Model iAF1260.cmd: 2.279683643131707E-5  
Model iJN1463.cmd: 2.2747577088310838E-5  
Cycle 732

Total biomass:  
Model iAF1260.cmd: 2.2818454276837885E-5  
Model iJN1463.cmd: 2.2757609041469773E-5  
Cycle 733  
Total biomass:  
Model iAF1260.cmd: 2.2839725372616095E-5  
Model iJN1463.cmd: 2.2767350290427003E-5  
Cycle 734  
Total biomass:  
Model iAF1260.cmd: 2.2860000703960078E-5  
Model iJN1463.cmd: 2.2776334856687744E-5  
Cycle 735  
Total biomass:  
Model iAF1260.cmd: 2.2880683580210843E-5  
Model iJN1463.cmd: 2.2785590537783753E-5  
Cycle 736  
Total biomass:  
Model iAF1260.cmd: 2.290115615700418E-5  
Model iJN1463.cmd: 2.279466827492093E-5  
Cycle 737  
Total biomass:  
Model iAF1260.cmd: 2.292115245472688E-5  
Model iJN1463.cmd: 2.2803282371525984E-5  
Cycle 738  
Total biomass:  
Model iAF1260.cmd: 2.2941349584871575E-5  
Model iJN1463.cmd: 2.2812114743704024E-5  
Cycle 739  
Total biomass:  
Model iAF1260.cmd: 2.296119247581529E-5  
Model iJN1463.cmd: 2.2820572439620105E-5  
Cycle 740  
Total biomass:  
Model iAF1260.cmd: 2.2981277193645776E-5  
Model iJN1463.cmd: 2.282931114876771E-5  
Cycle 741  
Total biomass:  
Model iAF1260.cmd: 2.3001029719275467E-5  
Model iJN1463.cmd: 2.2837672091596683E-5  
Cycle 742  
Total biomass:  
Model iAF1260.cmd: 2.3021027270642598E-5  
Model iJN1463.cmd: 2.2846340482258864E-5  
Cycle 743  
Total biomass:  
Model iAF1260.cmd: 2.3040920372871082E-5  
Model iJN1463.cmd: 2.285498440637909E-5  
Cycle 744  
Total biomass:  
Model iAF1260.cmd: 2.306046685144795E-5  
Model iJN1463.cmd: 2.2863220770343346E-5  
Cycle 745  
Total biomass:  
Model iAF1260.cmd: 2.3080292455514744E-5  
Model iJN1463.cmd: 2.2871776179943528E-5  
Cycle 746  
Total biomass:  
Model iAF1260.cmd: 2.310226753065541E-5  
Model iJN1463.cmd: 2.288179200223036E-5  
Cycle 747  
Total biomass:  
Model iAF1260.cmd: 2.3125120433764937E-5  
Model iJN1463.cmd: 2.2892396835665105E-5  
Cycle 748  
Total biomass:  
Model iAF1260.cmd: 2.314834124650899E-5  
Model iJN1463.cmd: 2.2903245101387893E-5  
Cycle 749  
Total biomass:  
Model iAF1260.cmd: 2.317171384272209E-5  
Model iJN1463.cmd: 2.2914192454499824E-5  
Cycle 750  
Total biomass:  
Model iAF1260.cmd: 2.319514545184849E-5  
Model iJN1463.cmd: 2.2925176964162462E-5  
Cycle 751  
Total biomass:  
Model iAF1260.cmd: 2.3218595822322334E-5  
Model iJN1463.cmd: 2.2936171867067936E-5  
Cycle 752  
Total biomass:  
Model iAF1260.cmd: 2.324204735363381E-5  
Model iJN1463.cmd: 2.2947165491748796E-5



Cycle 753  
Total biomass:  
Model iAF1260.cmd: 2.326549230952518E-5  
Model iJN1463.cmd: 2.2958152717520287E-5  
Cycle 754  
Total biomass:  
Model iAF1260.cmd: 2.3288927277431626E-5  
Model iJN1463.cmd: 2.2969131289005353E-5  
Cycle 755  
Total biomass:  
Model iAF1260.cmd: 2.331235074794563E-5  
Model iJN1463.cmd: 2.298010021033582E-5  
Cycle 756  
Total biomass:  
Model iAF1260.cmd: 2.3335762051566994E-5  
Model iJN1463.cmd: 2.299105904107819E-5  
Cycle 757  
Total biomass:  
Model iAF1260.cmd: 2.3359160890109762E-5  
Model iJN1463.cmd: 2.3002007586170967E-5  
Cycle 758  
Total biomass:  
Model iAF1260.cmd: 2.3382547129709195E-5  
Model iJN1463.cmd: 2.301294575916188E-5  
Cycle 759  
Total biomass:  
Model iAF1260.cmd: 2.3405920709253918E-5  
Model iJN1463.cmd: 2.3023873521638665E-5  
Cycle 760  
Total biomass:  
Model iAF1260.cmd: 2.3429281599878543E-5  
Model iJN1463.cmd: 2.303479085648019E-5  
Cycle 761  
Total biomass:  
Model iAF1260.cmd: 2.345262978700402E-5  
Model iJN1463.cmd: 2.3045697756055328E-5  
Cycle 762  
Total biomass:  
Model iAF1260.cmd: 2.3475965262390235E-5  
Model iJN1463.cmd: 2.3056594216883226E-5  
Cycle 763  
Total biomass:  
Model iAF1260.cmd: 2.3499288020605107E-5  
Model iJN1463.cmd: 2.306748023735491E-5  
Cycle 764  
Total biomass:  
Model iAF1260.cmd: 2.3522598057460467E-5  
Model iJN1463.cmd: 2.3078355816699047E-5  
Cycle 765  
Total biomass:  
Model iAF1260.cmd: 2.3545895369345E-5  
Model iJN1463.cmd: 2.308922095451141E-5  
Cycle 766  
Total biomass:  
Model iAF1260.cmd: 2.356917995287857E-5  
Model iJN1463.cmd: 2.3100075650566824E-5  
Cycle 767  
Total biomass:  
Model iAF1260.cmd: 2.3592451804807786E-5  
Model iJN1463.cmd: 2.3110919904700205E-5  
Cycle 768  
Total biomass:  
Model iAF1260.cmd: 2.3615710921935944E-5  
Model iJN1463.cmd: 2.312175371680816E-5  
Cycle 769  
Total biomass:  
Model iAF1260.cmd: 2.3638957301095196E-5  
Model iJN1463.cmd: 2.3132577086839908E-5  
Cycle 770  
Total biomass:  
Model iAF1260.cmd: 2.366219093912158E-5  
Model iJN1463.cmd: 2.3143390014704138E-5  
Cycle 771  
Total biomass:  
Model iAF1260.cmd: 2.3684745729051344E-5  
Model iJN1463.cmd: 2.3153621020875417E-5  
Cycle 772  
Total biomass:  
Model iAF1260.cmd: 2.370705079700502E-5  
Model iJN1463.cmd: 2.316363805398776E-5  
Cycle 773  
Total biomass:  
Model iAF1260.cmd: 2.3729259365053644E-5

Model iJN1463.cmd: 2.317357298325926E-5  
Cycle 774  
Total biomass:  
Model iAF1260.cmd: 2.3751425745959836E-5  
Model iJN1463.cmd: 2.3183472521299284E-5  
Cycle 775  
Total biomass:  
Model iAF1260.cmd: 2.3773569088320567E-5  
Model iJN1463.cmd: 2.3193353124159633E-5  
Cycle 776  
Total biomass:  
Model iAF1260.cmd: 2.3795696142182675E-5  
Model iJN1463.cmd: 2.3203220587785405E-5  
Cycle 777  
Total biomass:  
Model iAF1260.cmd: 2.3817809455484085E-5  
Model iJN1463.cmd: 2.32130769549803E-5  
Cycle 778  
Total biomass:  
Model iAF1260.cmd: 2.3839909533601585E-5  
Model iJN1463.cmd: 2.3222922946376977E-5  
Cycle 779  
Total biomass:  
Model iAF1260.cmd: 2.386199700614537E-5  
Model iJN1463.cmd: 2.3232758816361306E-5  
Cycle 780  
Total biomass:  
Model iAF1260.cmd: 2.3884071809016063E-5  
Model iJN1463.cmd: 2.324258465471821E-5  
Cycle 781  
Total biomass:  
Model iAF1260.cmd: 2.3906133810173595E-5  
Model iJN1463.cmd: 2.325240049299287E-5  
Cycle 782  
Total biomass:  
Model iAF1260.cmd: 2.3928183187013473E-5  
Model iJN1463.cmd: 2.3262206342145812E-5  
Cycle 783  
Total biomass:  
Model iAF1260.cmd: 2.395022010799413E-5  
Model iJN1463.cmd: 2.327200220584456E-5  
Cycle 784  
Total biomass:  
Model iAF1260.cmd: 2.3972244238762648E-5  
Model iJN1463.cmd: 2.3281788085120467E-5  
Cycle 785  
Total biomass:  
Model iAF1260.cmd: 2.399425574362419E-5  
Model iJN1463.cmd: 2.3291563980137183E-5  
Cycle 786  
Total biomass:  
Model iAF1260.cmd: 2.4016254619918738E-5  
Model iJN1463.cmd: 2.330132989070715E-5  
Cycle 787  
Total biomass:  
Model iAF1260.cmd: 2.4038241031057783E-5  
Model iJN1463.cmd: 2.3311085816573615E-5  
Cycle 788  
Total biomass:  
Model iAF1260.cmd: 2.4060214807917666E-5  
Model iJN1463.cmd: 2.3320831757435327E-5  
Cycle 789  
Total biomass:  
Model iAF1260.cmd: 2.4082175947679008E-5  
Model iJN1463.cmd: 2.333056771302525E-5  
Cycle 790  
Total biomass:  
Model iAF1260.cmd: 2.4104124447527473E-5  
Model iJN1463.cmd: 2.3340293683037013E-5  
Cycle 791  
Total biomass:  
Model iAF1260.cmd: 2.4126060138836418E-5  
Model iJN1463.cmd: 2.335000966723027E-5  
Cycle 792  
Total biomass:  
Model iAF1260.cmd: 2.4147983350471005E-5  
Model iJN1463.cmd: 2.3359715665349056E-5  
Cycle 793  
Total biomass:  
Model iAF1260.cmd: 2.4169893913847555E-5  
Model iJN1463.cmd: 2.3369411677178515E-5  
Cycle 794  
Total biomass:

Model iAF1260.cmd: 2.4191791826223458E-5  
Model iJN1463.cmd: 2.3379097702516553E-5  
Cycle 795  
Total biomass:  
Model iAF1260.cmd: 2.4213677084871284E-5  
Model iJN1463.cmd: 2.338877374117935E-5  
Cycle 796  
Total biomass:  
Model iAF1260.cmd: 2.4235549687082735E-5  
Model iJN1463.cmd: 2.3398439793004977E-5  
Cycle 797  
Total biomass:  
Model iAF1260.cmd: 2.4257409814815613E-5  
Model iJN1463.cmd: 2.3408095857834613E-5  
Cycle 798  
Total biomass:  
Model iAF1260.cmd: 2.4279257096081094E-5  
Model iJN1463.cmd: 2.3417741935543045E-5  
Cycle 799  
Total biomass:  
Model iAF1260.cmd: 2.4301091897331172E-5  
Model iJN1463.cmd: 2.3427378026025062E-5  
Cycle 800  
Total biomass:  
Model iAF1260.cmd: 2.4322914031365758E-5  
Model iJN1463.cmd: 2.343700412918794E-5  
Cycle 801  
Total biomass:  
Model iAF1260.cmd: 2.4344723311341065E-5  
Model iJN1463.cmd: 2.344662024493905E-5  
Cycle 802  
Total biomass:  
Model iAF1260.cmd: 2.436652010311024E-5  
Model iJN1463.cmd: 2.3456226373249776E-5  
Cycle 803  
Total biomass:  
Model iAF1260.cmd: 2.4388304208554334E-5  
Model iJN1463.cmd: 2.3465822514070626E-5  
Cycle 804  
Total biomass:  
Model iAF1260.cmd: 2.441007546379695E-5  
Model iJN1463.cmd: 2.3475408667394255E-5  
Cycle 805  
Total biomass:  
Model iAF1260.cmd: 2.4431834211515462E-5  
Model iJN1463.cmd: 2.348498483319409E-5  
Cycle 806  
Total biomass:  
Model iAF1260.cmd: 2.445358046025179E-5  
Model iJN1463.cmd: 2.3494551011488748E-5  
Cycle 807  
Total biomass:  
Model iAF1260.cmd: 2.4475313667763945E-5  
Model iJN1463.cmd: 2.350410720232872E-5  
Cycle 808  
Total biomass:  
Model iAF1260.cmd: 2.4497034543380027E-5  
Model iJN1463.cmd: 2.351365340574937E-5  
Cycle 809  
Total biomass:  
Model iAF1260.cmd: 2.451874272870646E-5  
Model iJN1463.cmd: 2.352319006871114E-5  
Cycle 810  
Total biomass:  
Model iAF1260.cmd: 2.454043804920659E-5  
Model iJN1463.cmd: 2.3532716743751794E-5  
Cycle 811  
Total biomass:  
Model iAF1260.cmd: 2.4562120846531576E-5  
Model iJN1463.cmd: 2.3542233430996042E-5  
Cycle 812  
Total biomass:  
Model iAF1260.cmd: 2.458379059127593E-5  
Model iJN1463.cmd: 2.3551740130556864E-5  
Cycle 813  
Total biomass:  
Model iAF1260.cmd: 2.4605447807907247E-5  
Model iJN1463.cmd: 2.356123696809357E-5  
Cycle 814  
Total biomass:  
Model iAF1260.cmd: 2.4627092504981776E-5  
Model iJN1463.cmd: 2.3570724043615732E-5  
Cycle 815

Total biomass:  
Model iAF1260.cmd: 2.4648724142838126E-5  
Model iJN1463.cmd: 2.358020113138785E-5  
Cycle 816  
Total biomass:  
Model iAF1260.cmd: 2.4670343427745734E-5  
Model iJN1463.cmd: 2.3589668231623617E-5  
Cycle 817  
Total biomass:  
Model iAF1260.cmd: 2.4691950003019157E-5  
Model iJN1463.cmd: 2.3599125344489876E-5  
Cycle 818  
Total biomass:  
Model iAF1260.cmd: 2.4713543866313088E-5  
Model iJN1463.cmd: 2.3608572470206674E-5  
Cycle 819  
Total biomass:  
Model iAF1260.cmd: 2.4735125184929977E-5  
Model iJN1463.cmd: 2.3618009609014396E-5  
Cycle 820  
Total biomass:  
Model iAF1260.cmd: 2.4756693786822834E-5  
Model iJN1463.cmd: 2.3627436761169704E-5  
Cycle 821  
Total biomass:  
Model iAF1260.cmd: 2.4778249500257716E-5  
Model iJN1463.cmd: 2.363685392691983E-5  
Cycle 822  
Total biomass:  
Model iAF1260.cmd: 2.4799792661816187E-5  
Model iJN1463.cmd: 2.364626110656684E-5  
Cycle 823  
Total biomass:  
Model iAF1260.cmd: 2.4821322930566197E-5  
Model iJN1463.cmd: 2.3655658300377693E-5  
Cycle 824  
Total biomass:  
Model iAF1260.cmd: 2.4842840642700504E-5  
Model iJN1463.cmd: 2.366504550867622E-5  
Cycle 825  
Total biomass:  
Model iAF1260.cmd: 2.4864345626758555E-5  
Model iJN1463.cmd: 2.367442273179634E-5  
Cycle 826  
Total biomass:  
Model iAF1260.cmd: 2.4885837880510223E-5  
Model iJN1463.cmd: 2.3683789970039318E-5  
Cycle 827  
Total biomass:  
Model iAF1260.cmd: 2.4907317232916918E-5  
Model iJN1463.cmd: 2.3693147223799332E-5  
Cycle 828  
Total biomass:  
Model iAF1260.cmd: 2.4928783850717088E-5  
Model iJN1463.cmd: 2.3702494493438456E-5  
Cycle 829  
Total biomass:  
Model iAF1260.cmd: 2.4950237731725412E-5  
Model iJN1463.cmd: 2.3711831779340267E-5  
Cycle 830  
Total biomass:  
Model iAF1260.cmd: 2.4971679042302675E-5  
Model iJN1463.cmd: 2.3721159081891806E-5  
Cycle 831  
Total biomass:  
Model iAF1260.cmd: 2.499310761167163E-5  
Model iJN1463.cmd: 2.3730476401521495E-5  
Cycle 832  
Total biomass:  
Model iAF1260.cmd: 2.5014523269352193E-5  
Model iJN1463.cmd: 2.3739783738647156E-5  
Cycle 833  
Total biomass:  
Model iAF1260.cmd: 2.5035926349887708E-5  
Model iJN1463.cmd: 2.3749081093731488E-5  
Cycle 834  
Total biomass:  
Model iAF1260.cmd: 2.5057316682843635E-5  
Model iJN1463.cmd: 2.3758368467240404E-5  
Cycle 835  
Total biomass:  
Model iAF1260.cmd: 2.5078694098086057E-5  
Model iJN1463.cmd: 2.3767645859622675E-5

Cycle 836  
Total biomass:  
Model iAF1260.cmd: 2.5100058929588453E-5  
Model iJN1463.cmd: 2.3776913271371347E-5  
Cycle 837  
Total biomass:  
Model iAF1260.cmd: 2.512141100725932E-5  
Model iJN1463.cmd: 2.3786170703003117E-5  
Cycle 838  
Total biomass:  
Model iAF1260.cmd: 2.5142750329050097E-5  
Model iJN1463.cmd: 2.3795418155035224E-5  
Cycle 839  
Total biomass:  
Model iAF1260.cmd: 2.5164076892913428E-5  
Model iJN1463.cmd: 2.3804655627990454E-5  
Cycle 840  
Total biomass:  
Model iAF1260.cmd: 2.518539069681726E-5  
Model iJN1463.cmd: 2.381388312240488E-5  
Cycle 841  
Total biomass:  
Model iAF1260.cmd: 2.5206691738762217E-5  
Model iJN1463.cmd: 2.3823100638843368E-5  
Cycle 842  
Total biomass:  
Model iAF1260.cmd: 2.5227980016741367E-5  
Model iJN1463.cmd: 2.3832308177887965E-5  
Cycle 843  
Total biomass:  
Model iAF1260.cmd: 2.5249253710163577E-5  
Model iJN1463.cmd: 2.384150453975733E-5  
Cycle 844  
Total biomass:  
Model iAF1260.cmd: 2.5270510599659532E-5  
Model iJN1463.cmd: 2.385068826199677E-5  
Cycle 845  
Total biomass:  
Model iAF1260.cmd: 2.5291749754838216E-5  
Model iJN1463.cmd: 2.3859858733474693E-5  
Cycle 846  
Total biomass:  
Model iAF1260.cmd: 2.5312970762489594E-5  
Model iJN1463.cmd: 2.386901568470883E-5  
Cycle 847  
Total biomass:  
Model iAF1260.cmd: 2.5334173439316083E-5  
Model iJN1463.cmd: 2.3878158998059697E-5  
Cycle 848  
Total biomass:  
Model iAF1260.cmd: 2.535535770405086E-5  
Model iJN1463.cmd: 2.388728862327791E-5  
Cycle 849  
Total biomass:  
Model iAF1260.cmd: 2.5376523520673385E-5  
Model iJN1463.cmd: 2.3896404540002276E-5  
Cycle 850  
Total biomass:  
Model iAF1260.cmd: 2.5397671940312315E-5  
Model iJN1463.cmd: 2.3905507497056866E-5  
Cycle 851  
Total biomass:  
Model iAF1260.cmd: 2.5418805965317048E-5  
Model iJN1463.cmd: 2.391459961812282E-5  
Cycle 852  
Total biomass:  
Model iAF1260.cmd: 2.543992678681378E-5  
Model iJN1463.cmd: 2.392368172865923E-5  
Cycle 853  
Total biomass:  
Model iAF1260.cmd: 2.5461034876006098E-5  
Model iJN1463.cmd: 2.3932754151328653E-5  
Cycle 854  
Total biomass:  
Model iAF1260.cmd: 2.5482130425741863E-5  
Model iJN1463.cmd: 2.394181701774749E-5  
Cycle 855  
Total biomass:  
Model iAF1260.cmd: 2.5503213517019833E-5  
Model iJN1463.cmd: 2.3950870383795273E-5  
Cycle 856  
Total biomass:  
Model iAF1260.cmd: 2.552428418430507E-5

Model iJN1463.cmd: 2.3959914274108223E-5  
Cycle 857  
Total biomass:  
Model iAF1260.cmd: 2.5545342442237886E-5  
Model iJN1463.cmd: 2.3968948700113986E-5  
Cycle 858  
Total biomass:  
Model iAF1260.cmd: 2.5566388296859824E-5  
Model iJN1463.cmd: 2.3977973667537717E-5  
Cycle 859  
Total biomass:  
Model iAF1260.cmd: 2.5587421750474623E-5  
Model iJN1463.cmd: 2.398698917963019E-5  
Cycle 860  
Total biomass:  
Model iAF1260.cmd: 2.560844280375956E-5  
Model iJN1463.cmd: 2.3995995238544033E-5  
Cycle 861  
Total biomass:  
Model iAF1260.cmd: 2.5629451456662972E-5  
Model iJN1463.cmd: 2.400499184599699E-5  
Cycle 862  
Total biomass:  
Model iAF1260.cmd: 2.5650447708811786E-5  
Model iJN1463.cmd: 2.401397900348151E-5  
Cycle 863  
Total biomass:  
Model iAF1260.cmd: 2.5671431559705525E-5  
Model iJN1463.cmd: 2.4022956712392778E-5  
Cycle 864  
Total biomass:  
Model iAF1260.cmd: 2.5692403008802583E-5  
Model iJN1463.cmd: 2.4031924974123815E-5  
Cycle 865  
Total biomass:  
Model iAF1260.cmd: 2.571336205552166E-5  
Model iJN1463.cmd: 2.4040883790034578E-5  
Cycle 866  
Total biomass:  
Model iAF1260.cmd: 2.573554630847153E-5  
Model iJN1463.cmd: 2.4050899834819516E-5  
Cycle 867  
Total biomass:  
Model iAF1260.cmd: 2.575497396835114E-5  
Model iJN1463.cmd: 2.4058923194313414E-5  
Cycle 868  
Total biomass:  
Model iAF1260.cmd: 2.577334794474277E-5  
Model iJN1463.cmd: 2.4066191211357647E-5  
Cycle 869  
Total biomass:  
Model iAF1260.cmd: 2.579134051575897E-5  
Model iJN1463.cmd: 2.4073184747178803E-5  
Cycle 870  
Total biomass:  
Model iAF1260.cmd: 2.580918490022678E-5  
Model iJN1463.cmd: 2.408007196471754E-5  
Cycle 871  
Total biomass:  
Model iAF1260.cmd: 2.582696313814155E-5  
Model iJN1463.cmd: 2.4086912388500996E-5  
Cycle 872  
Total biomass:  
Model iAF1260.cmd: 2.5844704056731158E-5  
Model iJN1463.cmd: 2.4093726482303115E-5  
Cycle 873  
Total biomass:  
Model iAF1260.cmd: 2.5862417800507425E-5  
Model iJN1463.cmd: 2.410052191408478E-5  
Cycle 874  
Total biomass:  
Model iAF1260.cmd: 2.5880107957638434E-5  
Model iJN1463.cmd: 2.4107301100128203E-5  
Cycle 875  
Total biomass:  
Model iAF1260.cmd: 2.589777581545572E-5  
Model iJN1463.cmd: 2.4114064847431688E-5  
Cycle 876  
Total biomass:  
Model iAF1260.cmd: 2.5915421853761794E-5  
Model iJN1463.cmd: 2.4120813504814432E-5  
Cycle 877  
Total biomass:

Model iAF1260.cmd: 2.5933046268780345E-5  
Model iJN1463.cmd: 2.4127547215524458E-5  
Cycle 878  
Total biomass:  
Model iAF1260.cmd: 2.5950649157060338E-5  
Model iJN1463.cmd: 2.413426605051155E-5  
Cycle 879  
Total biomass:  
Model iAF1260.cmd: 2.596823057997051E-5  
Model iJN1463.cmd: 2.4140970055240385E-5  
Cycle 880  
Total biomass:  
Model iAF1260.cmd: 2.598579058635737E-5  
Model iJN1463.cmd: 2.4147659266122143E-5  
Cycle 881  
Total biomass:  
Model iAF1260.cmd: 2.6003329220468905E-5  
Model iJN1463.cmd: 2.4154333716223793E-5  
Cycle 882  
Total biomass:  
Model iAF1260.cmd: 2.602084652477601E-5  
Model iJN1463.cmd: 2.4160993437340504E-5  
Cycle 883  
Total biomass:  
Model iAF1260.cmd: 2.6038342540932566E-5  
Model iJN1463.cmd: 2.4167638460680145E-5  
Cycle 884  
Total biomass:  
Model iAF1260.cmd: 2.6055817310132235E-5  
Model iJN1463.cmd: 2.417426881712633E-5  
Cycle 885  
Total biomass:  
Model iAF1260.cmd: 2.6073270873221594E-5  
Model iJN1463.cmd: 2.4180884537317516E-5  
Cycle 886  
Total biomass:  
Model iAF1260.cmd: 2.6090703270752674E-5  
Model iJN1463.cmd: 2.4187485651688892E-5  
Cycle 887  
Total biomass:  
Model iAF1260.cmd: 2.6108114543015485E-5  
Model iJN1463.cmd: 2.419407219047715E-5  
Cycle 888  
Total biomass:  
Model iAF1260.cmd: 2.6125504730006465E-5  
Model iJN1463.cmd: 2.420064418374748E-5  
Cycle 889  
Total biomass:  
Model iAF1260.cmd: 2.614287387146179E-5  
Model iJN1463.cmd: 2.4207202077594452E-5  
Cycle 890  
Total biomass:  
Model iAF1260.cmd: 2.6160222006860504E-5  
Model iJN1463.cmd: 2.4213745484614374E-5  
Cycle 891  
Total biomass:  
Model iAF1260.cmd: 2.617754917542383E-5  
Model iJN1463.cmd: 2.4220274434311175E-5  
Cycle 892  
Total biomass:  
Model iAF1260.cmd: 2.6194855416111653E-5  
Model iJN1463.cmd: 2.4226789282950685E-5  
Cycle 893  
Total biomass:  
Model iAF1260.cmd: 2.62121407676361E-5  
Model iJN1463.cmd: 2.423328973206554E-5  
Cycle 894  
Total biomass:  
Model iAF1260.cmd: 2.6229408533543636E-5  
Model iJN1463.cmd: 2.423977800490362E-5  
Cycle 895  
Total biomass:  
Model iAF1260.cmd: 2.6246660242984128E-5  
Model iJN1463.cmd: 2.424625544211161E-5  
Cycle 896  
Total biomass:  
Model iAF1260.cmd: 2.6263896469554832E-5  
Model iJN1463.cmd: 2.42527220935113E-5  
Cycle 897  
Total biomass:  
Model iAF1260.cmd: 2.6281117586977994E-5  
Model iJN1463.cmd: 2.425917811392709E-5  
Cycle 898

Total biomass:  
Model iAF1260.cmd: 2.6298323553253476E-5  
Model iJN1463.cmd: 2.426562370619294E-5  
Cycle 899  
Total biomass:  
Model iAF1260.cmd: 2.6315514430227245E-5  
Model iJN1463.cmd: 2.4272058782801124E-5  
Cycle 900  
Total biomass:  
Model iAF1260.cmd: 2.633269011815096E-5  
Model iJN1463.cmd: 2.427848336313218E-5  
Cycle 901  
Total biomass:  
Model iAF1260.cmd: 2.6349850950639784E-5  
Model iJN1463.cmd: 2.4284897503576734E-5  
Cycle 902  
Total biomass:  
Model iAF1260.cmd: 2.6366996674291714E-5  
Model iJN1463.cmd: 2.4291301218326464E-5  
Cycle 903  
Total biomass:  
Model iAF1260.cmd: 2.6384127473245145E-5  
Model iJN1463.cmd: 2.4297694534529177E-5  
Cycle 904  
Total biomass:  
Model iAF1260.cmd: 2.6401243530717958E-5  
Model iJN1463.cmd: 2.4304077479012982E-5  
Cycle 905  
Total biomass:  
Model iAF1260.cmd: 2.6418344592423264E-5  
Model iJN1463.cmd: 2.4310450078348068E-5  
Cycle 906  
Total biomass:  
Model iAF1260.cmd: 2.6435430840960097E-5  
Model iJN1463.cmd: 2.4316812358958316E-5  
Cycle 907  
Total biomass:  
Model iAF1260.cmd: 2.645250245824678E-5  
Model iJN1463.cmd: 2.4323164347039857E-5  
Cycle 908  
Total biomass:  
Model iAF1260.cmd: 2.6469559190030188E-5  
Model iJN1463.cmd: 2.4329506068642064E-5  
Cycle 909  
Total biomass:  
Model iAF1260.cmd: 2.6486601362741217E-5  
Model iJN1463.cmd: 2.4335837549615254E-5  
Cycle 910  
Total biomass:  
Model iAF1260.cmd: 2.6503628867062588E-5  
Model iJN1463.cmd: 2.4342158815679647E-5  
Cycle 911  
Total biomass:  
Model iAF1260.cmd: 2.6520641738628895E-5  
Model iJN1463.cmd: 2.434846989234487E-5  
Cycle 912  
Total biomass:  
Model iAF1260.cmd: 2.6537640012797297E-5  
Model iJN1463.cmd: 2.4354770804979415E-5  
Cycle 913  
Total biomass:  
Model iAF1260.cmd: 2.6554623724705104E-5  
Model iJN1463.cmd: 2.4361061578764707E-5  
Cycle 914  
Total biomass:  
Model iAF1260.cmd: 2.6571592909253853E-5  
Model iJN1463.cmd: 2.4367342238752944E-5  
Cycle 915  
Total biomass:  
Model iAF1260.cmd: 2.658854760110769E-5  
Model iJN1463.cmd: 2.4373612809802423E-5  
Cycle 916  
Total biomass:  
Model iAF1260.cmd: 2.660548799556516E-5  
Model iJN1463.cmd: 2.4379873316629975E-5  
Cycle 917  
Total biomass:  
Model iAF1260.cmd: 2.6622413965842146E-5  
Model iJN1463.cmd: 2.4386123783800786E-5  
Cycle 918  
Total biomass:  
Model iAF1260.cmd: 2.663932538527557E-5  
Model iJN1463.cmd: 2.4392364235704463E-5



Cycle 919  
Total biomass:  
Model iAF1260.cmd: 2.6656222448376278E-5  
Model iJN1463.cmd: 2.4398594696598572E-5  
Cycle 920  
Total biomass:  
Model iAF1260.cmd: 2.6673105188670844E-5  
Model iJN1463.cmd: 2.4404815415177104E-5  
Cycle 921  
Total biomass:  
Model iAF1260.cmd: 2.6689973799709108E-5  
Model iJN1463.cmd: 2.4411026291545483E-5  
Cycle 922  
Total biomass:  
Model iAF1260.cmd: 2.6706827994099185E-5  
Model iJN1463.cmd: 2.4417227247785277E-5  
Cycle 923  
Total biomass:  
Model iAF1260.cmd: 2.6723668124963586E-5  
Model iJN1463.cmd: 2.442341830756147E-5  
Cycle 924  
Total biomass:  
Model iAF1260.cmd: 2.6740493904962107E-5  
Model iJN1463.cmd: 2.442959949437492E-5  
Cycle 925  
Total biomass:  
Model iAF1260.cmd: 2.6757305686302715E-5  
Model iJN1463.cmd: 2.443577083156194E-5  
Cycle 926  
Total biomass:  
Model iAF1260.cmd: 2.6774103341346936E-5  
Model iJN1463.cmd: 2.444193234234766E-5  
Cycle 927  
Total biomass:  
Model iAF1260.cmd: 2.6790886742633995E-5  
Model iJN1463.cmd: 2.4448084049756874E-5  
Cycle 928  
Total biomass:  
Model iAF1260.cmd: 2.6807656241005336E-5  
Model iJN1463.cmd: 2.44542259637208E-5  
Cycle 929  
Total biomass:  
Model iAF1260.cmd: 2.6824411549325512E-5  
Model iJN1463.cmd: 2.44603581330814E-5  
Cycle 930  
Total biomass:  
Model iAF1260.cmd: 2.6841152858404726E-5  
Model iJN1463.cmd: 2.4466480567439175E-5  
Cycle 931  
Total biomass:  
Model iAF1260.cmd: 2.6857880358487692E-5  
Model iJN1463.cmd: 2.4472593289315922E-5  
Cycle 932  
Total biomass:  
Model iAF1260.cmd: 2.6874593921469524E-5  
Model iJN1463.cmd: 2.447869630724949E-5  
Cycle 933  
Total biomass:  
Model iAF1260.cmd: 2.6891293419430196E-5  
Model iJN1463.cmd: 2.448478963331837E-5  
Cycle 934  
Total biomass:  
Model iAF1260.cmd: 2.690797920054152E-5  
Model iJN1463.cmd: 2.4490873289677237E-5  
Cycle 935  
Total biomass:  
Model iAF1260.cmd: 2.6924651136495645E-5  
Model iJN1463.cmd: 2.4496947298398233E-5  
Cycle 936  
Total biomass:  
Model iAF1260.cmd: 2.694130925755047E-5  
Model iJN1463.cmd: 2.4503011792309014E-5  
Cycle 937  
Total biomass:  
Model iAF1260.cmd: 2.695795359379108E-5  
Model iJN1463.cmd: 2.4509066681906936E-5  
Cycle 938  
Total biomass:  
Model iAF1260.cmd: 2.697458417511494E-5  
Model iJN1463.cmd: 2.4515111988845706E-5  
Cycle 939  
Total biomass:  
Model iAF1260.cmd: 2.6991201031216243E-5

Model iJN1463.cmd: 2.4521147734630723E-5  
Cycle 940  
Total biomass:  
Model iAF1260.cmd: 2.7007804191644345E-5  
Model iJN1463.cmd: 2.4527173940685972E-5  
Cycle 941  
Total biomass:  
Model iAF1260.cmd: 2.7024393685727705E-5  
Model iJN1463.cmd: 2.4533190628275254E-5  
Cycle 942  
Total biomass:  
Model iAF1260.cmd: 2.7040969880001468E-5  
Model iJN1463.cmd: 2.4539197818532547E-5  
Cycle 943  
Total biomass:  
Model iAF1260.cmd: 2.705753246581014E-5  
Model iJN1463.cmd: 2.4545195532513286E-5  
Cycle 944  
Total biomass:  
Model iAF1260.cmd: 2.707408147195937E-5  
Model iJN1463.cmd: 2.455118379110975E-5  
Cycle 945  
Total biomass:  
Model iAF1260.cmd: 2.7090616927102184E-5  
Model iJN1463.cmd: 2.455716261510964E-5  
Cycle 946  
Total biomass:  
Model iAF1260.cmd: 2.7107138859703267E-5  
Model iJN1463.cmd: 2.4563132012905102E-5  
Cycle 947  
Total biomass:  
Model iAF1260.cmd: 2.7123647298077105E-5  
Model iJN1463.cmd: 2.456909204353852E-5  
Cycle 948  
Total biomass:  
Model iAF1260.cmd: 2.7140142270349907E-5  
Model iJN1463.cmd: 2.457504268730097E-5  
Cycle 949  
Total biomass:  
Model iAF1260.cmd: 2.7156623804499384E-5  
Model iJN1463.cmd: 2.4580983978440908E-5  
Cycle 950  
Total biomass:  
Model iAF1260.cmd: 2.7173091928319353E-5  
Model iJN1463.cmd: 2.4586915937164664E-5  
Cycle 951  
Total biomass:  
Model iAF1260.cmd: 2.7189546669451413E-5  
Model iJN1463.cmd: 2.4592838543942245E-5  
Cycle 952  
Total biomass:  
Model iAF1260.cmd: 2.7205988055368616E-5  
Model iJN1463.cmd: 2.45987518980132E-5  
Cycle 953  
Total biomass:  
Model iAF1260.cmd: 2.7222416113396284E-5  
Model iJN1463.cmd: 2.4604655979612816E-5  
Cycle 954  
Total biomass:  
Model iAF1260.cmd: 2.7238830870699708E-5  
Model iJN1463.cmd: 2.4610550808504577E-5  
Cycle 955  
Total biomass:  
Model iAF1260.cmd: 2.7255232354268996E-5  
Model iJN1463.cmd: 2.4616436404318806E-5  
Cycle 956  
Total biomass:  
Model iAF1260.cmd: 2.727162093226253E-5  
Model iJN1463.cmd: 2.462231278660641E-5  
Cycle 957  
Total biomass:  
Model iAF1260.cmd: 2.728799628977307E-5  
Model iJN1463.cmd: 2.4628179974801987E-5  
Cycle 958  
Total biomass:  
Model iAF1260.cmd: 2.7304358453350327E-5  
Model iJN1463.cmd: 2.4634037988236507E-5  
Cycle 959  
Total biomass:  
Model iAF1260.cmd: 2.73207074493696E-5  
Model iJN1463.cmd: 2.4639886846129413E-5  
Cycle 960  
Total biomass:

Model iAF1260.cmd: 2.733704330407202E-5  
Model iJN1463.cmd: 2.464572656760121E-5  
Cycle 961  
Total biomass:  
Model iAF1260.cmd: 2.735336604353952E-5  
Model iJN1463.cmd: 2.4651557173681197E-5  
Cycle 962  
Total biomass:  
Model iAF1260.cmd: 2.7369675693710092E-5  
Model iJN1463.cmd: 2.4657378791445406E-5  
Cycle 963  
Total biomass:  
Model iAF1260.cmd: 2.7385972280386115E-5  
Model iJN1463.cmd: 2.466319132922056E-5  
Cycle 964  
Total biomass:  
Model iAF1260.cmd: 2.7402255829209304E-5  
Model iJN1463.cmd: 2.4668994805729297E-5  
Cycle 965  
Total biomass:  
Model iAF1260.cmd: 2.7418526365682385E-5  
Model iJN1463.cmd: 2.467478923957571E-5  
Cycle 966  
Total biomass:  
Model iAF1260.cmd: 2.7434783915158164E-5  
Model iJN1463.cmd: 2.468057464928262E-5  
Cycle 967  
Total biomass:  
Model iAF1260.cmd: 2.7451028502871686E-5  
Model iJN1463.cmd: 2.4686351053241923E-5  
Cycle 968  
Total biomass:  
Model iAF1260.cmd: 2.746726015388781E-5  
Model iJN1463.cmd: 2.4692118469799112E-5  
Cycle 969  
Total biomass:  
Model iAF1260.cmd: 2.748347889316173E-5  
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Cycle 970  
Total biomass:  
Model iAF1260.cmd: 2.7499684745502584E-5  
Model iJN1463.cmd: 2.4703626413486624E-5  
Cycle 971  
Total biomass:  
Model iAF1260.cmd: 2.7515877735568462E-5  
Model iJN1463.cmd: 2.470936697423276E-5  
Cycle 972  
Total biomass:  
Model iAF1260.cmd: 2.7532057887892854E-5  
Model iJN1463.cmd: 2.4715098590985317E-5  
Cycle 973  
Total biomass:  
Model iAF1260.cmd: 2.7548225226884463E-5  
Model iJN1463.cmd: 2.4720821281653596E-5  
Cycle 974  
Total biomass:  
Model iAF1260.cmd: 2.7564379776806522E-5  
Model iJN1463.cmd: 2.4726535064077318E-5  
Cycle 975  
Total biomass:  
Model iAF1260.cmd: 2.757942274820344E-5  
Model iJN1463.cmd: 2.473136571668794E-5  
Cycle 976  
Total biomass:  
Model iAF1260.cmd: 2.7594165378023593E-5  
Model iJN1463.cmd: 2.4735958798001957E-5  
Cycle 977  
Total biomass:  
Model iAF1260.cmd: 2.7608803300263785E-5  
Model iJN1463.cmd: 2.4740470388815373E-5  
Cycle 978  
Total biomass:  
Model iAF1260.cmd: 2.7623398421571837E-5  
Model iJN1463.cmd: 2.4744949837156202E-5  
Cycle 979  
Total biomass:  
Model iAF1260.cmd: 2.76379700561747E-5  
Model iJN1463.cmd: 2.4749412539275225E-5  
Cycle 980  
Total biomass:  
Model iAF1260.cmd: 2.7652524240882905E-5  
Model iJN1463.cmd: 2.475386332729474E-5  
Cycle 981

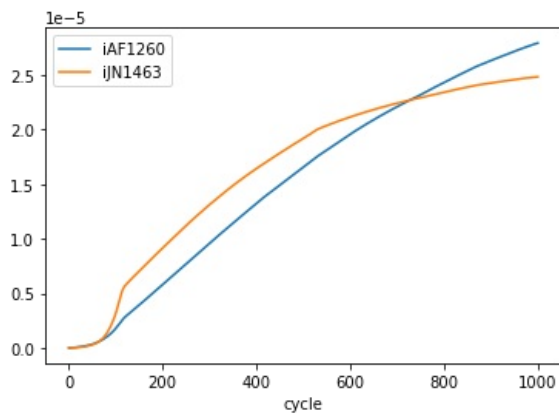
Total biomass:  
Model iAF1260.cmd: 2.7667062881921168E-5  
Model iJN1463.cmd: 2.4758303720146034E-5  
Cycle 982  
Total biomass:  
Model iAF1260.cmd: 2.7681586600653737E-5  
Model iJN1463.cmd: 2.4762734210456868E-5  
Cycle 983  
Total biomass:  
Model iAF1260.cmd: 2.7696095618620363E-5  
Model iJN1463.cmd: 2.4767154971517452E-5  
Cycle 984  
Total biomass:  
Model iAF1260.cmd: 2.7710590032856186E-5  
Model iJN1463.cmd: 2.4771566147718465E-5  
Cycle 985  
Total biomass:  
Model iAF1260.cmd: 2.7725069901472234E-5  
Model iJN1463.cmd: 2.477596771103335E-5  
Cycle 986  
Total biomass:  
Model iAF1260.cmd: 2.773953527029874E-5  
Model iJN1463.cmd: 2.4780359694477318E-5  
Cycle 987  
Total biomass:  
Model iAF1260.cmd: 2.7753986181171356E-5  
Model iJN1463.cmd: 2.4784742141395005E-5  
Cycle 988  
Total biomass:  
Model iAF1260.cmd: 2.7768422674503537E-5  
Model iJN1463.cmd: 2.4789115053568824E-5  
Cycle 989  
Total biomass:  
Model iAF1260.cmd: 2.7782844790110586E-5  
Model iJN1463.cmd: 2.4793478472708036E-5  
Cycle 990  
Total biomass:  
Model iAF1260.cmd: 2.7797252567431452E-5  
Model iJN1463.cmd: 2.4797832426879895E-5  
Cycle 991  
Total biomass:  
Model iAF1260.cmd: 2.7811646045618995E-5  
Model iJN1463.cmd: 2.4802176943888246E-5  
Cycle 992  
Total biomass:  
Model iAF1260.cmd: 2.782602526357579E-5  
Model iJN1463.cmd: 2.480651205134171E-5  
Cycle 993  
Total biomass:  
Model iAF1260.cmd: 2.7840390259947796E-5  
Model iJN1463.cmd: 2.4810837776710575E-5  
Cycle 994  
Total biomass:  
Model iAF1260.cmd: 2.7854741073140836E-5  
Model iJN1463.cmd: 2.4815154147271342E-5  
Cycle 995  
Total biomass:  
Model iAF1260.cmd: 2.7869077741320638E-5  
Model iJN1463.cmd: 2.4819461190162344E-5  
Cycle 996  
Total biomass:  
Model iAF1260.cmd: 2.7883400302430716E-5  
Model iJN1463.cmd: 2.482375893231356E-5  
Cycle 997  
Total biomass:  
Model iAF1260.cmd: 2.789770879414778E-5  
Model iJN1463.cmd: 2.4828047400527842E-5  
Cycle 998  
Total biomass:  
Model iAF1260.cmd: 2.7912003253932527E-5  
Model iJN1463.cmd: 2.483232662140201E-5  
Cycle 999  
Total biomass:  
Model iAF1260.cmd: 2.7926283719018907E-5  
Model iJN1463.cmd: 2.4836596621424557E-5  
Cycle 1000  
Total biomass:  
Model iAF1260.cmd: 2.794055022640763E-5  
Model iJN1463.cmd: 2.4840857426877853E-5  
Cycle 1001  
End of simulation  
Total time = 979.955s

STDERR empty.

Para revisar la biomasa total

```
In [59]: sim.total_biomass.plot(x = "cycle")
```

```
Out[59]: <AxesSubplot:xlabel='cycle'>
```

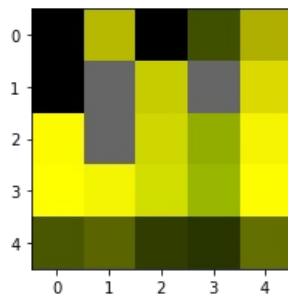


Graficamos los resultados de biomasa y demás metabolitos interesantes en el grid:

```
In [84]: im = sim.get_biomass_image('iAF1260', params.all_params['maxCycles'])
im2 = sim.get_biomass_image('iJN1463', params.all_params['maxCycles'])

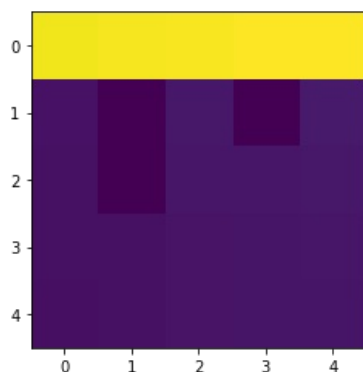
final = np.zeros((grid_size, grid_size, 3))
final[:, :, 0] = im / np.max(im)
final[:, :, 1] = im2 / np.max(im2)
for rock in rock_locs:
    final[rock[0], rock[1], 0:3] = 0.4
from matplotlib import pyplot as plt
fig, ax = plt.subplots(figsize = (3.1, 3.1))
ax.imshow(final)
plt.imshow(final)
```

```
Out[84]: <matplotlib.image.AxesImage at 0x20d37753a90>
```



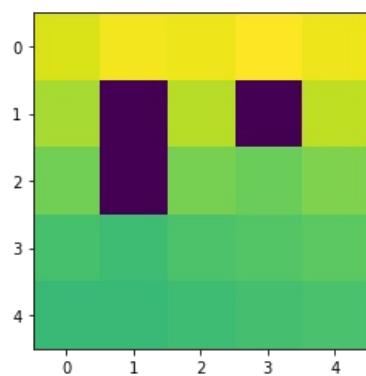
```
In [66]: plt.imshow(sim.get_metabolite_image("succ_e", params.all_params['maxCycles']))
```

```
Out[66]: <matplotlib.image.AxesImage at 0x20d372077c0>
```



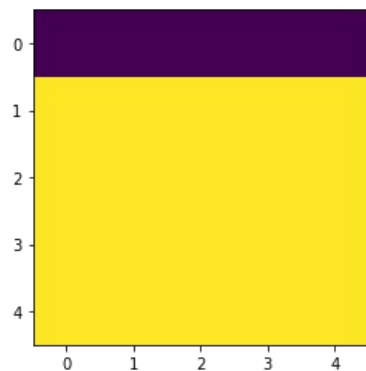
```
In [67]: plt.imshow(sim.get_metabolite_image("ac_e",params.all_params['maxCycles']))
```

```
Out[67]: <matplotlib.image.AxesImage at 0x20d37237ca0>
```



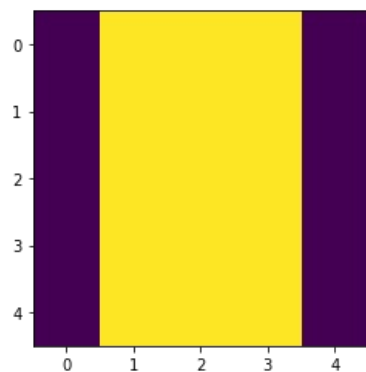
```
In [85]: plt.imshow(sim.get_metabolite_image("nh4_e",params.all_params['maxCycles']))
```

```
Out[85]: <matplotlib.image.AxesImage at 0x20d3787b160>
```



```
In [86]: plt.imshow(sim.get_metabolite_image("o2_e",params.all_params['maxCycles']))
```

```
Out[86]: <matplotlib.image.AxesImage at 0x20d378c4790>
```



```
In [ ]:
```