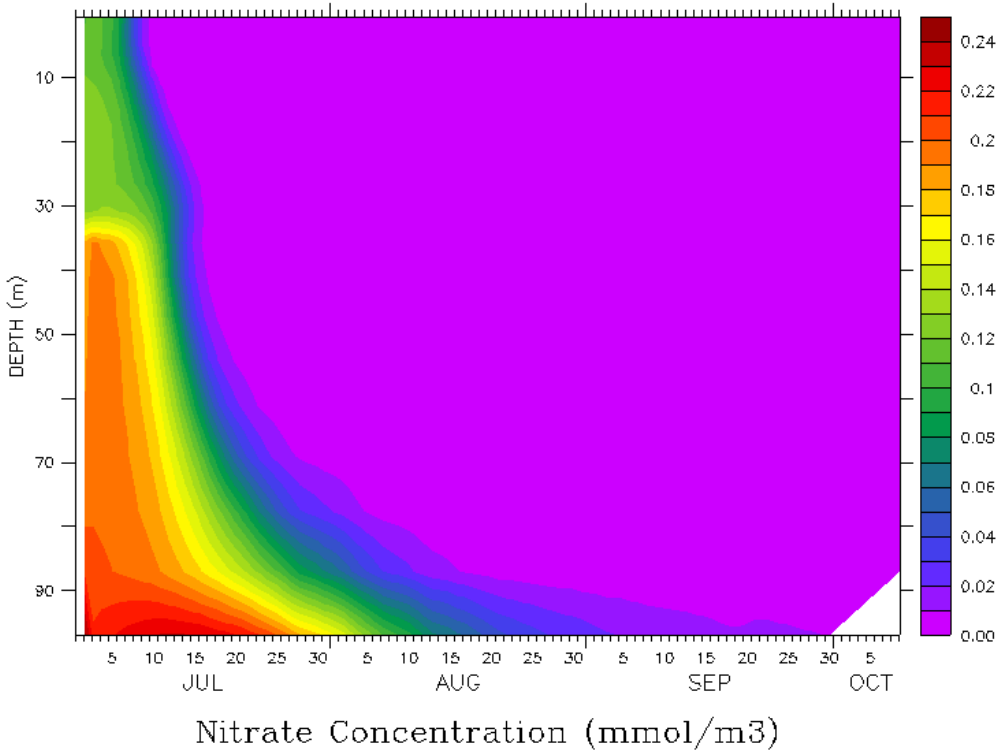
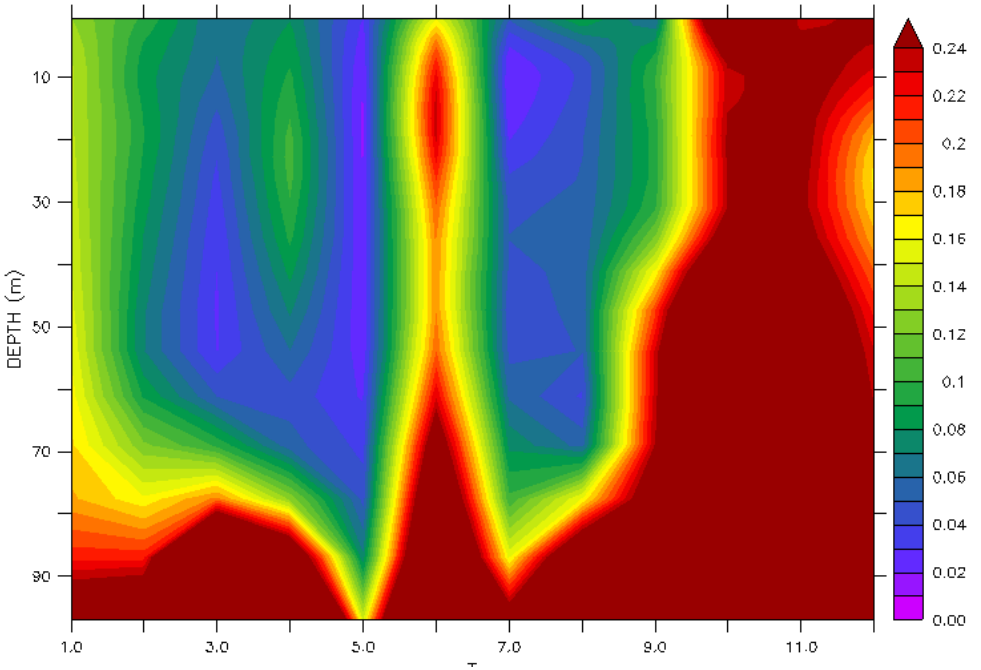
NO3, BATS, CTL run

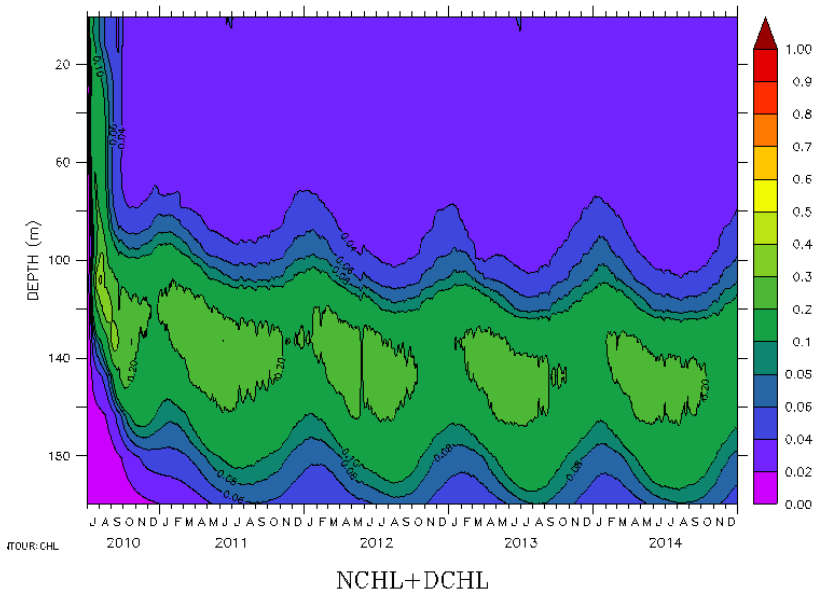


NO3, BATS, WOA



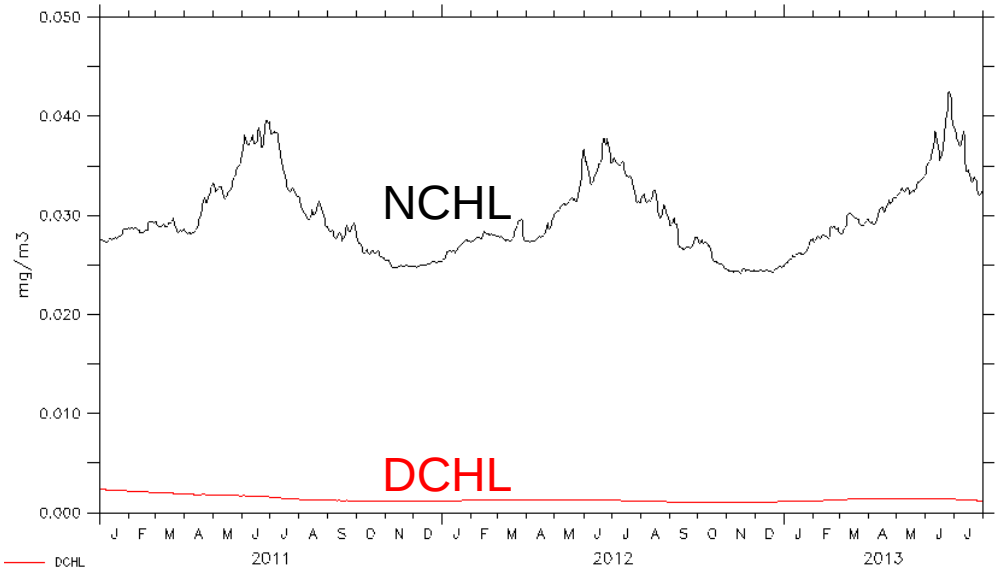
Comparison just to show that we are not trying to fit to observations and use BATS as a site do do some tests...

Chlorophyll, BATS, CTL run

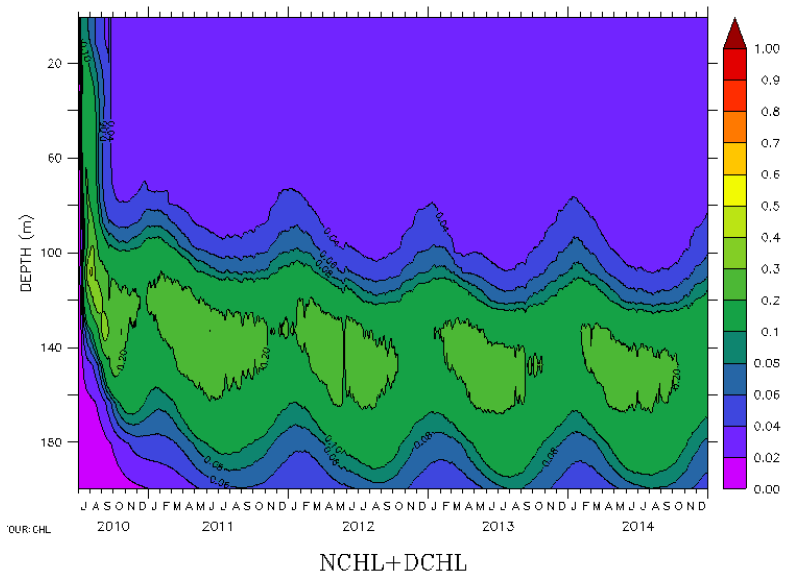


NCHL+DCHL

Surface chlorophyll, chl in nanoPhy and Diat

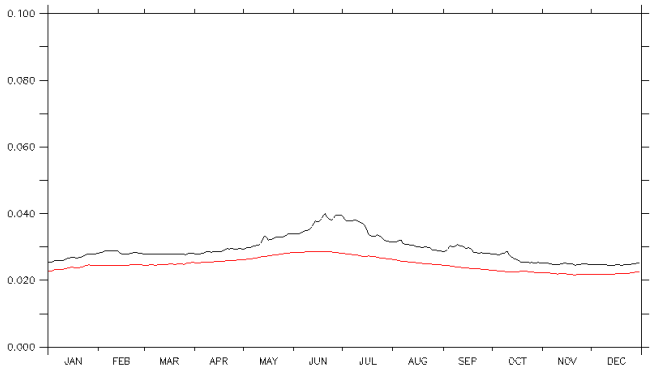


Chlorophyll, BATS, no nutrients from atmosphere (test_noinputs)



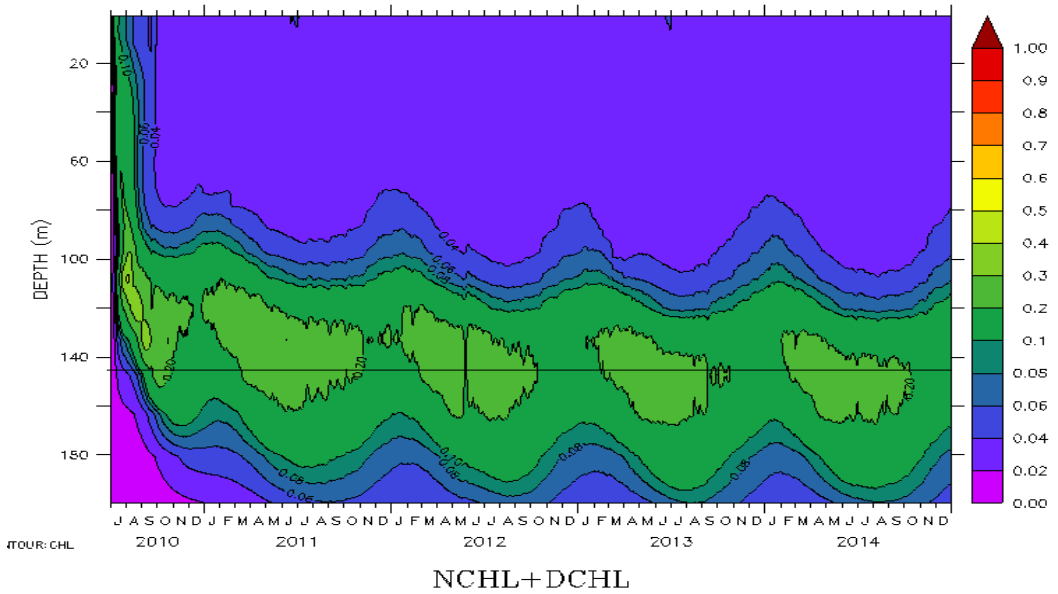
NCHL+DCHL

Surface Chlorophyll, BATS, CTL run,
No atmospheric inputs



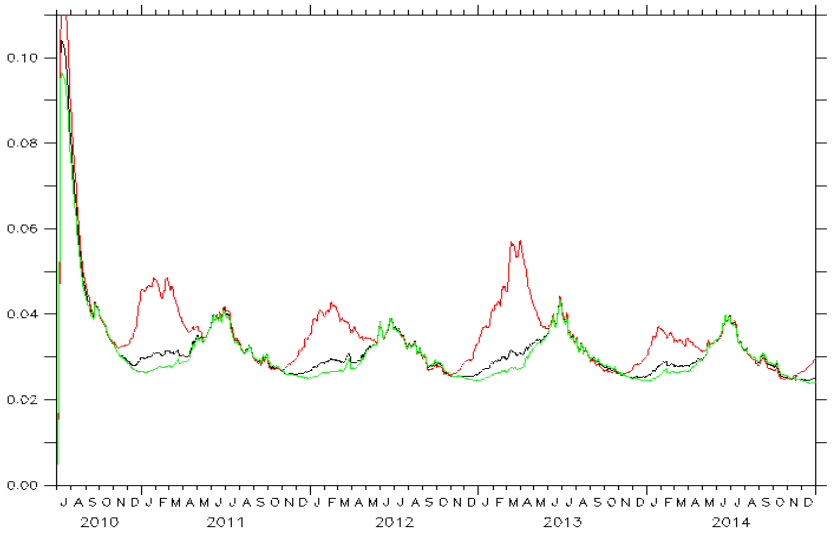
Impact of dust = slight decrease of surface chl

Chl, CTL

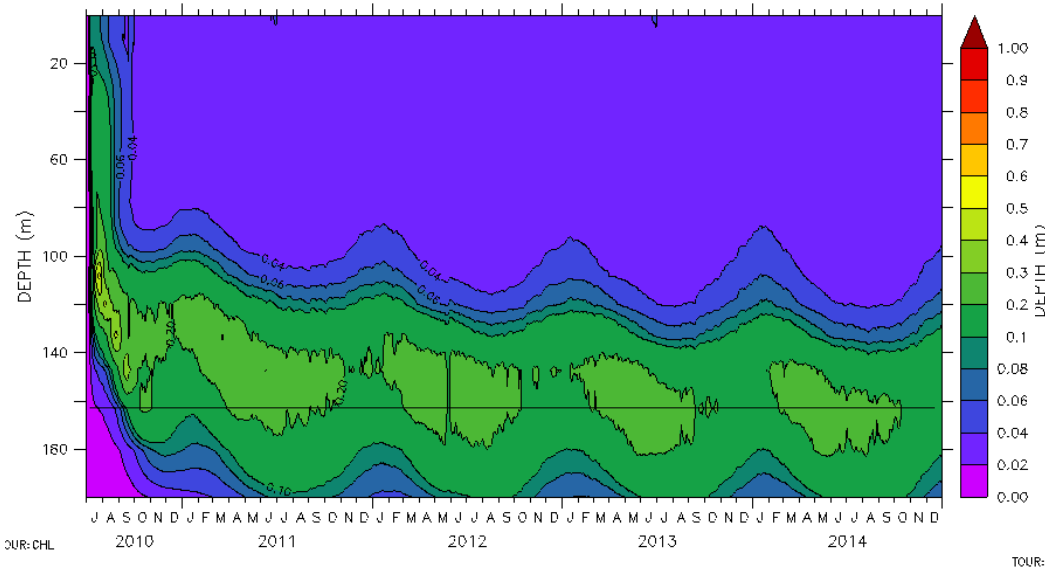


NCHL+DCHL

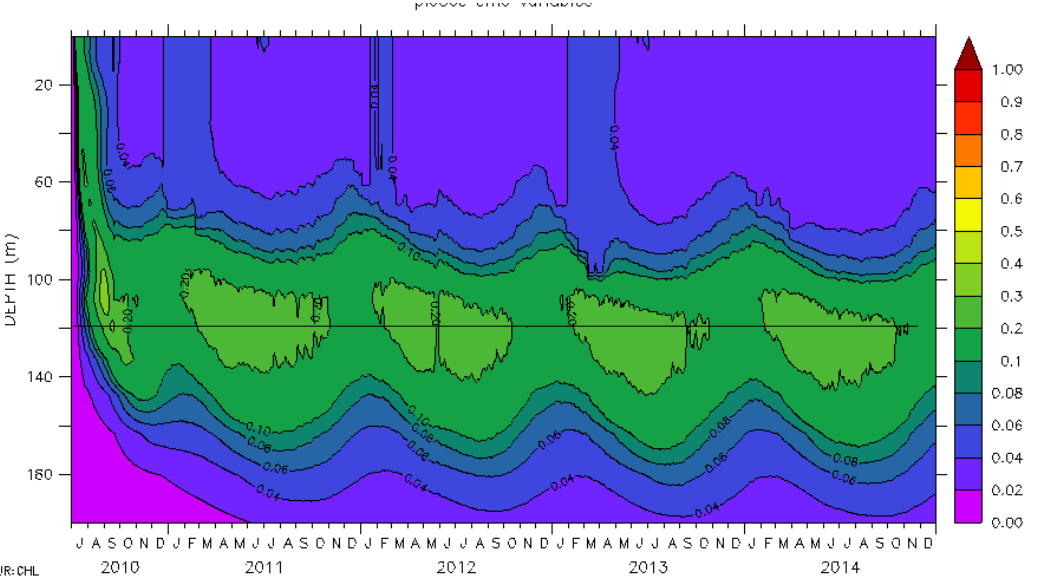
Surface Chlorophyll, BATS, CTL, pislope+50% pislope -50%



Chl, Pislope +50%

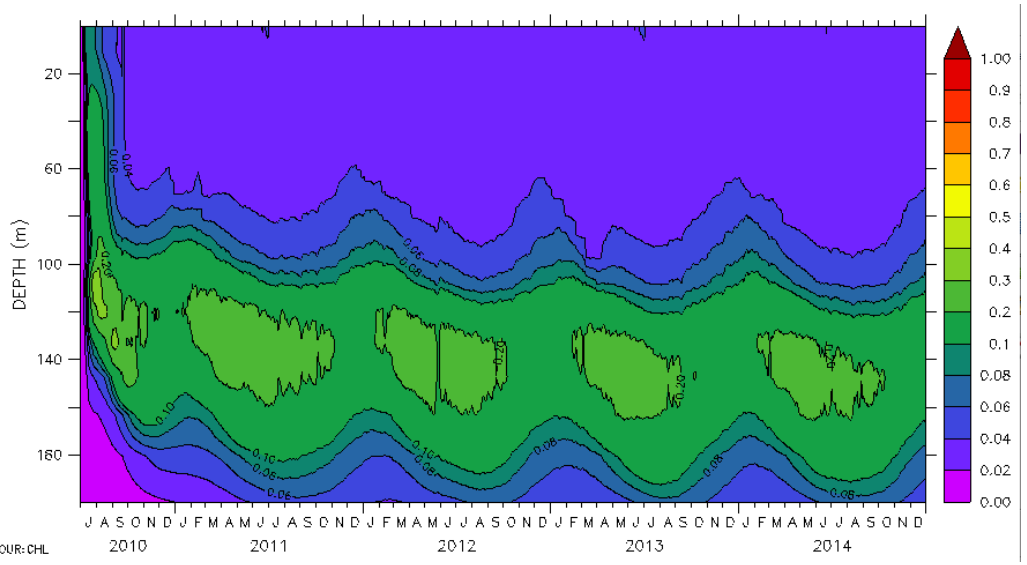


Chl, Pislope -50%

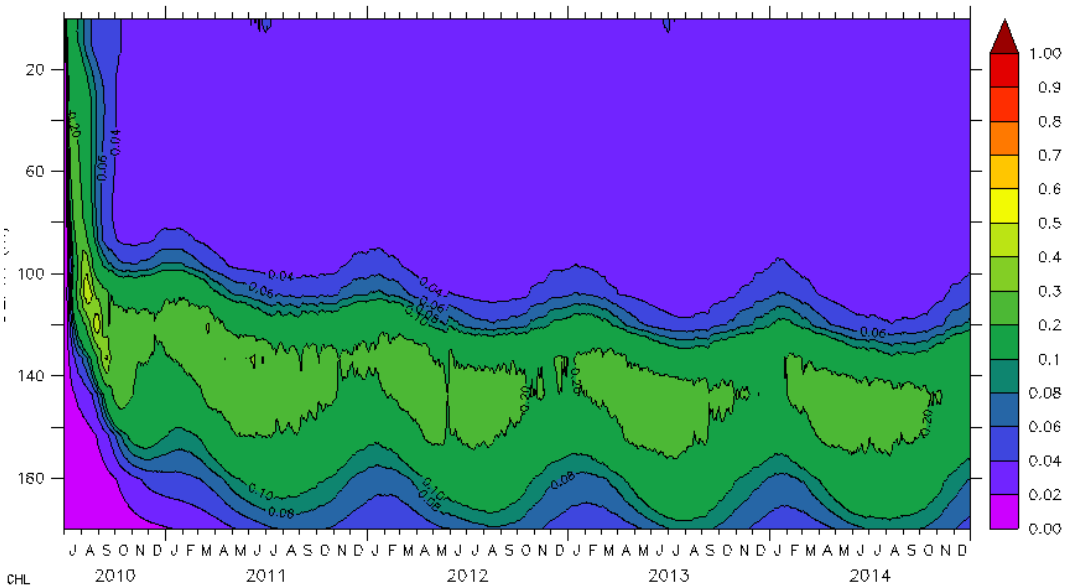


Change of DCM depth: deeper when pislope is stronger => less light is needed for phyto to grow

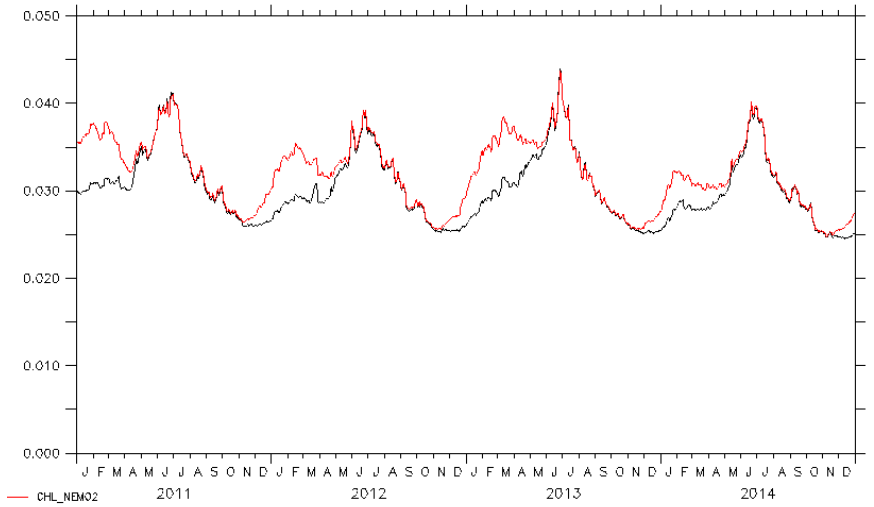
Chl, Kno3,knh4 +50%



Chl, Kno3,knh4 -50%

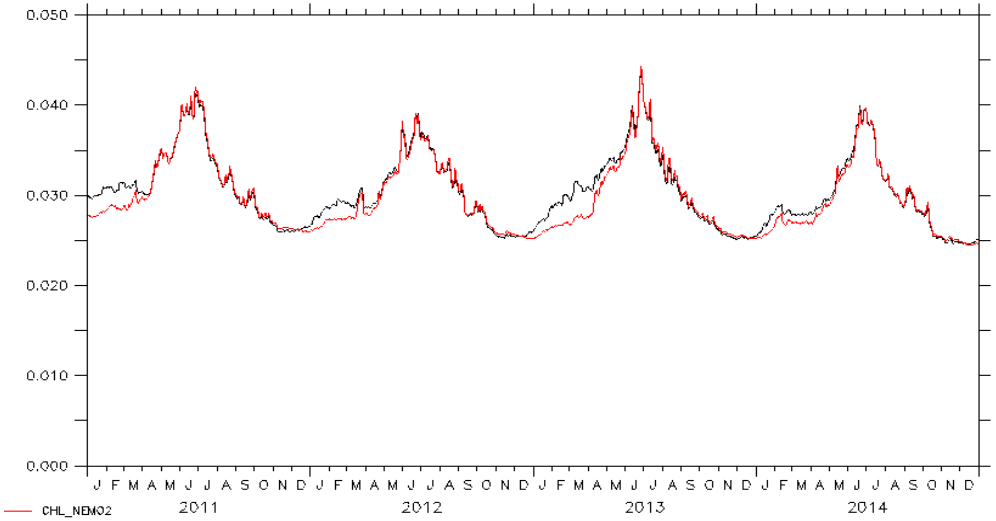


Surface chlorophyll



chlsurf, CTL(black), kno3nh4+ (red)

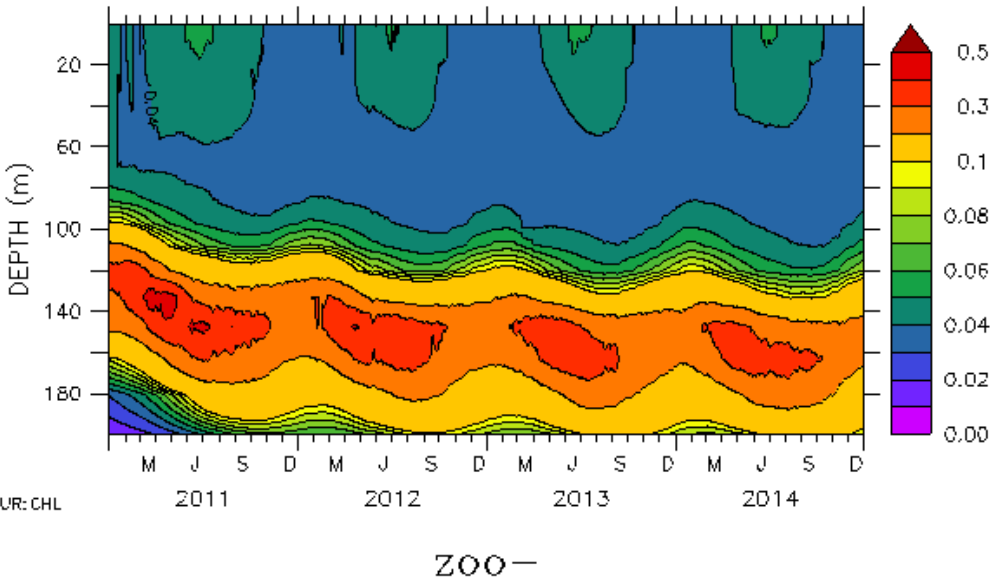
Surface chlorophyll



CTL(black), kno3nh4− (red)

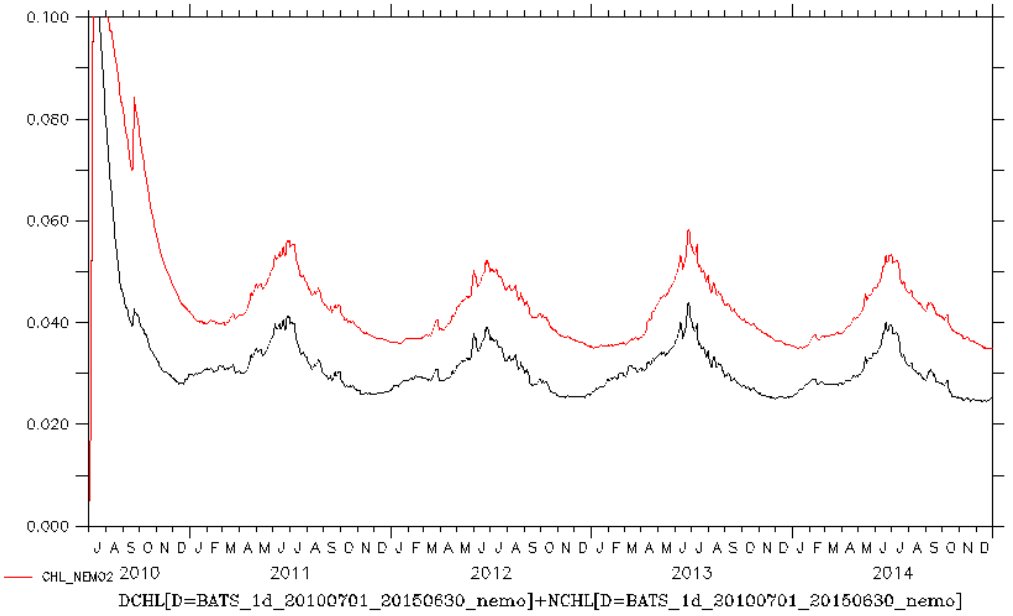
Impact on seasonality = slightly stronger spring bloom (but effects are small)

Chl, Zoo grazing -50%



zoo−

Surface Chlorophyll, BATS, CTL ,
Zoo grazing-50%



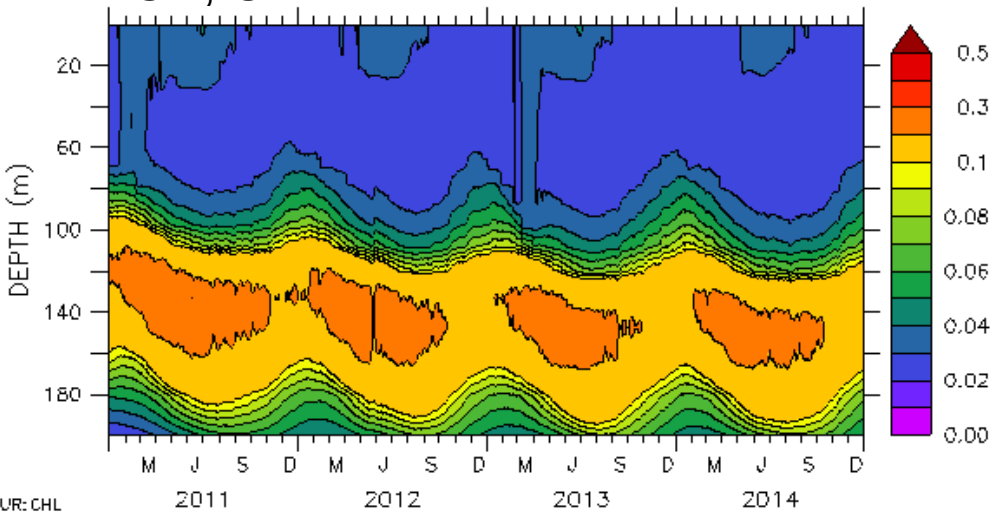
FERRET (optimized) Ver.7.43
NOAA/PMEL TMAP
25-NOV-2020 08:19:12

X : 2
Y : 2
CALENDAR: NOLEAP

DATA SET:
BATS_1d_20100701_20150630_nemo

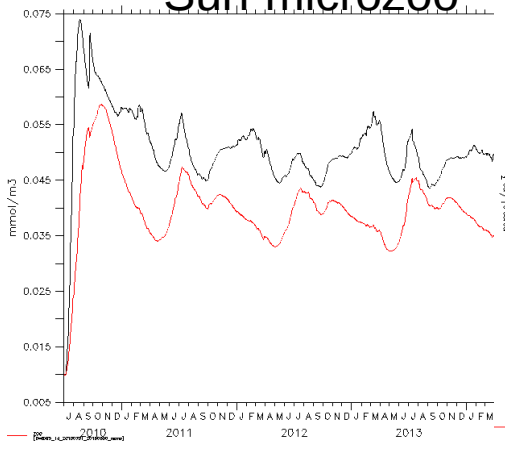
Chl, CTL

pisces sms variables

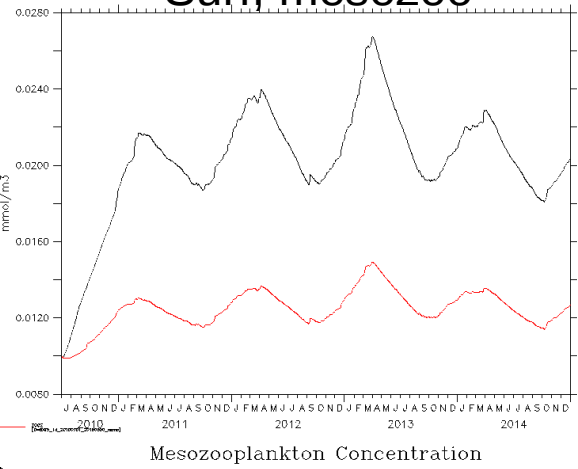


control

Surf microzoo

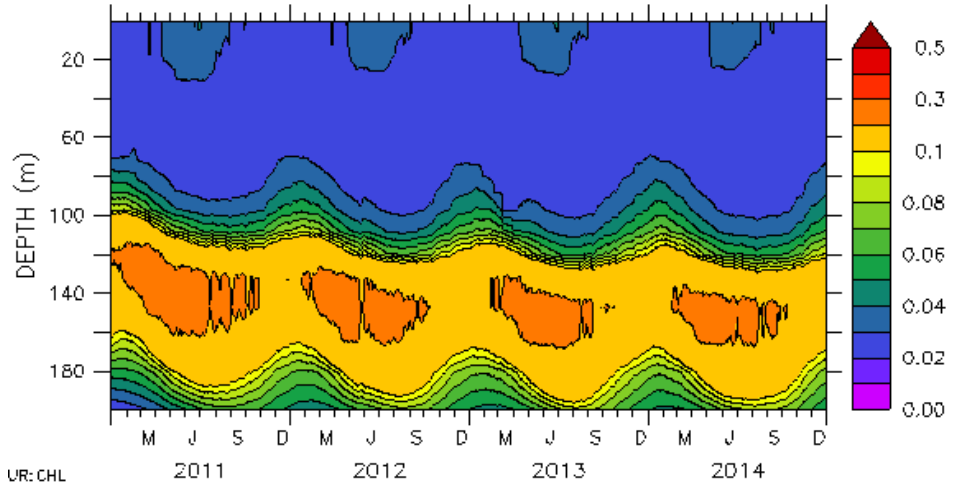


Surf, mesozoo



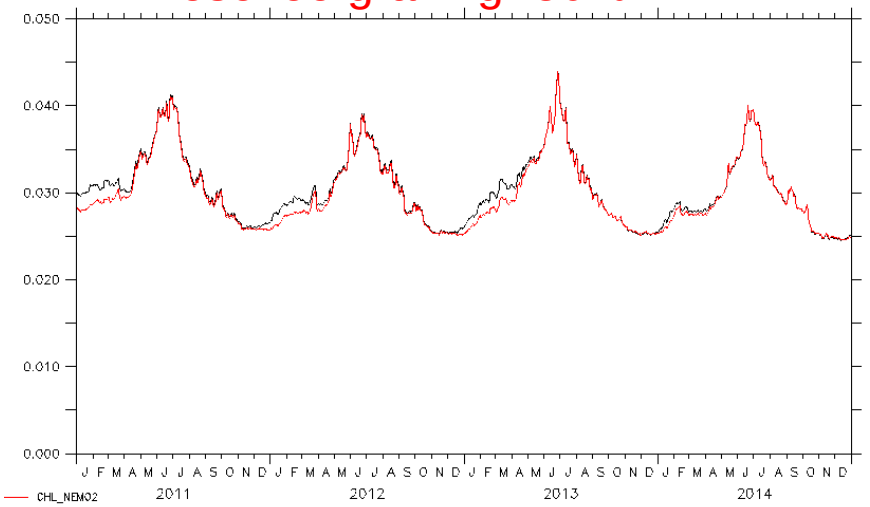
Impact of grazing on amplitude of the signal
+ micro zoo decrease in spite of phyto increase
= complex because microZ between prey and predator

Chl, MesoZoo grazing -50%

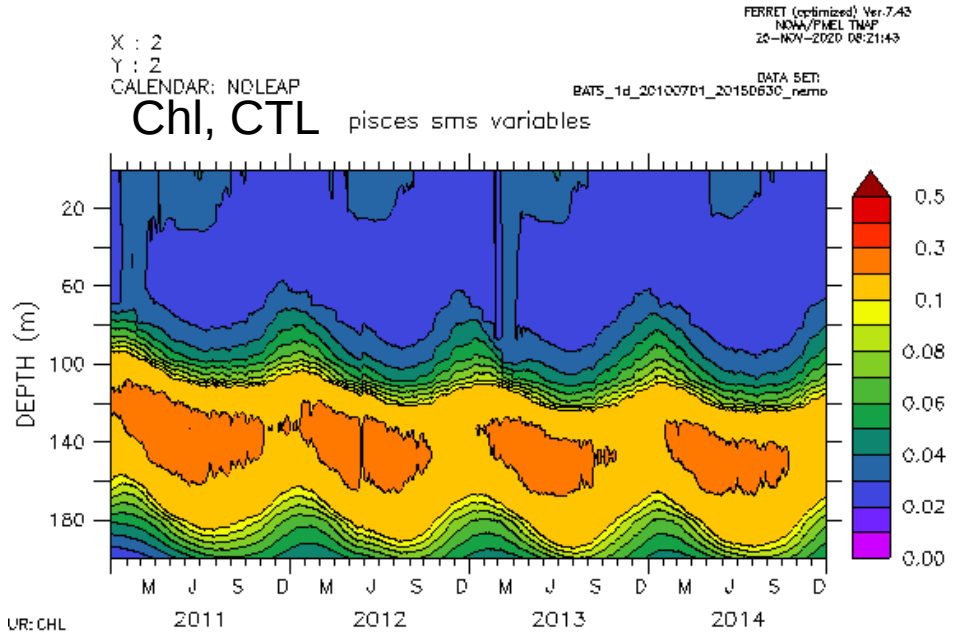


grazrat2–

Surface Chlorophyll, BATS, CTL , mesozoo grazing -50%

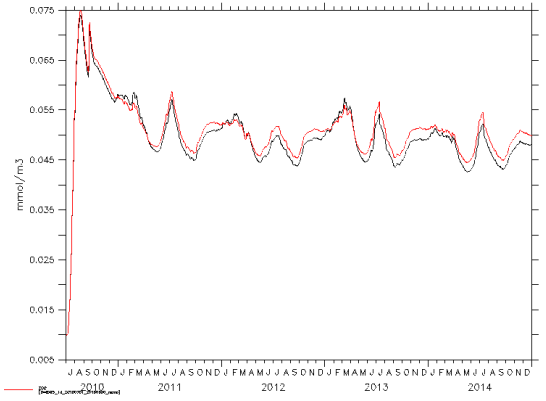


chlsurf, CTL(black), grazrat2– (red)



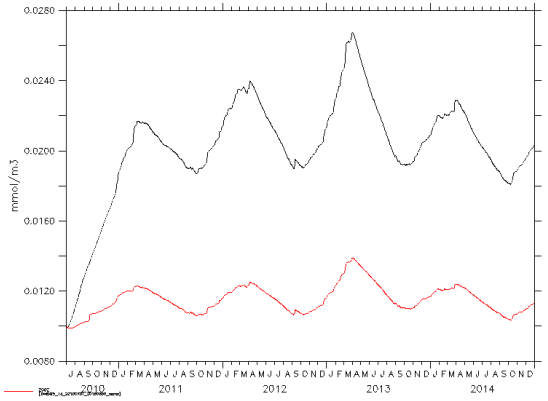
control

Surf microzoo



(Micro)Zooplankton Concentration

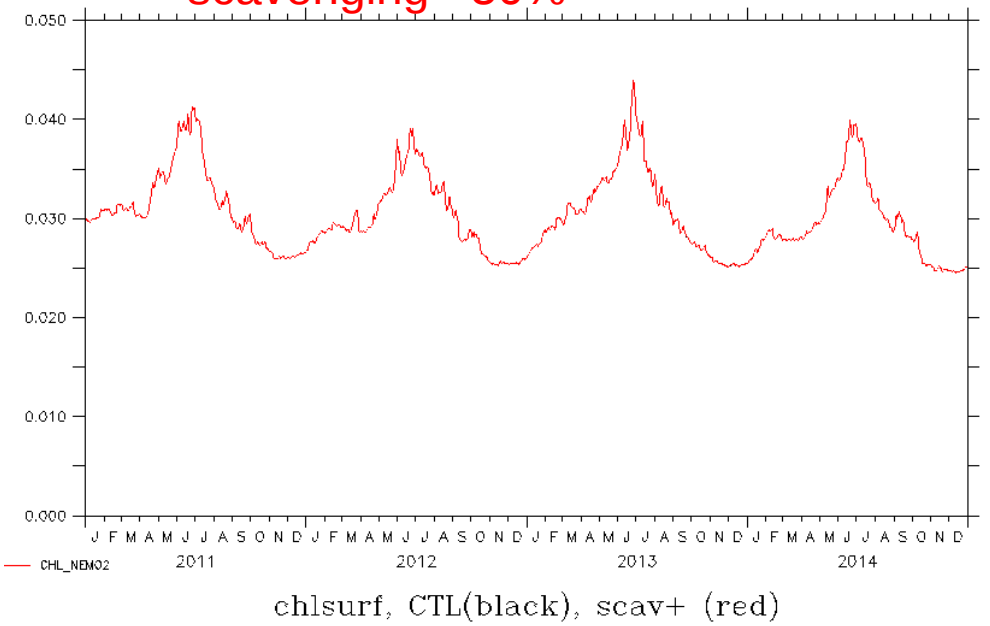
Surf, mesozoo



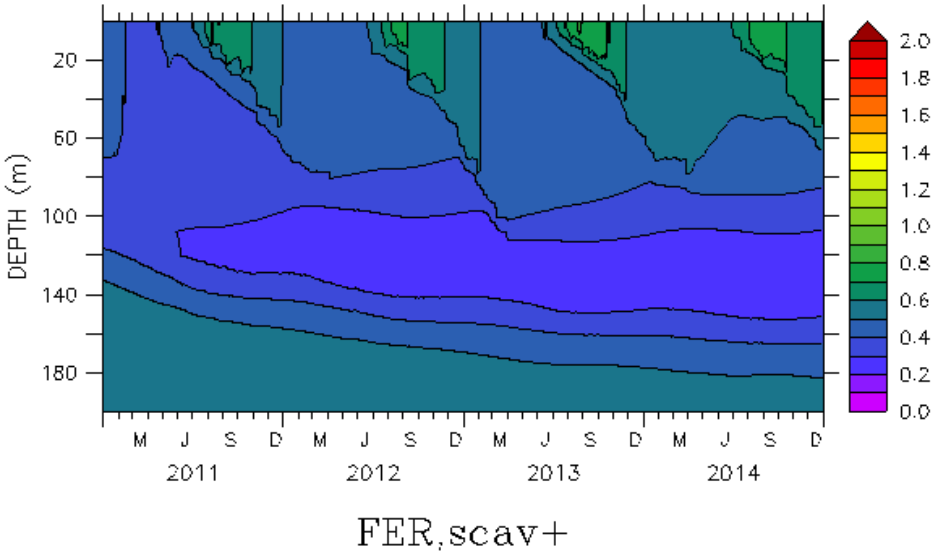
Mesozooplankton Concentration

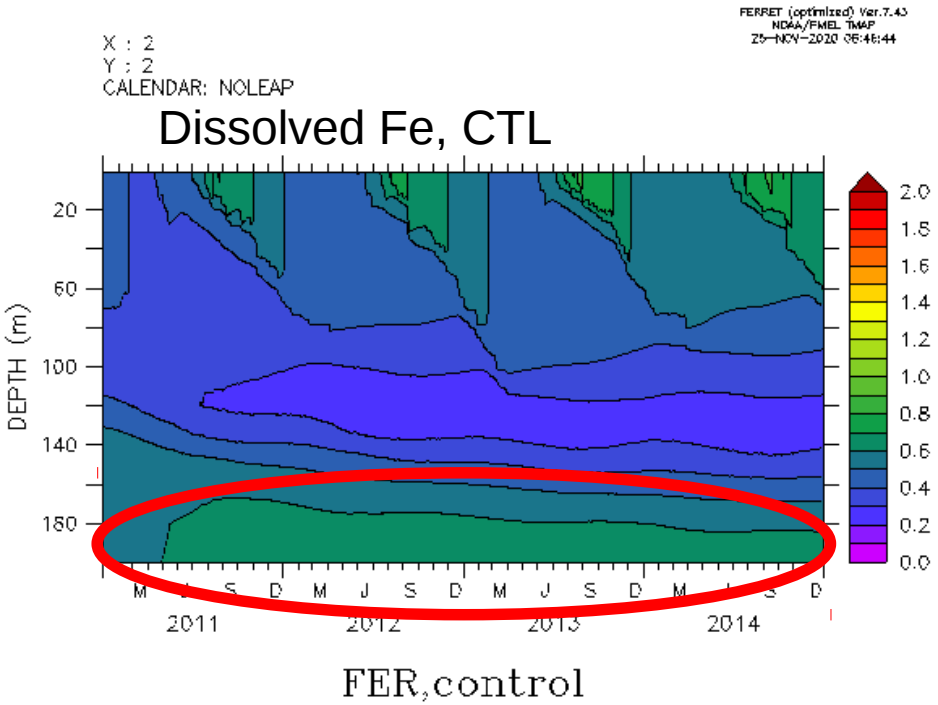
No much impact of the change in grazing rate of mesoZoo : less grazing on microZ but no increase of microZ….

Surface Chlorophyll, BATS, CTL , scavenging +50%



Dissolved Fe, scavenging +50%





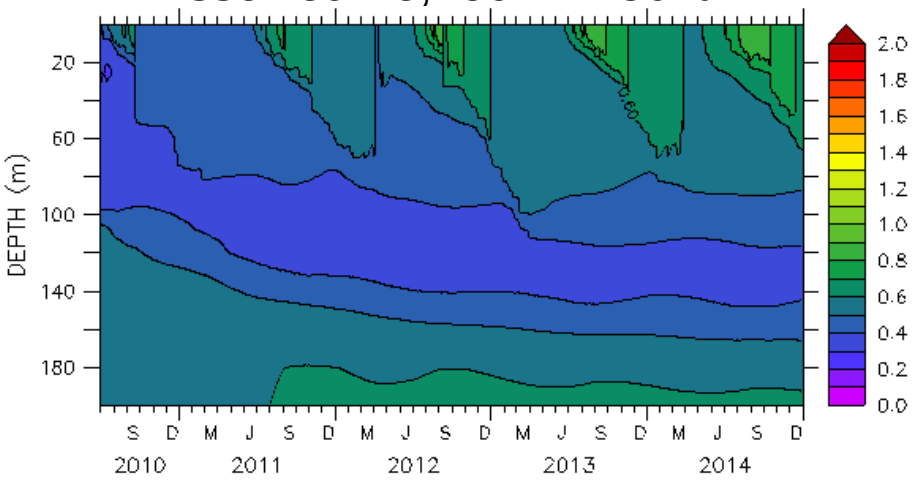
Less Fe at depth <0 because of more scavenging

No chl difference because Fe not limiting

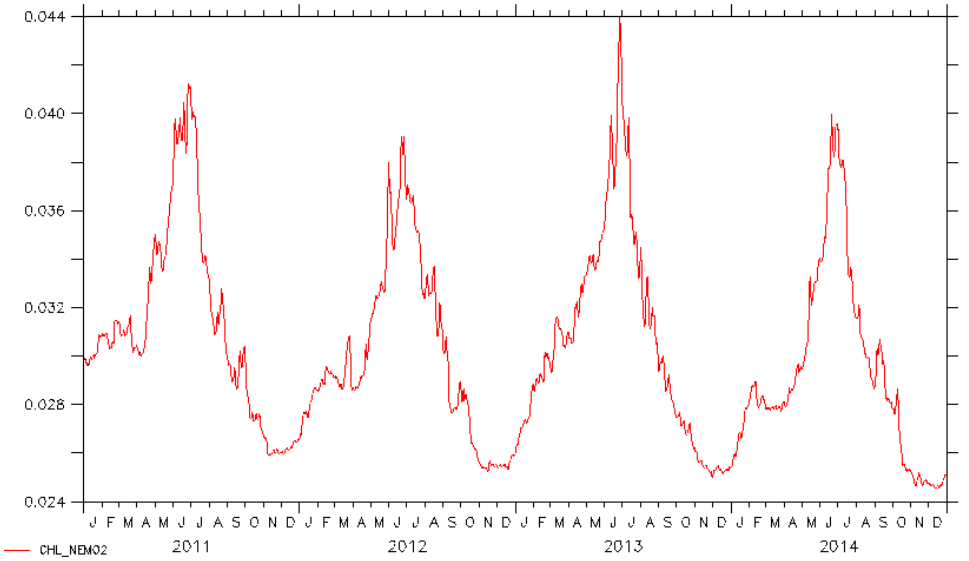
(LNFE=limitation due to Iron = 1 = no limitation

in surface layer)

Dissolved Fe, fecnm +50%

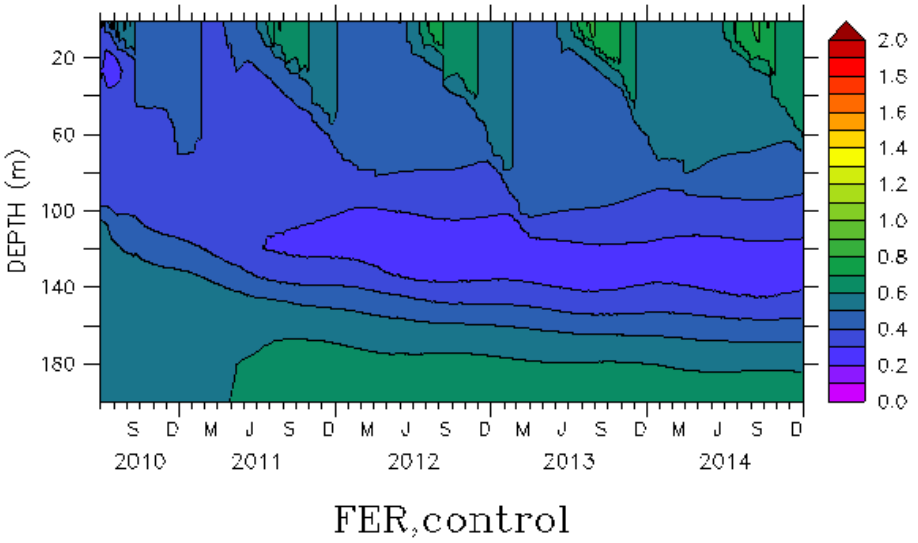


CHL surf, CTL fecnm (difference=0)

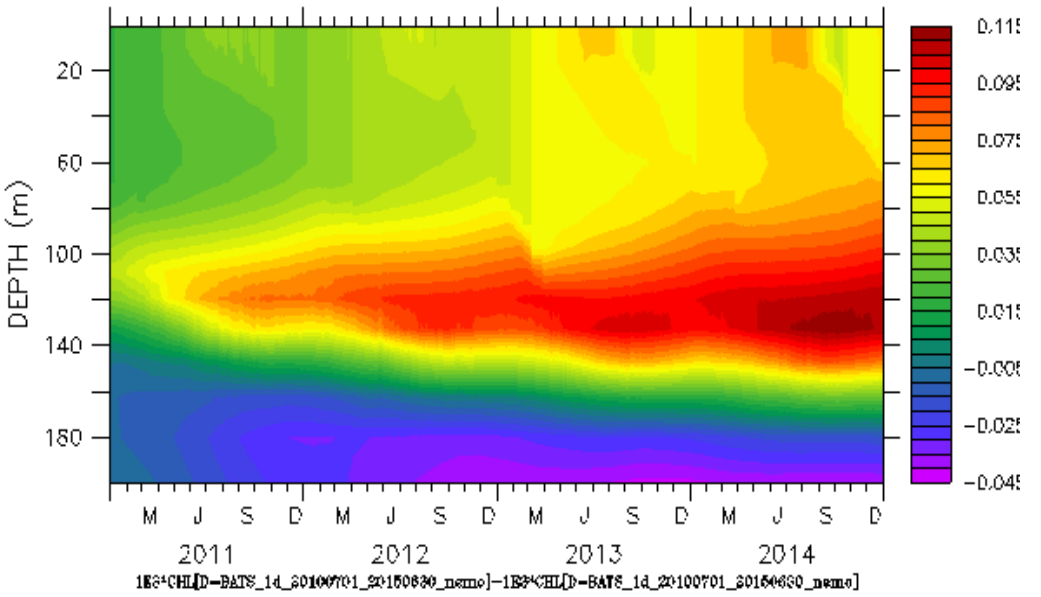


FERRET (optimized) Ver.7.43
NOAA/PMEL TMAP
25-NOV-2020 14:09:05
X : 2
Y : 2
CALENDAR: NOLEAP

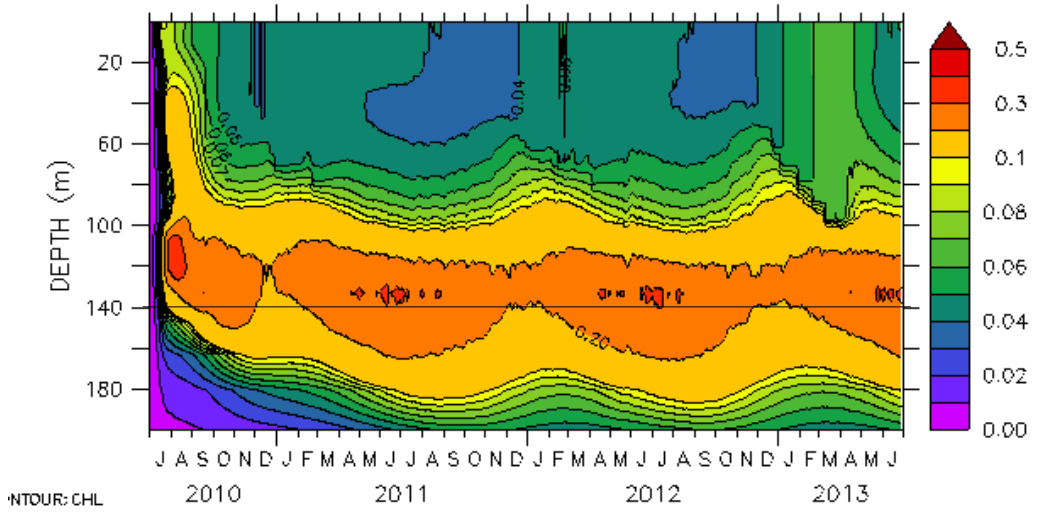
Dissolved Fe, CTL



Nfe(fecnm+)-nfe(ctl): More Fe in Nanophyto

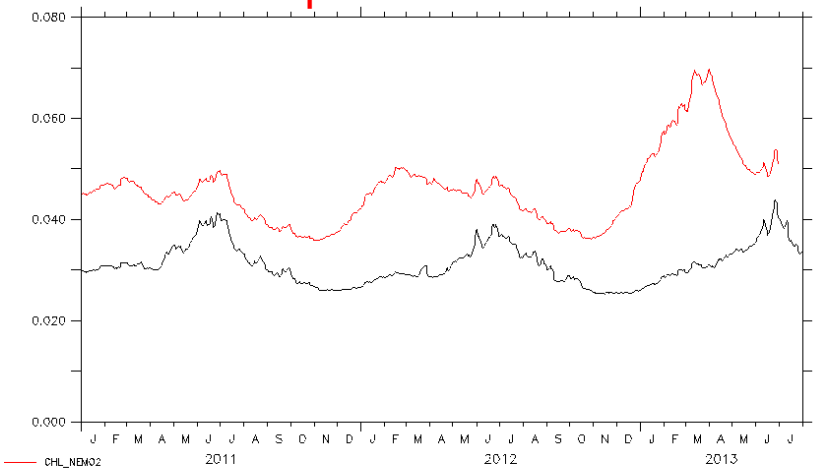


Change in fecnm:
No Chl change,
decrease of Fe in the DCM

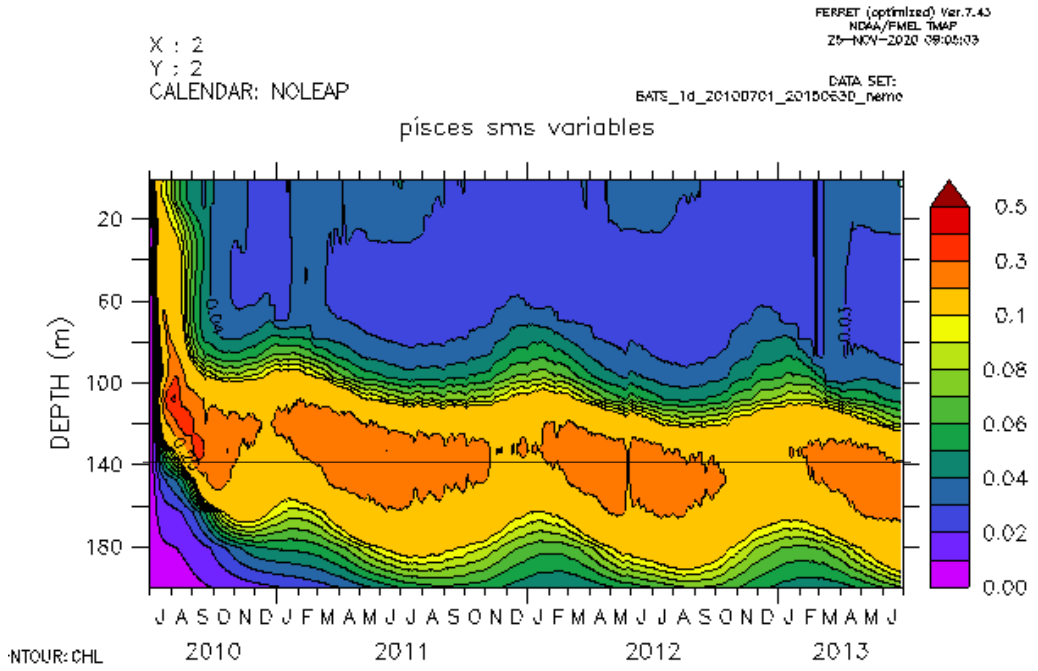


unknown

Surface Chlorophyll, BATS, CTL , unknown param

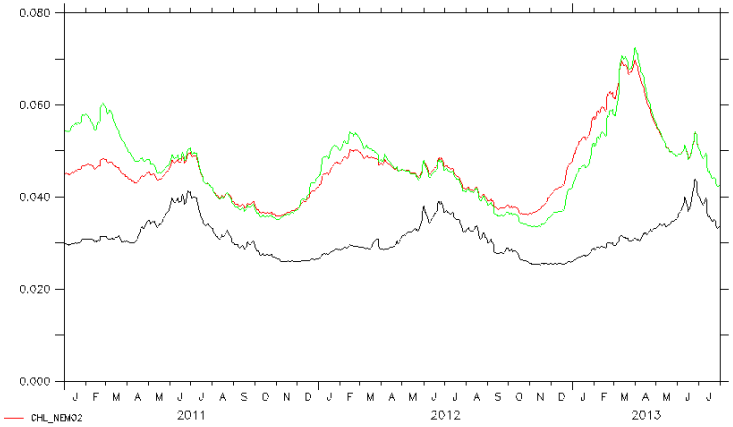


chlsurf, CTL(black), unknown (red)



control

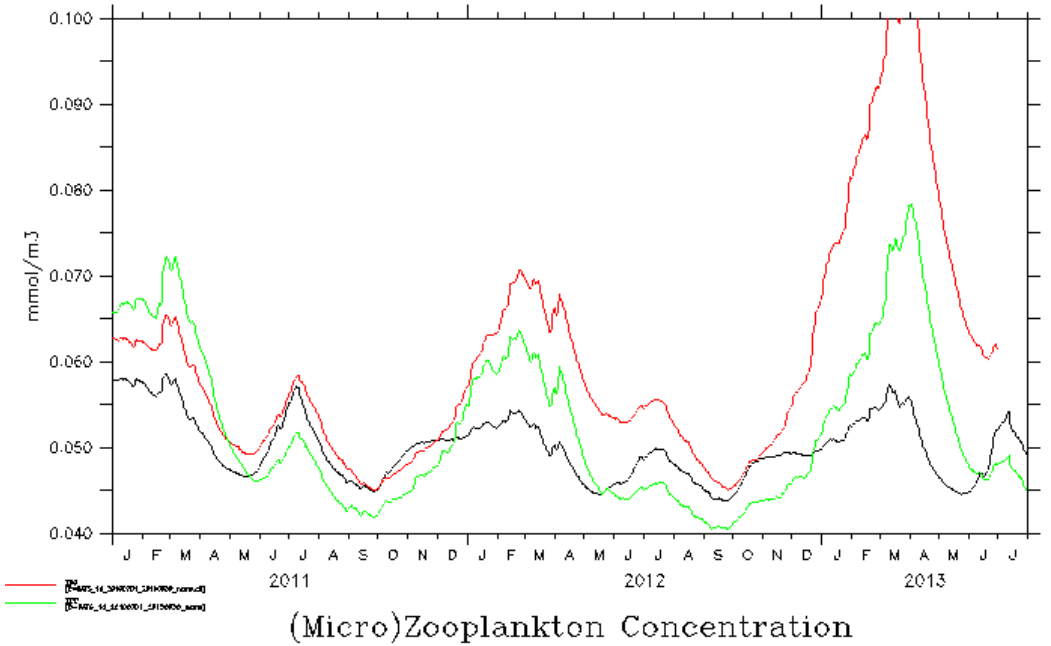
Surface Chlorophyll, BATS, CTL , unknown param, param1



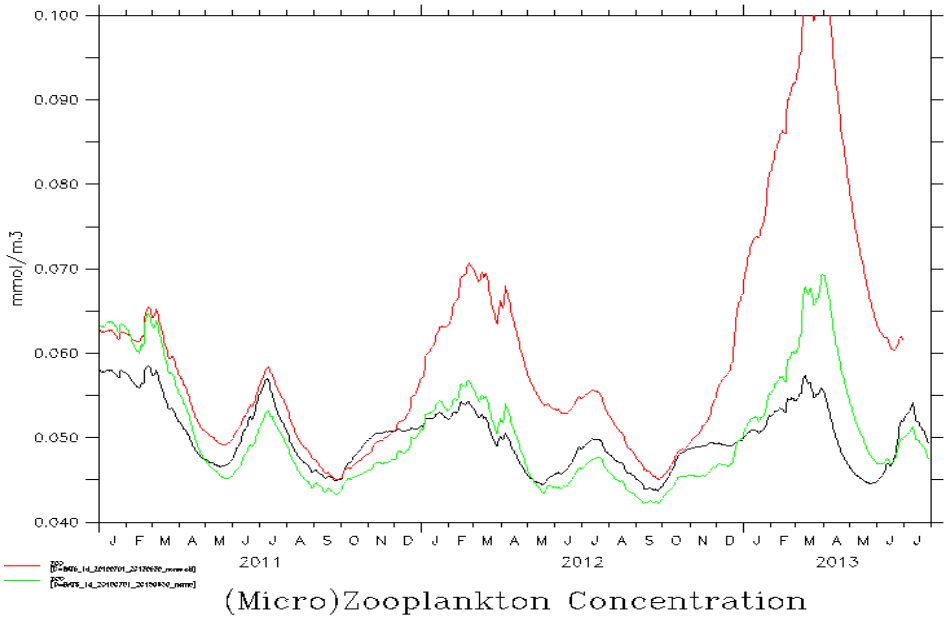
chlsurf, CTL(black), unknown (red)

Guess solution:
- decrease grazing rate
- decrease pislope
- increase kno3,knh4

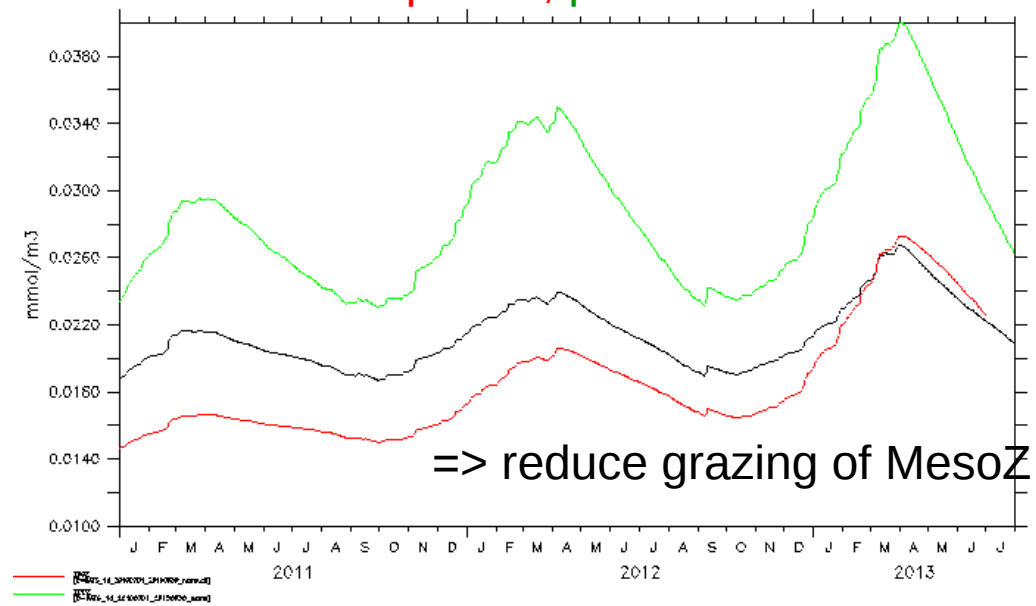
Surface microZ, BATS, CTL ,
unknown param, param1



Surface microZ, BATS, CTL ,
unknown param, best fit (param2)

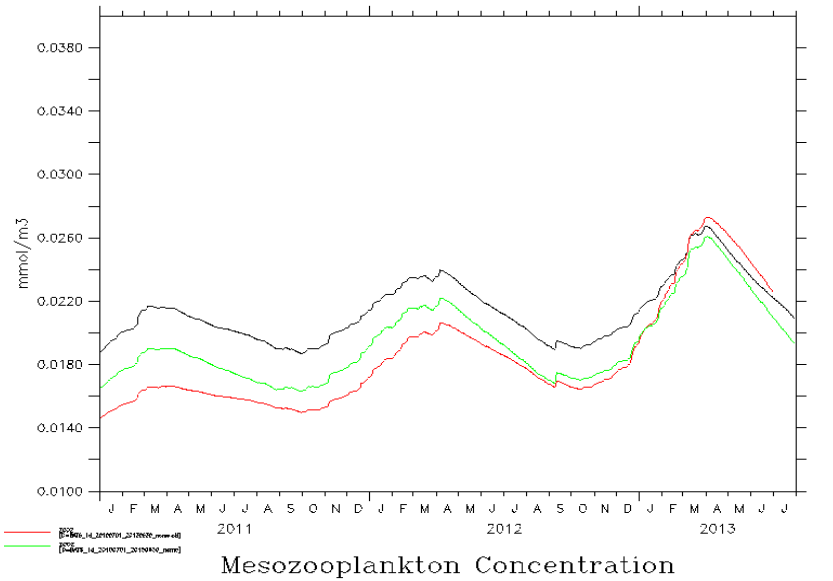


Surface mesoZ, BATS, CTL ,
unknown param, param1



=> reduce grazing of MesoZ

Surface mesoZ, BATS, CTL ,
unknown param, best fit (param2)



- diff namelist_pisces_ref_old namelist_pisces_ref
- 64,67c64,67
- < **concnno3 = 1.e-6 ! Nitrate half saturation of nanophytoplankton**
- **< concdno3 = 3.E-6 ! Nitrate half saturation for diatoms**
- **< concnnh4 = 1.E-7 ! NH4 half saturation for phyto**
- **< concdnh4 = 3.E-7 ! NH4 half saturation for diatoms**
- ---
- > concnno3 = 1.5e-6 ! Nitrate half saturation of nanophytoplankton
- > concdno3 = 4.5E-6 ! Nitrate half saturation for diatoms
- > concnnh4 = 1.5E-7 ! NH4 half saturation for phyto
- > concdnh4 = 4.5E-7 ! NH4 half saturation for diatoms
- 151,152c151,152
- < **pislopen = 2. ! P-I slope**
- **< pisloped = 2. ! P-I slope for diatoms**
- ---
- > pislopen = 1. ! P-I slope
- > pisloped = 1. ! P-I slope for diatoms
- 205c205
- < **grazrat2 = 0.75 ! maximal mesozoo grazing rate**
- **---**
- > grazrat2 = 0.5 ! maximal mesozoo grazing rate
- 257c257
- < **grazrat = 3.0 ! maximal zoo grazing rate**
- ---
- > grazrat = 2.0 ! maximal zoo grazing rate