

# Océan et climat : séance 3 ‘La température de l’eau’

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**DRAFT/FRENCH/PRIMARY SCHOOL/SECOND GRADE**

## Objectifs

Objectifs :

- fonctionnement de l’océan
- circulation des masses d’eau vue par la température de l’eau
- les satellites d’observation
- résumer des cartes sous forme de série temporelle
- données Copernicus

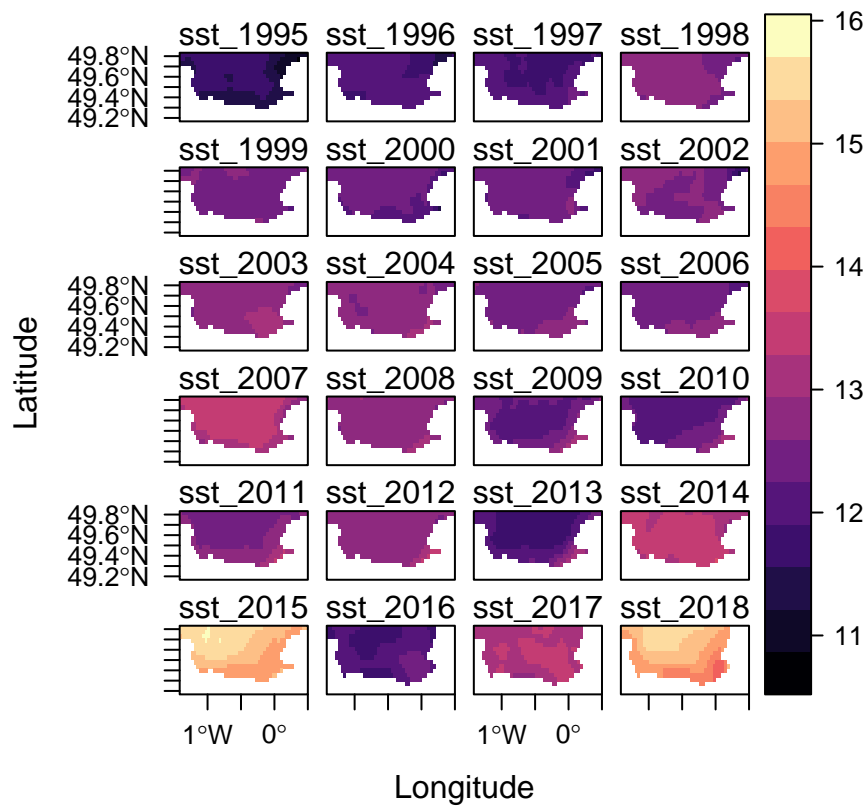
## Document

### test Carte

Test d’extraction de données satellitaires sur la baie de zone et cartographie rapide.

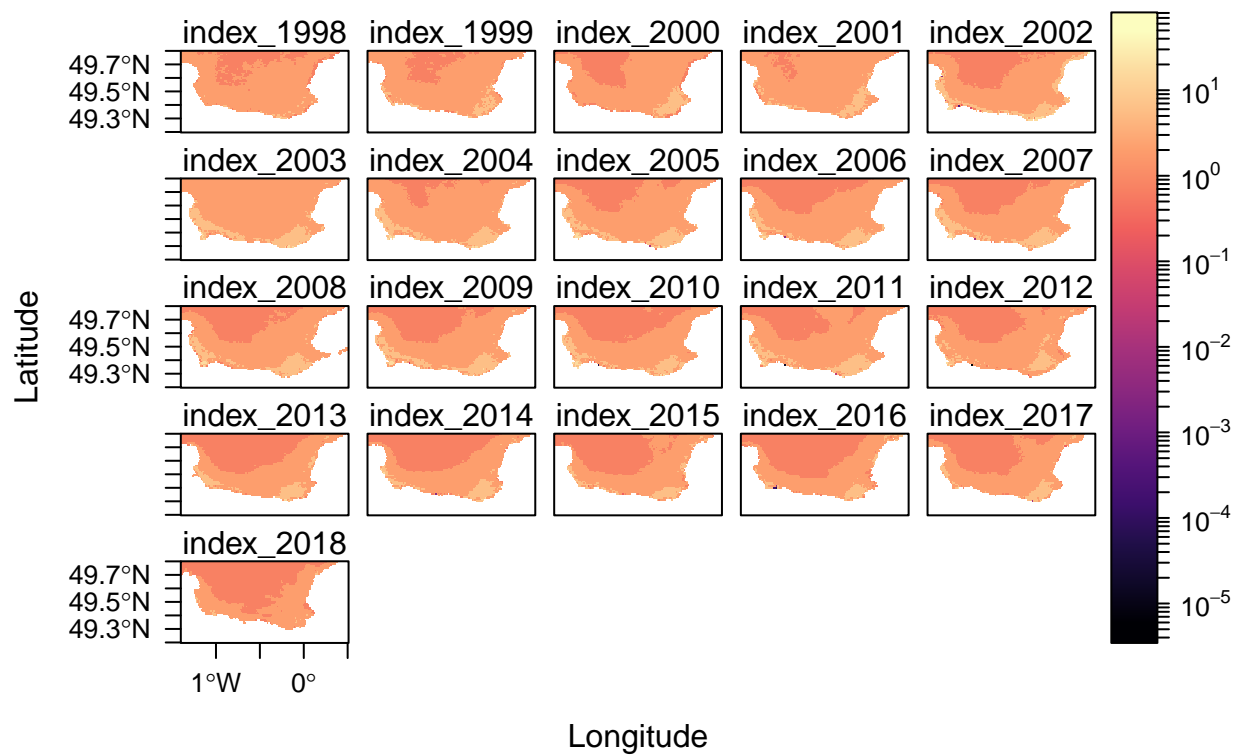
### Température de surface

```
fct1<-function(chl){  
  #define hydro year position  
  idtps<-data.frame(name=names(chl))%>%  
    mutate(year=as.numeric(substr(name,7,10)),month=as.numeric(substr(name,12,13)))%>%  
    mutate(yearhydro=ifelse(month<9,year,year+1))  
  #average data by hydro year  
  chl<-stackApply(chl,idtps$yearhydro,mean,na.rm=T)  
  return(chl)  
}  
  
library(rasterVis)  
library(dplyr)  
sst<-stack("/home/moi/ifremer/CAPES_NOURSEINE/icec2018/data/addedvalue/data/sst")  
yearsst<-fct1(sst)  
names(yearsst)<-gsub("index","sst",names(yearsst))  
(levelplot(yearsst))#,zscaleLog=T))
```



Concentration en chlorophylle a

```
chl<-stack("/home/moi/ifremer/CAPES_NOURSEINE/icec2018/data/addedvalue/data/chl")
yearchl<-fct1(chl)
levelplot(yearchl,zscaleLog=T)
```



```
#kp490
kd490<-stack("./data/kd490")
datkd490<-fct1(kd490,newmapstrate,"kd490")
#bbp443
pipo<-stack("./data/bbp443")
datbbp443<-fct1(pipo,newmapstrate,"bbp443")
#cdm443
pipo<-stack("./data/cdm443")
datcdm443<-fct1(pipo,newmapstrate,"cdm443")
#spm
pipo<-stack("./data/spm")
datspm<-fct1(pipo,newmapstrate,"spm")
#sst
pipo<-stack("./data/sst")
datssst<-fct1(pipo,newmapstrate,"sst")

#prepare the world
library("rnaturalearth")
library("rnaturalearthdata")
library(ggplot2)
library(sf)
library(maps)
world <- ne_countries(scale = "medium", returnclass = "sf")
legendworld<-data.frame(x=c(1,1,1,1),y=c(1.5,2,2.25,2.5),nom=c("Légende :", "Terre", "", "Océan"))#, color
aa<-ggplot()+geom_tile(data=legendworld,aes(x=y,y=x,fill=nom),color="white")+
  scale_fill_manual(values=rev(c("lightgrey", "lightblue", "white", "white")))+
  geom_text(data=legendworld,aes(x=y,y=x,label=nom),size=3)+
```

```

    theme_void()+
    theme(legend.position="none")#+
    #coord_fixed()
#print(aa)

lemonde<-ggplot(data=world)+
geom_sf(data=world,colour="dark grey",fill="dark grey",show.legend=TRUE)+
coord_sf(expand=F)+theme_bw()+
  theme(panel.grid.major = element_line(colour = 'transparent'),
        panel.background = element_rect(fill = "lightblue", colour = "lightblue"))+
  ggtitle("Le monde")
#print(lemonde)

p1<-ggdraw()+
  draw_plot(lemonde,0,0,1,1)+
  draw_plot(aa,0.35,0.21,0.38,0.06)
print(p1)

```