

# FLR and a4a for Quantitative Fisheries Science



FLR Team  
Maritime Affairs Unit - IPSC  
EC Joint Research Center

## Welcome to the EC JRC, Ispra, Italy.



## AGENDA

- TIMETABLE: 9.00 - 12.30 / 14.00 - 17.30
- BREAKS @ 10.30 / 15.30

# LOGISTICS

Taxis

Lunch

- JRC Mensa

## Dinner

### Ispra

- Caffè del Lago. Via Lungolago Cristoforo Colombo. Tel. 0332782761
- Caffè Vespucci. Via Lungolago Cristoforo Colombo. Tel. 0332781589
- Pizzeria Julias e Benny. Via Milite Ignoto, 8. Tel. 0332 782538
- La Baita (German bar/restaurant) Via Milite Ignoto, 130. Tel. 345 571 1972

### Angera

- Damino. Viale Pietro Mar... 34. Tel. 0331930498

## Dinner

### Ranco

- Bar Molo 2013. Via Lungolago. Tel 0331975190
- Belvedere Ranco. Via Pave, 11. Tel. 0331976609

### Osmate

- Trattoria delle Zucche. Via Maggiore, 30. Tel. 0331953569

### Cadrezzate

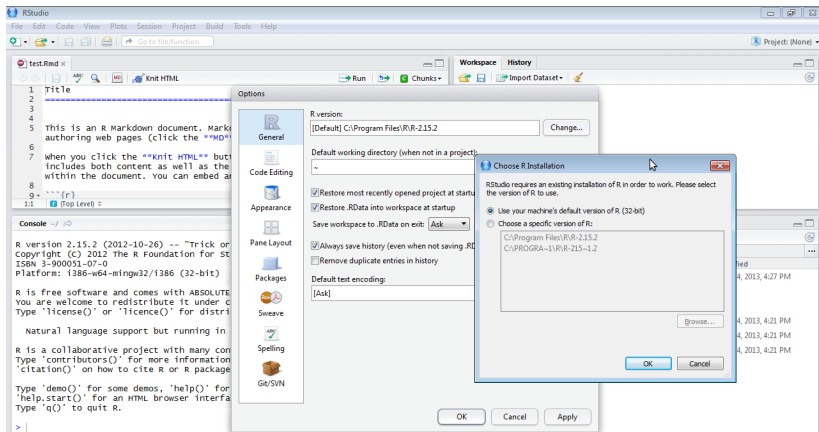
- La Locanda. Piazza Garibaldi, 61. Tel 0331910003

## MATERIALS

- R 3.2: <http://cran.r-project.org/>
- RStudio: <http://rstudio.org/>
- git: <http://msysgit.github.io/>
- github account: <http://github.com/>

# INSTALLATION

## Select 32 bit R





## INSTALLATION: CRAN packages

```
install.packages("")
```

- copula
- triangle
- mgcv
- splines
- plyr
- ggplot2
- knitr

## INSTALLATION: FLR packages

```
utils::install.packages(repos="http://flr-project.org/R")
```

- FLCore
- FLEDA
- FLash
- ggplotFL
- FLBRP
- FLa4a

## INSTALLATION: all packages

```
source("http://flr-project.org/R/instFLR.R")
```

## PROGRAMME

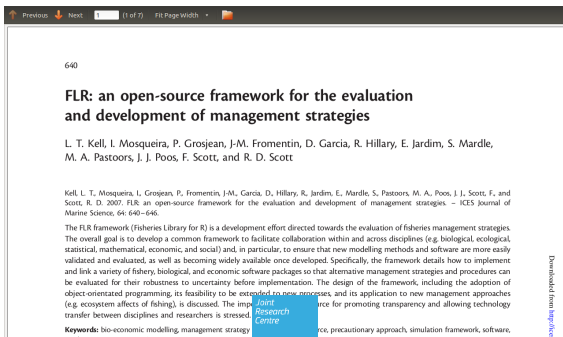
1. Introduction to FLR
2. Loading data, complex classes, plotting and EDA
3. Stock-recruitment, reproducible research
4. Modelling M and growth with a4a
5. Stock assessment using a4a
6. Reference points and short term forecasting for advice
7. More forecasting scenarios
8. From stock assessment to MSE

## HOW WILL IT RUN

- Presentations
- Tutorials
- Exercises
- Paper of the day

## Today's paper

Kell, L. T., Mosqueira, I., Grosjean, P., Fromentin, J-M., Garcia, D., Hillary, R., Jardim, E., Mardle, S., Pastoors, M. A., Poos, J. J., Scott, F., and Scott, R. D. 2007. FLR: an open-source framework for the evaluation and development of management strategies. – *ICES Journal of Marine Science*, 64: 640–646.



## LICENSE

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Code: General Public License 3.0



## ABOUT US

Nekane Alzorriz - BioEco, BoB

Ernesto Jardim - STECF, MPs, a4a

Iago Mosqueira - FLR, IOTC, MPs

Chato Osio - Med, data-poor



## ABOUT YOU

- Who and where from
- Use of R? FLR?
- Programming?
- Fisheries modelling?

# READY !!

'Men learn while they teach.'

Seneca the Younger

## Today's material

`https://fishreg.jrc.ec.europa.eu/gitlab/r-training/  
201508-jrc/blob/master/Days/01-MON.zip`