

Online course with on-demand video and live Zoom meetings

Introduction to Regression Models with Spatial Correlation using R-INLA

Provided by: Highland Statistics Ltd

This online course consists of 5 modules representing a total of approximately 40 hours of work. Each module consists of video files with short theory presentations, followed by exercises using real data sets, and video files discussing the solutions. All video files are on-demand and can be watched online, as often as you want, at any time of the day, within a 6 month period.

A discussion board allows for daily interaction between instructors and participants. The course also contains 5 2-hour live web meetings in which we summarise the theory and the exercises. Attending these live web meetings is optional. We will run the web meetings multiple times per day and in different time zones.

You are invited to apply the statistical techniques discussed during the course on your own data and if you encounter any problems, you can ask questions on the Discussion Board. The course fee includes a 1-hour face-to-face video chat with the instructors.

Course content

We begin with an introduction how to add dependency to regression models using frequentist tools. After discussing the limitations of this approach we switch to Bayesian techniques. R-INLA is used to implement regression models, generalised linear models (GLM) and generalised linear mixed models (GLMM) with spatial dependency.

We will also explain how to deal with dependency around islands and fjords (barrier models). We will use geostatistical data and areal data.

During the course several case studies are presented, in which the statistical theory is integrated with applied analyses in a clear and understandable manner.

Date & Venue

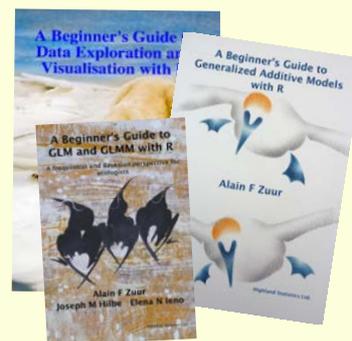
Date: 20 July-7 August 2020
6 months access

Multiple live meetings in different time zones.

Price: £575 + **1 hour free face-to-face video chat about your data**

Instructors: Dr. Alain Zuur
Dr. Elena Ieno

Authors of 11 books and providers of over 150 courses



COURSE CONTENT

Module 1 consists of 5 on-demand videos

- General introduction.
- Theory presentation on adding dependency to a regression model using frequentist techniques: Temporal correlation, spatial correlation and mixed-effects models.
- One exercise.
- Short introduction to mixed effects models.
- One exercise on linear mixed effects models.
- Live 2 hour Zoom meeting.

Module 2 consists of 7 on-demand videos

- Brief introduction to Bayesian analysis.
- Conjugate priors.
- Diffuse versus informative priors.
- Theory presentation on INLA.
- Exercise showing how to execute a linear regression model in R-INLA.
- Exercise showing how to execute a linear mixed-effects model in R-INLA.
- Exercise showing how to execute a Poisson GLM in R-INLA.
- Live 2 hour Zoom meeting.

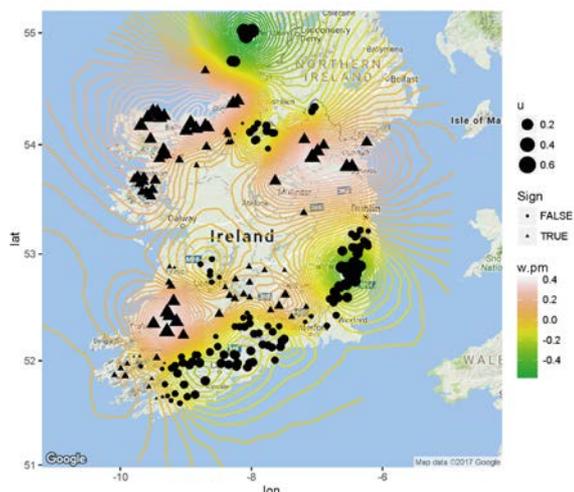
Module 3 consists of 7 on-demand video files

- Theory presentation on adding spatial correlation to regression models in R-INLA.
- Exercise showing how to add spatial correlation to a linear regression model.
- Exercise showing how to add spatial correlation to a Poisson GLM.
- Exercise showing how to add spatial correlation to a negative binomial GLM.
- Exercise showing how to add spatial correlation to a Bernoulli GLM.
- Exercise showing how to add spatial correlation to a gamma GLM.
- Exercise showing how to add spatial correlation to a beta GLM.
- Live 2 hour Zoom meeting.

Module 4 consists of 4 on-demand video files

- Theory presentation on the analysis of lattice and areal data.
- Exercise showing how to use the CAR correlation with a Poisson GLM.
- Theory presentation on barrier models for dealing with islands and fjords.
- One exercise showing how to implement the barrier model.
- Live 2 hour Zoom meeting.

Some Zoom meetings may take slightly longer than 2 hours.



GENERAL INFORMATION
COURSE FEE: £575

- Credit card payments are charged in GBP currency. UK participants are subject to 20% VAT.
- EU participants (but non-UK) are not subject to UK VAT, but need to provide their institutional VAT number. Non-EU participants (including Norway) are not subject to VAT.

LIVE 2-HOUR ZOOM MEETINGS SUMMARISING THE MODULES

	Module 1	Module 2	Module 3	Module 4
09.00-11.00 BST	20 July	23 July	30 July	6 August
19.00-21.00 BST	20 July	23 July	30 July	6 August

BST = British Summer Time.

- 09.00 London (BST) = 10.00 Amsterdam.
- 19.00 London (BST) = 14.00 New York / Toronto = 15.00 Sao Paulo = 11.00 Los Angeles / Vancouver.
- Times may be adjusted to accommodate certain time zones.

[Click here for](#) recommended internet speed (see the text under 'Recommended bandwidth for Webinar Attendees'). We will record the meetings and make them available on the course website.

Course participants will be given access to the course website with all the videos, data sets, R solution code and course material on 13 July.

FREE 1-HOUR FACE-TO-FACE MEETING

The course fee includes a 1-hour face-to-face meeting with one or both instructors. The meeting needs to take place within 3 months after the last live zoom meeting. You can discuss your own data, but we strongly recommend that the statistical topics are within the content of the course. The 1-hour needs to be consumed in one session. It will take place at a mutual convenient time.

PRE-REQUIRED KNOWLEDGE:

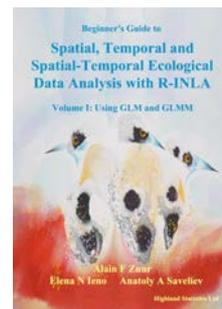
Good knowledge of R, data exploration, linear regression and GLM (Poisson, negative binomial, Bernoulli). Working knowledge of mixed-effects models. Short revisions are provided. This is a non-technical course.

CANCELLATION POLICY:

What if you are not able to participate? Once participants are given access to course exercises with R solution codes, pdf files of certain book chapters, pdf files of powerpoint files and video files, all course fees are non-refundable. However, we will offer you the option to attend a future course or you can authorise a colleague to attend this course. Terms and conditions see: <http://highstat.com/index.php/sign-up2>

RECOMMEND LITERATURE:

- Zuur, Ieno, Saveliev (2017). *Beginner's Guide to Spatial, Temporal and Spatial-Temporal Ecological Data Analysis with R-INLA*.
- This book is available from www.highstat.com.
- Books are not included in the course fee. The course can be followed without purchasing these books.



GENERAL

- Please ensure that you have system administration rights to install R and R packages on your computer.
- Instructions what to install will be provided before the start of the course.

REGISTRATION

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Payment via credit card or bank transfer

