Announcing a Course Sequence:

Introduction to Bayesian Disease Mapping (IBDM)
BDM with INLA (BDMI)
Advanced Bayesian Disease Mapping (ABDM)

March 9th - 10th, March 11th, and March 12th - 13th 2020
Historic Charleston, South Carolina

COURSE CONTENT
These courses are designed to provide a comprehensive introduction to the area of Bayesian disease mapping in applications to Public Health and Epidemiology: The IBDM course will run on March 9th – 10th, the BDM with INLA (BDMI) on March 11th, and the ABDM course will run on March 12th – 13th 2020.

The **IBDM** two-day course consists of sessions dealing with:

DAY 1

- Basic concepts of Bayesian methods and disease mapping
- Bayesian computation and MCMC
- Basic R and Win/OpenBUGS use
- Demonstration of risk estimation and cluster detection using Win/OpenBUGS

DAY 2

- Hands-on with simple Win/OpenBUGS models: Poisson-gamma; convolution models for risk estimation
- Ecological analysis, cluster models
- space-time analysis
- R2WinBUGS/BRugs/CARBayes/Nimble

This is designed for those who want to cover mapping methods, and includes ecological analysis and the use of WinBUGS software and its variants.

The course will include theoretical input, but also practical elements and participants will be involved hands-on in the use of R and Win/OpenBUGS in disease mapping applications. Both human and veterinary examples will be covered in the course as well as simple space-time modelling. Examples will range over congenital anomaly birth data, foot-and-mouth disease in the UK and oral cancer in Georgia.

The **BDMI** course will provide a basic introduction to the use of INLA for Bayesian Disease Mapping. The course is intended for those have had a basic introduction to BDM (such as on the IBDM course) and will cover fitting BDM models using INLA. Some R experience would be useful but not essential.

The **ABDM** course consists of:

DAY 1 Spatial topics

- Spatial models and simple variants: convolution, proper CAR, full MVN
- Special application: Case event modelling
- Special applications: sparse count data: zip and factorial regression
- Multiple disease analysis
- Spatial survival modelling

DAY 2 Measurement Error, Multivariate and Spatio-temporal modelling topics

- Measurement error, SEMS and Joint modelling. CPO and pseudo Bayes factor
- Infectious disease models and veterinary data
- Regression and variable selection
- Space-time modelling with INLA, CARBayes and Nimble

This is designed for those who want to cover advanced BDM methods, and includes advanced use of Win/OpenBUGS and other packages. The course will include theoretical input, but also practical elements and participants will be involved hands-on in the use of R and Win/OpenBUGS in disease mapping applications. Both spatial and spatio-temporal analyses will be considered. Examples will range over childhood asthma data from Georgia, influenza in South Carolina, foot-and-mouth disease in the UK and Ohio respiratory cancer.

THE SPEAKER

Professor Andrew B. Lawson (Department of Public Health Sciences, College of Medicine, Medical University of South Carolina) is a World Health Organization (WHO) advisor on Disease Mapping and organized with the WHO an International workshop on this topic which has led to an edited volume "Disease Mapping and Risk Assessment for Public Health". He recently acted as chief editor of the CRC Handbook of Spatial Epidemiology (2016). He has published a number of books focused on disease mapping and spatial epidemiology. In particular, the 3rd edition of the book: Lawson, A. B. (2018) **Bayesian Disease Mapping** CRC Press, will be a course text for the IBDM course. A copy of the book is included in the course fee for that course only.

WHO SHOULD ATTEND

The courses are intended for epidemiologists and public health workers who need to analyse geographical disease incidence. In addition, the courses may be of interest to statisticians or geographers and planners who deal with spatial disease data. Some statistical/epidemiological background would be beneficial but not essential.

WHY ATTEND

Participants will gain an in-depth understanding of the basic issues, methods and techniques used in the analysis of spatial health data using a Bayesian approach. They will gain insight into the detailed analysis of practical problems in risk estimation and cluster detection. The course is presented by a leading researcher in the field of disease mapping and spatial epidemiology.

COURSE FEES AND REQUIREMENTS

*IBDM Two-day Course - $700.00

Two-day course fee includes comprehensive course notes, lunch, refreshments and a copy of *Bayesian Disease Mapping: Hierarchical Modeling in Spatial Epidemiology 3rd Ed*, Lawson, A. B., (2018), CRC press, New York.

*BDMI one day course - $400.00

One day course fee includes comprehensive course notes, lunch and refreshments

*ABDM Two-day Course - $700.00

Two-day course fee includes comprehensive course notes, lunch, and refreshments.

Booking of the whole course sequence is discounted to $1600.

Joint booking of either the IBDM or ABDM with BDMI is discounted to $900

(note: combined IBDM and ABDM cannot be booked without inclusion of the BDMI course)

Attendees must bring a laptop with R and WinBUGS 1.4.3 software preloaded. OpenBUGS v 3.2.3 rev 1012 or more recent, can be used instead of WinBUGS but the demonstration will be given based on WinBUGS. Datasets will be provided. R and WinBUGS software can be downloaded from the following websites: http://cran.wustl.edu and/or www.mrc-bsu.cam.ac.uk/bugs. OpenBUGS can be downloaded from

http://www.openbugs.net/w/Downloads

INLA can be downloaded with the R command:

```
install.packages("INLA", repos="https://www.math.ntnu.no/inla/R/stable")
```

Additional R packages will be needed, and notification of these will be sent to participants in the joining instructions.

VENUE

The courses will take place on the campus of the Medical University of South Carolina, Department of Public Health Sciences, Room CS301, 135 Cannon Street, Charleston, South Carolina.

AREA ACCOMODATIONS:

Charleston Marriott Hotel
170 Lockwood Boulevard
Charleston, SC 29403
(843)723-3000/(800)968-3569
www.marriott.com/chsmc

Courtyard Marriott Charleston
125 Calhoun Street
Charleston, SC 29401
(843)805-7900 Phone
http://www.charlestonhotel.com/

Comfort Inn
144 Bee Street
Charleston, SC 29401
(843)577-2224

The Courtyard by Marriott
35 Lockwood Drive
Charleston, SC 29401
(843) 722-7229

Additional information on Charleston and area hotel accommodations may be found at www.charlestoncvb.com. Download a campus map at www.musc.edu.

PARKING

Parking is limited in downtown Charleston. Parking is available in the President Street parking garage (corner of Cannon and President Streets) for $8 for the visitor day pass. The garage is about 200 yds from the course venue. If you plan to drive to Charleston and to campus, please contact Paula Talbot (843-876-1578 or talbotp@musc.edu) at least one week in advance for additional information on the parking location and to arrange a pass.

REGISTRATION INFORMATION

An Introduction to Bayesian Disease Mapping **March 9th – 10th 2020**

Bayesian Disease Mapping with INLA **March 11th 2020**

Advanced Bayesian Disease Mapping **March 12th – 13th 2020**

Medical University of South Carolina

Registration is limited to 20 participants

Deadline for Registration is February 21rd 2020

Conference Registration per person (mark correct box):
□ IBDM - $700 **□ ABDM - $700** **□ BDMI - $400** **□ IBDM (or ABDM) + BDMI - $900**
□ Complete course sequence - $1600

Name_____

Title_____

Company/Organization_____

Address_____

City_____State_____Zip_____

Phone (___)_____Fax (___)_____

E-mail_____

METHODS OF PAYMENT

Registration fees are payable in U.S. dollars only. Personal checks are acceptable if payable through a U.S. bank. (payable to MUSC, DPHS)

___ Enclosed is a check in the amount of $_____

___ Charge $ _____to my credit card.

___ American Express ___ Discover ___ MasterCard ___ Visa

Card# _____Exp. Date_____

Authorizing Signature_____

Card Holder Address_____

Refund Policy: Requests for refunds must be made in writing. There will be a $75 processing fee for cancellations before February 21st . Beginning February 21st , no refunds can be given.
We reserve the right to reschedule the course or courses should circumstances dictate, giving reasonable notice to participants.

If you will require special accommodations or have special dietary requests, please specify:

REGISTRATION OPTIONS

- Mail registration form and fee to:
  Bayesian Disease Mapping courses
  Medical University of South Carolina
  Department of Public Health Sciences
  Attention: Paula Talbot
  135 Cannon Street, Suite 303
  MSC 835
  Charleston, South Carolina 29425-8350

- Phone registration to:
  Department of Public Health Sciences
  Paula Talbot
  (843) 876-1578

- Fax registration form to:
  Department of Public Health Sciences
  Attention: Paula Talbot
  (843) 792-6000