Workshop Proposal for GeoVet 2019

o Title of the workshop

Spatial Distribution Modeling with R

o Name of instructor(s) and short biographies and contact information of the workshop organizer(s)

Robert Hijmans (rhijmans@ucdavis.edu), Ani Ghosh and Alex Mandel

Robert Hijmans is professor in the Department of Environmental Science and Policy at UC Davis. He specialized in spatial modeling, including of the distribution of species and diseases. He has developed some of the core packages that enable such modeling in R. Drs. Ani Ghosh and Alex Mandel are research scientists in the Department of Environmental Science and Policy at UC Davis. Dr. Ghosh specialized in remote sensing, and Dr. Mandel in spatial informatics and open source software.

o Workshop's learning outcomes

This workshop will take participants through all the steps of a spatial distribution model (also known as "species distribution model", "disease distribution model", "ecological niche model", "climate envelope model"). This includes aspects of data preparation, model fitting, prediction, evaluation and analysis. It should allow participants to independently implement such models, and to more critically think about them.

o Background and skills workshop attendees should have (max 150 words).

Basic R skills would be very helpful. If participants have no prior experience with R, they are strongly encouraged to get acquainted with it beforehand. For example by working through our intro website https://rspatial.org/intr or similar on-line resources.

o The history of the workshop: have you offered this workshop before?

Yes [x] No [ ]. If yes, please provide a brief summary of the venues, dates, and approximate attendance numbers.

We did this workshop last September in Tanzania. We have done several similar workshop on spatial data analysis with R (e.g. spatial prediction, remote sensing image analysis), and I use this in my regular university classes as well. Over the past three years we have taught week-long courses in Tanzania (30 participants), and Cambodia (15 participants), a two-day course in Kenya. To get a sense of the material covered see https://rspatial.org/sdm

▪ **Workshop specifications**

o Do you prefer to organize a pre- or post-workshop? Pre [ ] Post [ ] Either [x]

o What's the minimum and max number of attendees for the workshop? [40]

o What's the duration (days) of the workshop (max. length is 2 days, but contact us at GeoVet19@ucdavis.edu if you want to propose a longer workshop e.g. 3-4 days): [1 day]

o A package of accessories that includes one laptop projector, power strips, extension cords, Easel Board and adapters will be provided. Please contact us at GeoVet19@ucdavis.edu if you need additional material.

Participants need to bring a laptop. There should be power outlets/chords in the room.

o What is the proposed cost (USD) of the workshop for the participants: [50 USD]

▪ Workshop contents and schedule

All sessions will have a short oral presentation as an introduction to the topic, followed by a hands on exercise, and ends with wrap up to discuss the main points. Robert Hijmans will do the introductions.

8.30-10.30 - Review of basic R

10.30-11.00 - Break

11.00-12.00 - Spatial data in R

12.00-1.00 - Break

1.00-3.00   - Spatial model fitting and prediction

3.00-3.30   - Break

3.30-5.00   - Model evaluation and interpretation