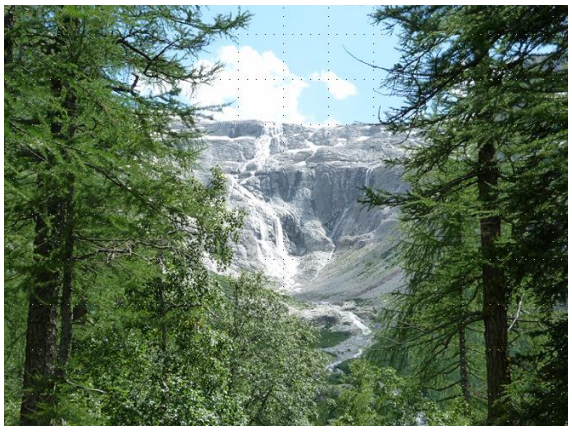
Dealing with Spatio-temporal Data in Movement and Population Ecology

Organizers: Francesca Cagnacci, Research and Innovation Centre-Fondazione Edmund Mach, Italy; Erlend B. Nilsen-NINA, Norway; Oyvind Steifetten- USN, Norway.
Teachers: Ferdinando Urbano (environmental analyst, Eurougulates), Mathieu Basille (spatial ecologist, University of Florida, USA), Emiel van Loon (quantitative ecologist, University of Amsterdam), Johannes De Groeve (geo-matics and data curatorship, Eurodeer), Francesca Cagnacci (movement ecologist, FEM-Italy), Erlend Nilsen (Population ecologist, NINA- Norway), Luca Delucchi (GIS specialist, FEM-Italy).
Special guests: Anne Berger (IZW, Germany), Sarah Davidson (Movebank)

Venue: The Campus at Fondazione Edmund Mach, via Mach 1, San Michele all'Adige, Trento, Italy: between mountains and vineyards (http://www.fmach.it/eng)
Dates: **June 17-22 2018**.

Format: An intense one-week course with a mix of technical lectures and hands-on exercises to handle and manipulate spatial data typically used in Movement and Population Ecology. Proficiently following the course will provide participants with solid skills in spatial database (PostgreSQL/PostGIS) and R for processing ecological spatio-temporal data. Basic knowledge of SQL and R is essential. The course will be completed by guest lectures on special topics.



Participation: This course targets PhD students, but participation of post-docs, researchers, managers and motivated MSc is also fostered. There will be room for a maximum of 25 participant, with priority given to students from the IRSAE network.
The course is supported by the International Research School in Applied Ecology (IRSAE www.irsae.no), and co-organized by Fondazione Edmund Mach, NINA and USN. **Fees and costs** are therefore:
IRSAE participants- Fees, board and lodging are covered for participants from IRSAE partners, who may also obtain reimbursement for travel costs through IRSAE and their institution.
No IRSAE participants- Students: 100€. Researchers/Managers: 150€. Food and lodging in the campus can be booked at 80 €/day. Alternative lodging possibilities are available in the area.
Evaluation and Credits: ECTS credits will be assigned, after positive grades in a final exam.
Registration: Please send an Email (**email subject**: Spatio-temporal data School 2018), containing a brief description of your PhD project and/or description of the relevance of the course to your research, along with a CV to Francesca Cagnacci (francesca.cagnacci@fmach.it), cced Henriette Gelink (henriette.gelink@inn.no).

Deadline: April 30, 2015. Notification of acceptance: May 15, 2015

More and upcoming info/material on: http://irsae.no/courses-conferences-and-workshops/upcoming-courses

Scientific content:

The advancement of a movement and population ecology theoretical framework has been paralleled by the increasing spatial and temporal resolution and size of datasets available from tagging or genomics techniques. Movement and population data come with complex associated information related to the environmental context, such as population density, weather, habitat types and vegetation indexes based on remote sensing. This course has two main objectives: to learn how to store, handle and process in a robust and efficient way the spatio-temporal information linked with movement and population data; and to learn how to integrate and analyse movement and population data with their environmental context. These objectives will be pursued through a hands-on, step by step approach. Some introductory general lectures and exercises will be followed by two typical examples of ecological problem-solving, based on PostgreSQL/PostGIS, R and QGIS software environments. Last but not least, special topic lectures held by international experts will take real research examples and issues into the course flow.

Summary course schedule:

Mon, 17th June	am	Arrivals
	pm	Introduction to spatial objects in animal ecology (F. Cagnacci) ***Special topic***: The ecological context built from satellites, including Sentinel (L. Delucchi, J. De Groeve). ***Lecture***: Introduction to database and spatial database (F.Urbano, J. De Groeve)
	Science Happy Hour	**Ice-breaker**: introductions from participants.
Tue, 18th June	am/pm	***Study case 1***: Dealing with Spatio-temporal data in Movement and Population Ecology. An example from biologging sensors. Step 1 to 3: 1. Data acquisition and screening 2. From files to DB 3. From DB to Spatial DB, to QGIS. (F. Urbano, J. De Groeve). ***Special Topic***: Dealing with acceleration data (A. Berger)
	Science Happy Hour	**An extended lab meeting**: flash talks from students, in presence of experts
Wed 19th June	am/pm	***Study case 1***: Dealing with Spatio-temporal data in Movement and Population Ecology. An example from biologging sensors. Step 4 to 5: 4. Connecting DB to R. 5. Spatial analysis in R. (F. Urbano, M. Basille). ***Special topic***: Integration of SpatialDB with R: how to harmonize software environments. (M. Basille) ***Advanced topic***: Adding the spatial context to movement and population data: examples in PostGIS, QGIS, and R (M. Basille, J. De Groeve).
	Science Happy Hour	**An extended lab meeting**: flash talks from students, in presence of experts
Thu 20th	am/pm	***Working Example 2***: Dealing with Spatio-temporal data in Movement and Population Ecology. An example from population data. Step 1 to 5. (F. Urbano, J. De Groeve). ***Special Topic***: From population data to spatial modelling. (E. Nilsen)
	Science Happy Hour	**An extended lab meeting**: flash talks from students, in presence of experts
Fri 21st	am	***Special Topic***: Resource Selection Analysis in Movement and Population Ecology. (E. van Loon) ***Working Example 3:*** Resource Selection Analysis in Practice
	pm	***Special Topic:*** Data sharing and Data standards for a better Science. (S. Davidson, F. Cagnacci) ***Wrapping up***: Take home message and Questions