

# Simulation of Migratory Routes of Birds

[Georgios Technitis](#)

Geographic Information Science Group, Department of Geography, University of Zurich - Irchel, Switzerland, [georgios.technitis@geo.uzh.ch](mailto:georgios.technitis@geo.uzh.ch)

Host Institution: Max Planck Institute for Ornithology in Radolfzell, Konstanz(DE)

STSM Host: Kamran Safi, [ksafi@orn.mpg.de](mailto:ksafi@orn.mpg.de)

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**Abstract.** Recent advances in movement ecology have shown that scientists of different research expertise come together in an attempt to create a combined approach to animal movement simulation. The connection of Ecology and GIScience in this case is prominent. From the Ecological perspective, the traditional null hypothesis testing approach requires a reference model to compare against the recorded GPS data, whereas the GIScience field produces various theoretical models, but is lacking on the biological justification of them. This STSM focuses on three targets: first, to establish an operational programming workflow between the Ecology and GIS groups, second - to evaluate already developed algorithms for movement modeling, and third, to set up the prerequisites for an improved, empirically informed version of such model. During the short mission, crucial questions were raised and the fully stochastic approach in animal movement modeling was fundamentally challenged. In an attempt to address these very questions, we developed a point to point, random trajectory generator that accounts for the distributions of speed and angle of the recorded data, while using both correlation and auto-correlation functions to better model the behavior of the recorded moving object.

**Keywords:** movement modeling, random trajectory creation, movement ecology, bird migration