DSS Statistics Seminar
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Webinar https://uniroma1.zoom.us/j/8688197736
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Marine litter in the North-Western Ionian sea – Data features and space-time modeling

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Marine litter has recently become a recognized global ecological concern, and its distribution and impacts on deep-sea habitats are under continuous investigation. Here we focus on marine litter data collected as a by-product of trawl fishery surveys regularly conducted at a local scale in the Mediterranean. Litter data are multivariate, have space-time structure, and are semi-continuous, i.e. they combine information on occurrence and conditional-to-presence abundance. Data on potential environmental drivers obtained by remote sensing or GIS technologies are also available with different spatial support. The modeling strategy is based on a two-part model that enables handling the zero-inflation problem and the spatial correlation characterizing the data. In the spirit of multi-species distribution models, we propose to jointly infer different litter categories in a Hurdle-model framework. The effects of potential environmental drivers and shared spatial effects linking abundances and probabilities of occurrences of litter categories are implemented via the SPDE approach in the computationally efficient INLA context. Results support the possibility of better understanding the spatio-temporal dynamics of marine litter in the study area.

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