



# PhD program : Deep learning simulation of seabirds behavior : evaluating the impact of offshore windfarms

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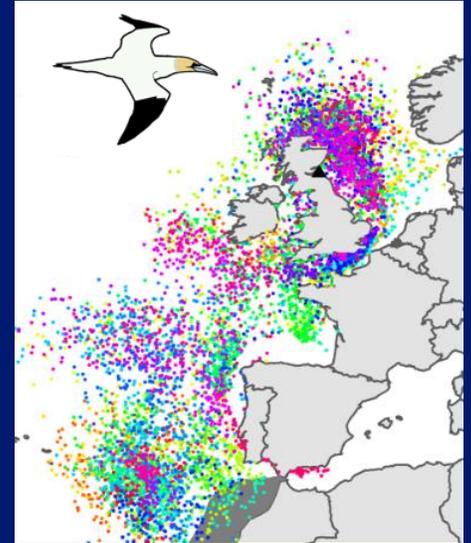
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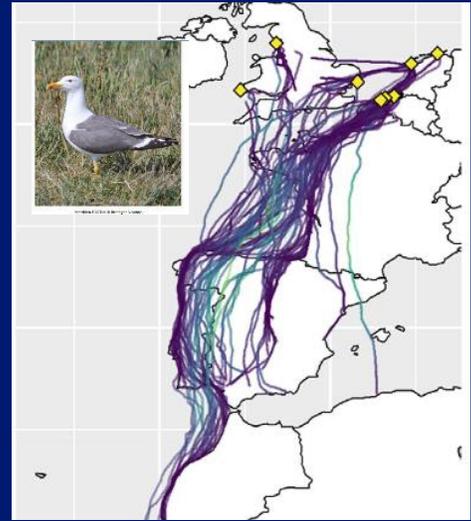
# Offshore wind farms and seabirds



First french offshore windfarms (EDF R)



GPS locations of Northern gannets (*Morus bassanus*)



GPS tracks of lesser black-backed gulls (*Larus fuscus*)

## Impact of Offshore Wind Farms (OWF) on seabirds

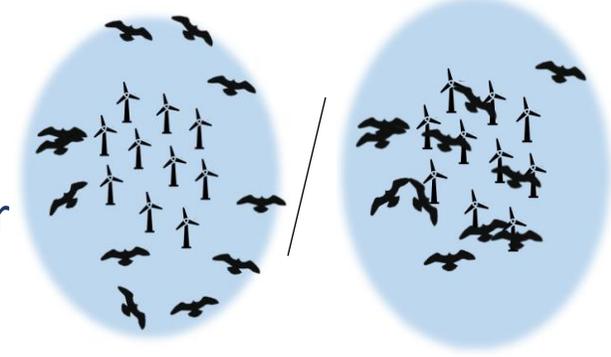
➔ Direct mortality (collisions)



➔ Barrier effect (energy cost of avoidance)



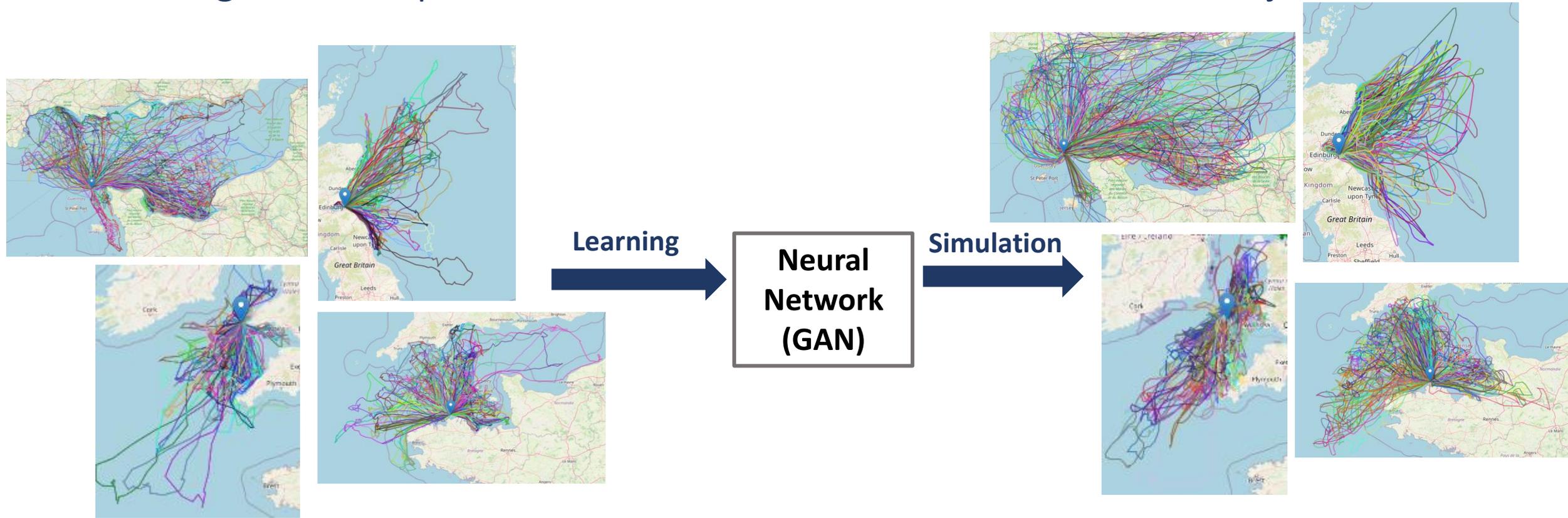
➔ Habitat modification (attraction or repulsion)



➔ Need to predict and quantify the impact of future OWF

# Simulating seabirds' behaviour with a deep learning model

**PhD goal:** Develop an environnement-based simulator of seabirds' trajectories

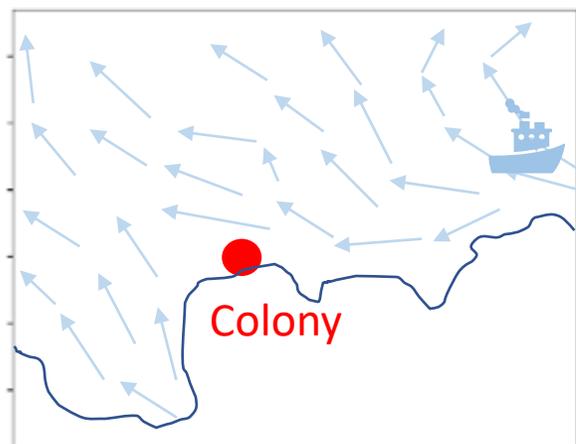


GPS data + environmental data  
(eg : bathymetry, wind, fishing activities...)

Simulated trajectories

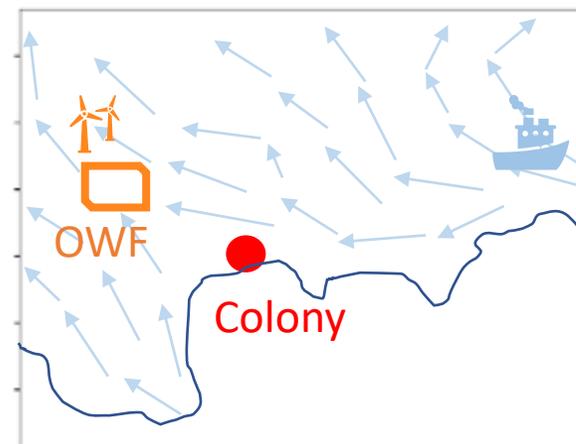
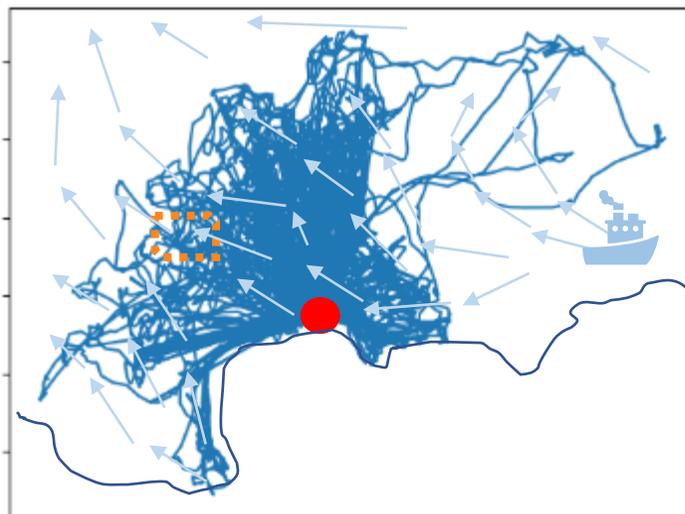
➔ Model best suited for predicting seabirds' behavior according to environmental conditions

# Estimating impact through simulations



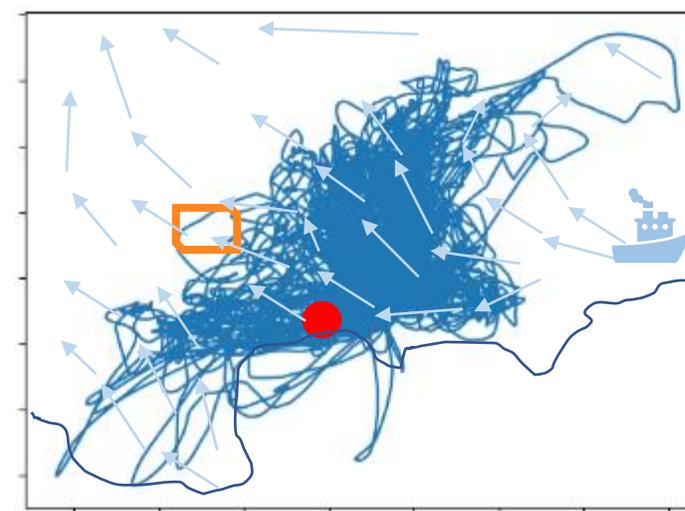
Scenario without OWF

GAN



Scenario with OWF

GAN



Comparison =

- Direct estimation of habitat modification
- Direct estimation of barrier effect
- Input of Collision Risk Models

➔ Impact prediction with the simulator