Weather covariates (Table 1), were downloaded as hourly gridded data from the ERA5 Atmospheric Reanalysis by European Medium Range Weather Forecasts hosted by Copernicus Climate Change Service Information 2020 (Copernicus Climate Change Service (C3S) 2017). We used the Climate Data Store (CDS) API through the provided ‘cdsapi’ Python library (Petrelli 2019) to download the data as NetCDF files. The spatial resolution for this dataset is 0.25x0.25 degrees for atmospheric variables and 0.5x0.5 degree for oceanic variables.

Once the Weather data were downloaded, we imported each variable into R 3.6.3 (R Core Team 2020) using the ‘raster’ package (Hijmans and van Etten 2020) as a raster stack ( a 4-dementional array with spatial coordinates on the x and y axes, the variable in question on the z axis, and time as a 4th axis). For each datapoint (mistnet or acoustic) the date and time was rounded to the nearest hour and was matched with the corresponding hour from the raster data. Both datasets were reprojected to Universal Transverse Mercator (Datum: WGS84 Zone 11 North) which preserves distance and area using the ‘sp’ package (Pebesma and Bivand 2005; Bivand et al. 2013). The mean of each weather covariate within 20km and 40km was calculated for the atmospheric and oceanic variables respectively using the ‘velox’ package (Hunziker 2017). The 20km and 40km buffers were selected to assure that mean weather values were calculated from multiple surrounding grid cells. We calculated % of the face of the moon that was illuminated and if the moon was above the horizon with the ‘oce’ package (Kelley and Richards 2019). For the mist net data, we selected weather data from any hour between the first net open time and the last net closed time each survey night and averaged the resulting value to ascribe a single value to each survey.

Table : Weather covariates included as part of analysis of acoustic call rates

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **ERA5 Var Name** | **CMI\_Var\_Name** | **effect** | **why\_effect** | **Description** |
| total\_precipitation | tot\_precip | detection and behavior | mask signal; may effect calling behaviour (reduced calling during rain) | total precipitation (mean within 20 km) for the hour that the 15 minute bin falls within |
| 10m\_u\_component\_of\_wind | wind\_u | detection and behavior | mask signal; may effect calling behaviour (inverse calling/wind relationship?)(the mistnet is more visible when it is blown about, probably leading to more avoidance behavior) | mean wind in the east (negitive) west (positive) direction in m/s) (mean within 20 km) for the hour that the 15 minute bin falls within |
| 10m\_v\_component\_of\_wind | wind\_v | detection and behavior | mask signal; may effect calling behaviour (inverse calling/wind relationship?)(the mistnet is more visible when it is blow about, probably leading to more avoidance behavior) | mean wind in the north (negitive) south (positive) direction in m/s) (mean within 20 km) for the hour that the 15 minute bin falls within |
| significant\_height\_of\_combined\_wind\_waves\_and\_swell | wave\_height | detection | mask signal | significant wave height (mean within 40 km) for the hour that the 15 minute bin falls within |
| mean\_wave\_direction | wave\_dir | detection | mask signal for some directions but not others depending on site | dominant wave direction (mean within 40 km) for the hour that the 15 minute bin falls within |
| mean\_wave\_period | wave\_period | NA | ? | dominant wave period (mean within 40 km) for the hour that the 15 minute bin falls within |
| total\_cloud\_cover | tot\_cloud | behavior | interact with moon to make night darker | total cloud cover in percent?(mean within 20 km) for the hour that the 15 minute bin falls within |
| low\_cloud\_cover | low\_cloud | behavior | interact with moon to make night darker | low cloud cover in percent?(mean within 20 km) for the hour that the 15 minute bin falls within |
| mean\_sea\_level\_pressure | pressure | behavior | ? | barametric pressure in mbar (mean within 20 km) for the hour that the 15 minute bin falls within |
| surface\_pressure | surface\_pressure | behavior | ? | mean sealevel pressure in mbar (mean within 20 km) for the hour that the 15 minute bin falls within |
| sea\_surface\_temperature | sst | behavior | ? | mean sea surface temperature (mean within 40 km) for the hour that the 15 minute bin falls within |
| 2m\_temperature | temp\_c | behavior | ? | air temperature at 2 m (mean within 20 km) for the hour that the 15 minute bin falls within |
| 2m\_dewpoint\_temperature | dew\_point | behavior | the net is more visible when it has dew on it) so birds will avoid if covered with dew | dew point at 2 m (mean within 20 km) for the hour that the 15 minute bin falls within |