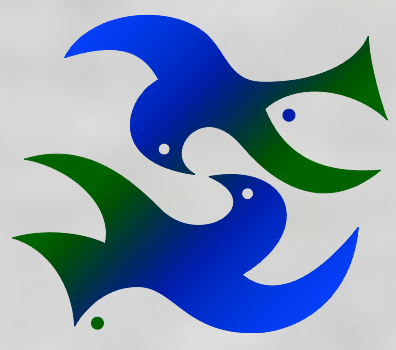


Residence time as a measure of habitat choice in caribou in West Greenland



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AIM: To study habitat choice in the Akia-Maniitsoq (AM) caribou (*Rangifer tarandus groenlandicus*) herd, West Greenland using residence time.

LOCATION: The Akia-peninsula stretches northwards from west of Nuuk to Maniitsoq and the Sukkertoppen Iskappe. The area is ca. 15 000 km² with elevations ranging from 0-1300 m asl.

GPS-DATA: In 2008, 40 female caribou from the AM population were deployed with satellite collars. GPS-positions were collected every 1, 2 or 3 hours and for up to more than two years following deployment. Data from 26 caribou where locations were logged every 2 hours (a total of 110 016 positions) were used in the analyses.

VEGETATION TYPES: Data on the distribution of different vegetation types in the AM area was based on remote sensing from the Landsat 7 satellite with a spatial resolution of 30x30 m. 14 different types or categories were used and included, e.g. heath, copse, fen, grassland, snow and water⁽¹⁾.

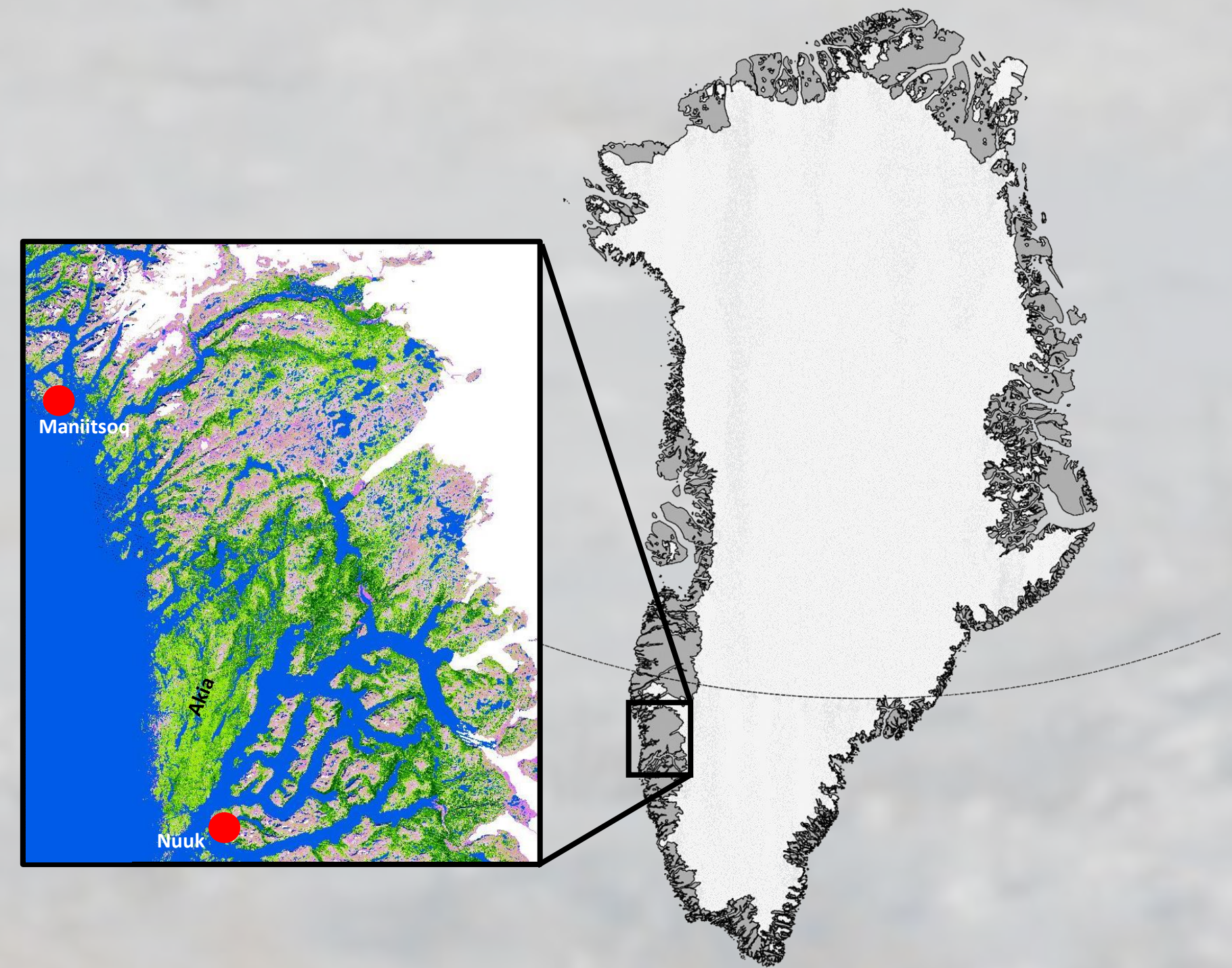
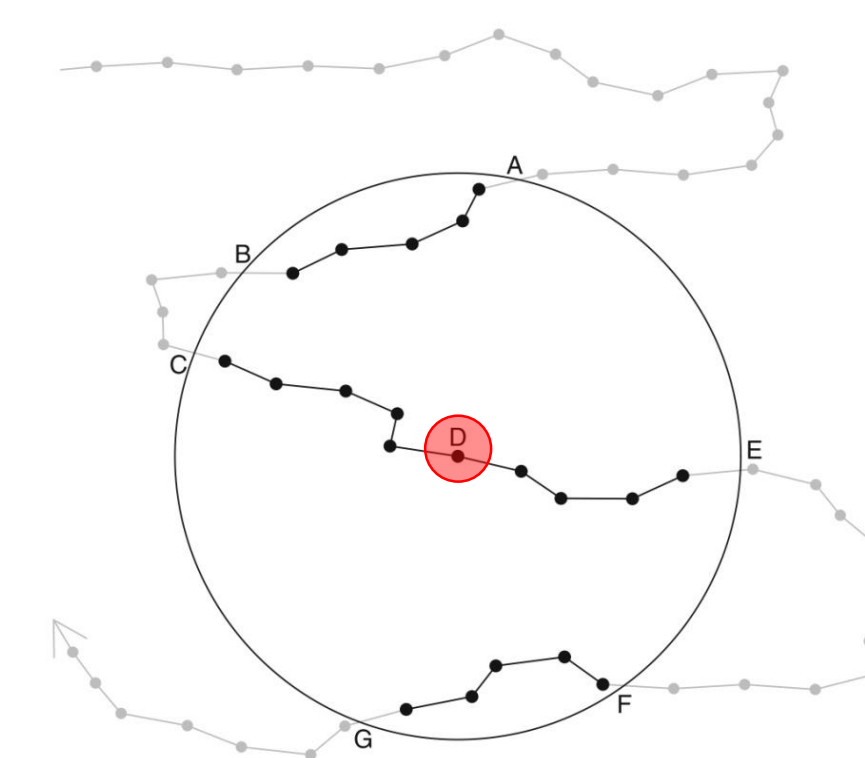


Figure 1. Location of the Akia-Maniitsoq caribou herd, West Greenland. Colored map shows different vegetation types.

RESIDENCE TIME (RT): The amount of time spent in the vicinity of any location⁽⁵⁾. In the analyses



RT was calculated in circles with radii of 500 m, and the maximum allowed time outside the circle was set at 24 hours.

Source: (5) Barraquand, F. and Benhamou, S. 2008.
<http://dx.doi.org/10.1890/08-0162.1>

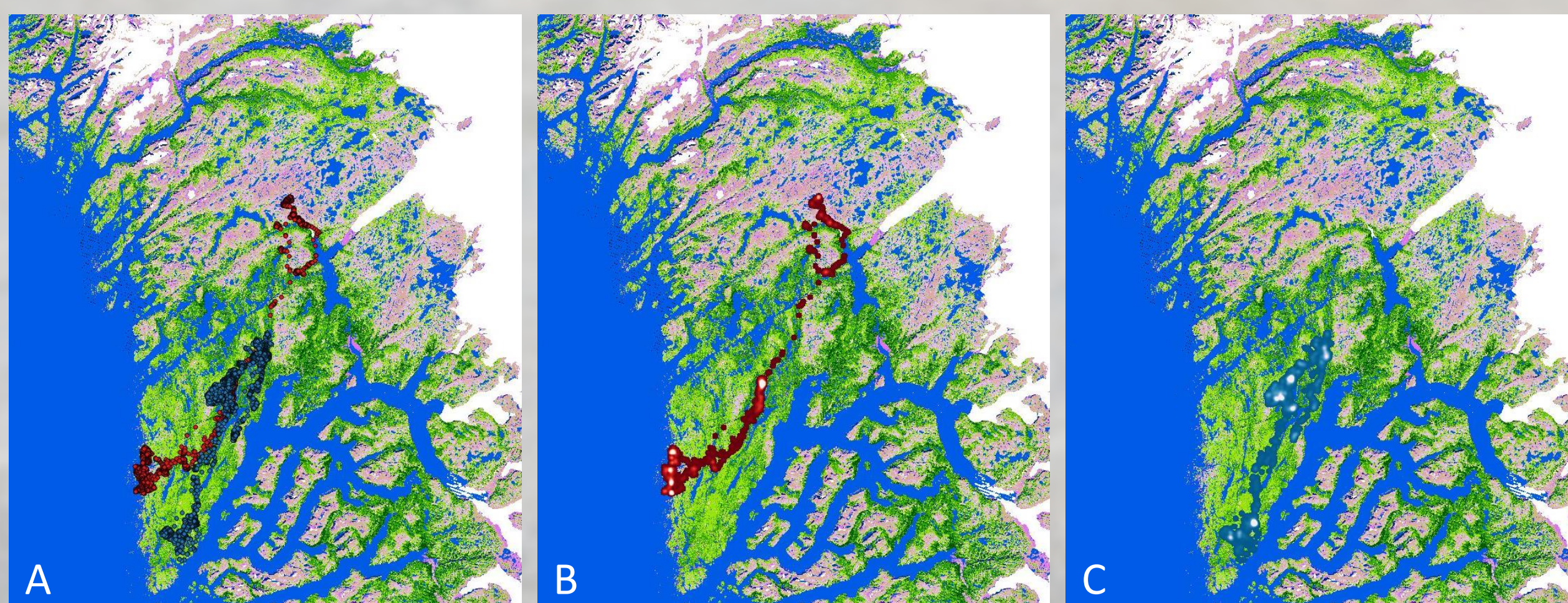


Figure 2. GPS-locations of 2 female caribou, #613848 and #5705 (A). Areas with high usage indicated by white colors (B and C). #613848 in red and caribou #5705 in blue.

SNOW DEPTH: Snow depth was modelled using the regional climate model HIRHAM5 with a resolution of 7.5 km⁽²⁾.

ELEVATION: Elevation was assessed using a digital elevation model with a resolution of 30 m⁽³⁾.

NDVI: As a measure of productivity the NDVI (Normalized Difference Vegetation Index) with a resolution of 250 m was applied. Data from 8-day composite periods were used⁽⁴⁾.

ANALYSIS: We included several possible drivers of habitat choice in the residence time analyses, e.g. vegetation type, snow depth, elevation and NDVI.

RESULTS and CONCLUSION: Several of the caribou had very long residence times during various periods of the year. During winter animals tended to stay within very small areas for extended periods corresponding to areas with low snow depth. Further, their preferred habitat was heath and open heath both during summer and winter.



Sources: (1) Tøttrup, C. 2009. Vegetation and snow mapping of area between Maniitsoq Ice Cap and Godthåbsfjorden - Final report to NERI/Alcoa. (2) Langen, PL., Danish Meteorological Institute. Model run. (3) Howat, IM et al. 2014. doi:10.5194/tc-8-1509-2014. (4) <http://gimms.gsfc.nasa.gov/download/MODIS/>

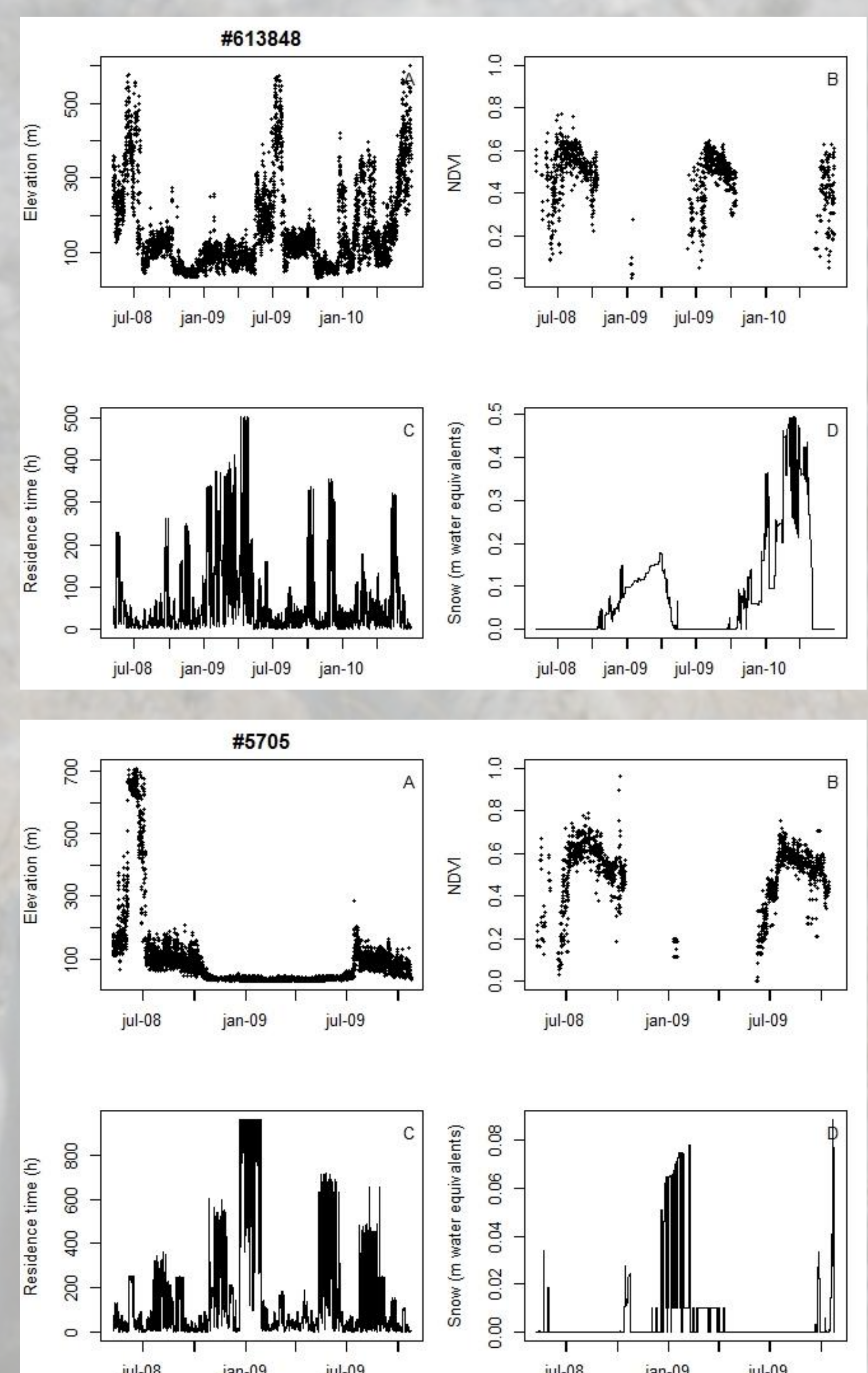


Figure 3. Location of the animals based on elevation (A), NDVI (B), Residence time in hours (h), and Snow depth (D) for two caribou: #613848 (upper) and #5705 (lower).