

Earth Observation from two perspectives – combining space borne animal tracking and environmental monitoring – a case study on storks and cities.

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ABSTRACT:

There are a few species that thrive in urban environments by being able to benefit from the association with humans and their settlements. These synanthropes, like the rat or the rock pigeon, usually occur in large numbers in urban landscapes. Another prominent model is the White Stork (*Ciconia Ciconia*). While breeding in Europe, storks stay close to humans and profit from anthropogenic surroundings. It is known that they build their large nests on human structures within rural areas so as to forage on nearby agricultural fields. Yet, the extent to which the stork's movements relate to man-made constructions during the different stages of migration and while overwintering in Africa remains unclear. Thanks to a combination of high-resolution GPS tracking and new remote sensing technologies, we are now able to observe the storks in their chosen wintering habitat even from the distance. Two radar satellites, TerraSAR-X and TanDEM-X, of the German Aerospace Centre (DLR) created a map of urban structures for the entire world also quantifying the proportion of settled areas and the arrangement of rural and urban areas. Together with high-resolution positional data of the stork's journey, we now can analyse their movements in relation to urban structures during the breeding, migration and wintering stages. This allows us to estimate whether and, if so, how storks change their level of association to humans during their different lifetime phases.