Global tracking of songbird migration from space

While it is in principle possible to follow individual birds as they migrate across the United States and Canada, it is much more difficult to determine what the thrushes do once they take off over the Gulf of Mexico, over other large ecological barriers, or when they land in inaccessible areas such as South American rainforests. Currently, we are unable to track the movements of small birds during migration beyond a few days (Cochran, 1987; Cochran *et al.*, 2004). However, to understand the connectivity between breeding and wintering areas (Webster *et al.*, 2002), the birds' intercontinental orientation capacities, the importance of circannual clocks and population cycles (Lawton and May, 1983), we will need to follow small birds for at least months at a time around the globe. One of the authors (M.W.) has started the "ICARUS"-Initiative (www.princeton.edu/~tracking) in collaboration with George Swenson (University of Illinois at Urbana-Champaign) and James A. Smith (NASA, Goddard Space Flight Center), aiming for the installation of a downward looking radio telescope in space, an Extraterrestrial Biological Observatory (EBO). Such a system would allow us to determine the daily locations of small (1g) transmitters around the world with an accuracy of approximately ± 1 km (Swenson *et al.*, 2004).