Detecting Earth's Moons. B. Bolin[1], R. Jedicke[1], M. Granvik[2] and R. Wainscoat[1]. [1]Institute for Astronomy, University of Hawaii at Manoa (2680 Woodlawn Drive, Honolulu, HI, 96822 bolin@ifa.hawaii.edu, jedicke@ifa.hawaii.edu, rjw@ifa.hawaii.edu), [2]Department of Physics, University of Helsinki (P.O. Box 64, 00014 Helsinki, Finland mgranvik@iki.fi)

Introduction: The discovery of the first known natural Temporary Captured Orbiter (TCO), 2006 RH_{120}, prompted an assessment of the probability of other TCOs [1]. It has been found that at any time there are one or two 1-meter diameter TCOs [1]. The average capture lifetime is long enough for them to be discovered by modern sky surveys. We assess their discovery rate with existing and anticipated sky surveys.

Methods and Discussion: We find that TCOs are detectable by all-sky surveys. Figure 1 shows the TCO sky-plane probability distribution and suggests that a survey that can image the entire sky every night to V~20 should be capable of discovering TCOs. We also discuss the prospect of detecting TCOs, or small meteoroids that are not captured, using large radar telescopes.

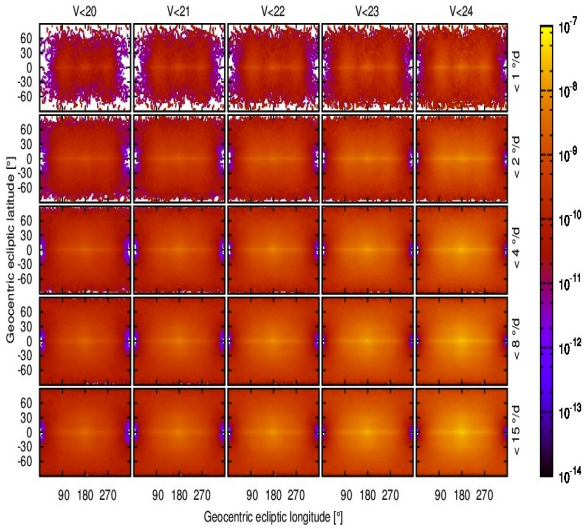

Figure 1: Geocentric skyplane probability density of the simulated TCO distribution for different values of the systems's limiting magnitude and limiting apparent rate of motion.

References:

[1] Granvik M., Vaubaillon J. and Jedicke R. (2012) *Icarus*, 218(1), 262-277