1047-16-384 **Steffen Oppermann** (Steffen.Oppermann@math.ntnu.no), Institutt for matematiske fag, NTNU Gløshaugen, 7034 Trondheim, Norway, and **Hugh Thomas*** (hthomas@unb.ca), Department of Mathematics and Statistics, University of New Brunswick, Fredericton, NB E3B 5A3, Canada. *Higher Auslander algebras, cyclic polytopes, and analogues of tropical cluster algebras.* Preliminary report.

Consider two simple models for the A_n cluster complex: triangulations of an $n+3$-gon, and tilting objects for the path algebra of a linearly-oriented A_{n+1} quiver. We show that there are higher-dimensional analogues of both these sets of objects, and that they are naturally in bijection. These higher dimensional analogues are: triangulations of a cyclic polytope of dimension $2d$ with $n+2d+1$ vertices, and basic tilting objects over the $d-1$-fold higher Auslander algebra of the path algebra of the linearly-oriented A_{n+1} quiver (satisfying an additional condition). The analogue of the cluster variables are the internal d-dimensional simplices of the polytope and the non-projective-injective summands of the tilting objects. While we do not have anything like a cluster algebra on this set of variables, we show the existence of an analogue of the tropical cluster algebra structure associated to a lamination. (Received February 02, 2009)