



New additional Figure for Miller et al. "Moss kill-dates---

Digital Globe image of one ice cap in the Orion Ice Complex (~4 km long axis) captured 20 Aug. 2015, shows moss kill dates collected in 2018 with their median calibrated age (CE year). The three early CE kill dates (289, 355, 410 CE) are situated beneath ice with distinctive surface characteristics that differ from the rest of the ice cap, consistent with an early CE ice expansion killing the moss, followed by partial retreat, and then subsumed by a late First Millennium episode of ice-cap growth, as well as Little Ice Age ice-cap growth, and now being revealed as ice is melting at all elevations. These small ice caps on nearly flat landscapes are frozen to their beds and exhibit little internal ice flow.