Abstract Submitted
for the NWS10 Meeting of
The American Physical Society

Physics of the weird solar minimum: New observations of the Sun[1] E. ZITA, C. SMITH, C. BALLOU, B. FRIEDMAN, C. SHOWALTER, R. REX, Evergreen St. College, N. HURLBURT, Lockheed Martin Solar and Astrophysics Lab — While solar physicists expected more sunspots, flares, and coronal mass ejections by now, the Sun has defied most predictions by persisting in a relatively quiet state for an unusually long time. Can we tell whether this solar minimum is likely to ease in the next decade, or if it may become a Maunder-type minimum? What evidence is there for mechanisms that might explain the observed delayed and low-amplitude magnetic activity? What effects could decreased solar activity have on Earth's climate? Evergreen undergraduates study the Sun with colleagues who built the new Solar Dynamics Observatory (SDO). Students analyzed flow velocities with respect to magnetic field tilts; analyzed waves of UV light in active regions; developed a software suite to enable the public to engage with solar dynamics; and cataloged movies of solar events for public release. We use data from the high-resolution HINODE satellite and from the new full-disk SDO. Zita studied the solar dynamo, and found that resistivity gradients can drive magnetic advection. We summarize our work and the light it may shed on questions such as those above.

[1]NSF RUI 0807651supported this work. We thank colleagues at LMSAL, and Phil Scherrer for his sponsorship of Evergreen students at Stanford.

E. Zita
Evergreen St. College

Date submitted: 19 Aug 2010 Electronic form version 1.4