Science from Kepler Collateral Data: 50 ksec/year from 13 million stars. J. J. Kolodziejczak[1] and D. A. Caldwell[2], [1]Space Science Office, NASA Marshall Space Flight Center, Huntsville, AL 35812; kolodz@nasa.gov, [2]SETI Institute, NASA Ames Research Center; Douglas.Caldwell@nasa.gov.

Introduction: As each Kepler frame is read out, light from each star in a CCD column accumulates in successive pixels as they wait for the next row to be read out. This accumulation is the same in the masked rows at the start of the readout and virtual rows at the end of the readout as it is in the science data. A range of these "smear" rows are added together for each long cadence and sent to the ground for calibration purposes. We will introduce and describe this smear collateral data, discuss and demonstrate its potential use for scientific studies exclusive of Kepler calibration,[1,2] including global characteristics of stellar variability, which are influenced by parameters of galactic evolution.

Photometric Precision: The smear data consists of individual column data for 24 rows, which represents a 0.178% duty cycle or ~50 ksec of observing time / year on every star in the Kepler field. This amounts to continuous 1/2 hour sampling of all stars at a sensitivity level 1/23rd that of the regular science targets with the significant limitation that stars sharing the same CCD column are summed.

Applications: The smear data contain projected information on zodiacal light and background, variable stars, variability of stellar populations. The figures below show an example of background estimation, and a sample light curve including data from a bright variable star during Q0-Q8 from the sky group cycling through Ch. 7.3, 17.3, 19.3, and 9.3 during Q1-Q4, respectively. Additional examples will be show along with discussion of the necessary steps required to analyze this unique data set, methods for accounting for image artifacts[3], and peculiar limitations arising from the short exposues and projected nature of the data.

References: [1] J. M. Jenkins, et al. (2010) *ApJ, 713,* L87. [2] D. A. Caldwell et al. (2010) *ApJ, 713,* L92. [3] J. J. Kolodziejczak. (2010) *Proc. SPIE,* 7742, 38.