

RHESSI Dataset

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This document contains an overview of the RHESSI dataset to be used in the Topics in Statistical Inference for Data Science final project. Variable definitions, units, and some basic data visualizations are given, as well as a link to some background information on the RHESSI satellite.

Data Overview

1. *Title:* RHESSI Solar Flare Data
2. *Dates of collection:* 2002 - 2018
3. *Instrument for data collection:* Reuven Ramaty High Energy Solar Spectroscopic Imager ([RHESSI](#))
4. *Dataset versions:* RHESSI_clean.csv
5. *Data Dimensions:* observations - 115,227, variables - 28

Variables

Variable	Definition	Units
Rflarenum	flare event number as YYYYMMDD_HHMMSS	
Rstart	flare start time	YYYY-MM-DDTHH:MM:SS
Rpeak	flare peak time	YYYY-MM-DDTHH:MM:SS
Rstop	flare stop time	YYYY-MM-DDTHH:MM:SS
RTstart	flare start time in decimal years	
RTpeak	flare peak time in decimal years	
RTstop	flare stop time in decimal years	
Rduration	duration of the flare	sec
Rrise	rise time of flare, from Rstart to Rpeak	sec
Rfall	fall time of flare, from Rstart to Rpeak	sec
Rcrrt	corrected peak count rate	ct/s
Rcttot	corrected total counts	ct
RARreg	closest AR, if available	
Rxpos	X-position of flare on sun, if known	
Rypos	Y-position of flare on sun, if known	
RGclass	GOES class of closest flare, if known	
RGflxpeak	peak flux in GOES band at earth	ergs/s/cm ²
Rflxpeak	peak RHESSI flux	ergs/s/cm ²
Rflxpeakerr	error on Rflxpeak	ergs/s/cm ²

Variable	Definition	Units
Rflxtot	total RHESSI fluence	ergs/cm^2
Rflxtoterr	error on Rflxtot	ergs/cm^2
RFlrPkDur	product of peak flare flux and flare duration	ergs/cm^2
Rflrlum	flare peak luminosity at sun	ergs/s
RFlrTotalEnergy	flare total energy at sun	ergs
class	alphabetical GOES class assigned to flare peak	
calctotalenergy	calculated total energy from RFlrPkDur/2	ergs
cycle	solar cycle the flare occurred in (24 or 25)	
year	integer year the flare occurred in	

Visualizations

