Geophysical Research Abstracts
Vol. 16, EGU2014-11326-1, 2014
EGU General Assembly 2014

The first AGILE low-energy (< 30 MeV) Terrestrial Gamma-ray Flashes catalog

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We present the first catalog of Terrestrial Gamma-ray Flashes (TGFs) detected by the Minicalorimeter (MCAL) instrument on-board the AGILE satellite. The catalog includes 308 TGFs detected during the period March 2009 - July 2012 in the +/- 2.5° latitude band and selected to have the maximum photon energy up to 30 MeV. The characteristics of the AGILE events are analysed and compared to the observational framework established by the two other currently active missions capable of detecting TGFs from space, RHESSI and Fermi. A detailed model of the MCAL dead time is presented, which is fundamental to properly interpret our observations, particularly concerning duration, intensity and correlation with lightning sferics detected by the World Wide Lightning Location Network. The TGFs cumulative spectrum supports a low production altitude, in agreement with previous measurements. The AGILE TGF catalog below 30 MeV is publicly accessible online at the website of the ASI Science Data Center (ASDC) http://www.asdc.asi.it/mcaltgfcat/ In addition to the TGF sample properties we also present the catalog website functionalities available to users.