

Substorm Zoo

A browser-based tool for research,
teaching and social data analysis

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Why Zoo?

The web site is called Substorm Zoo, because the aim is to present events in a variety of data series. In a sense, these events are the animals of heliospheric wild life. Hence the zoo.

The goal

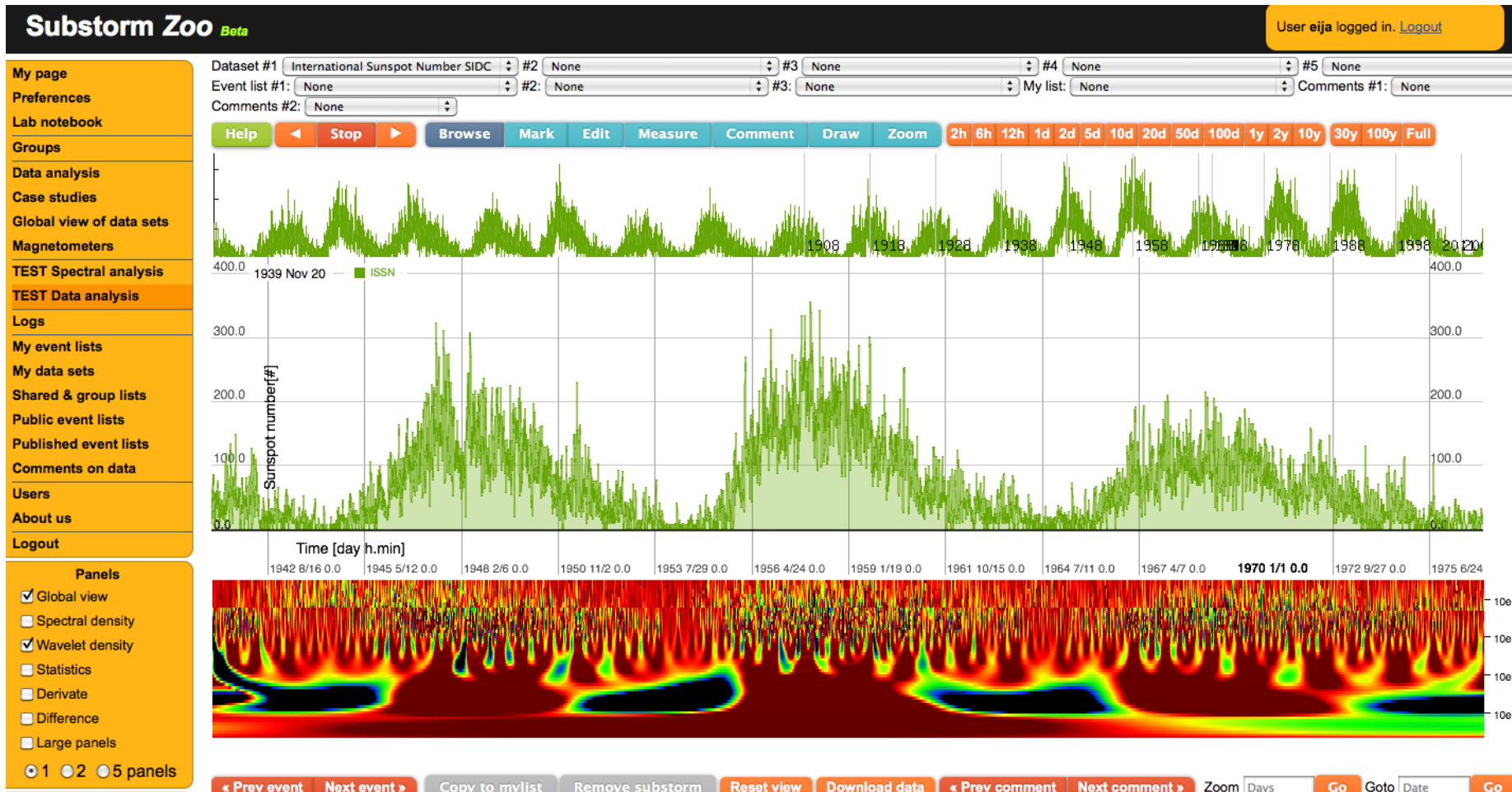
Substorm Zoo provides a browser-based tool for time-series analysis of data. Particular interest is in the identification of geo-effective and other important structures.

The web site enables the social data analysis by providing a possibility to create discussion groups, share event lists, upload own events, share the comments to the data etc.

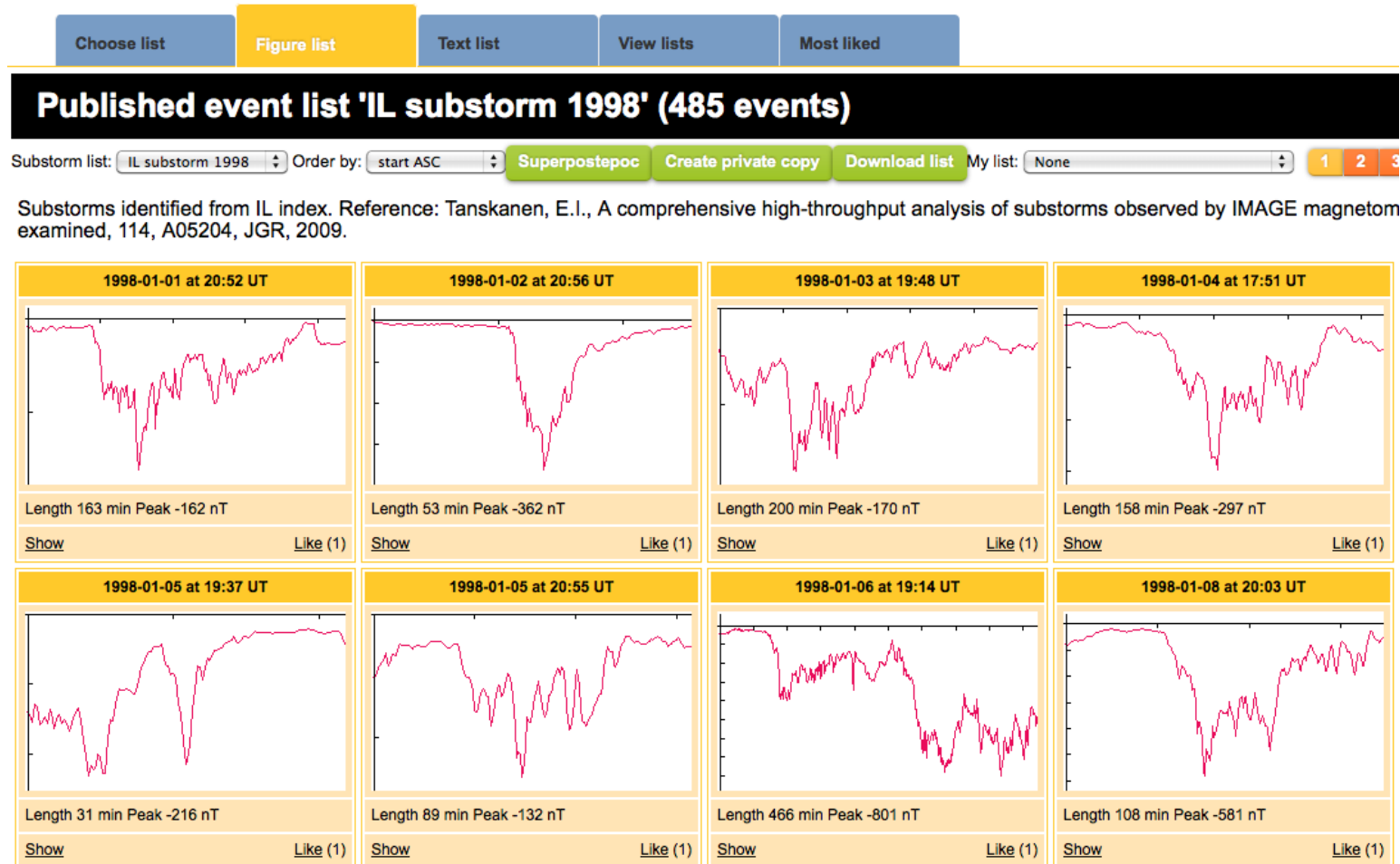
Online tools for science



Powerful analysis methods



Libraries of pre-identified events



Tools for social data analysis

Substorm Zoo Beta

User eija logged in. [Logout](#)

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Recent updates

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New message [Share »](#)

Photo missing [Hulda Fadnes](#) joined group AGF345_2011 [like](#) · [send a message](#) · [comment](#)
1 month ago

Photo missing [PHYS352 Student 3](#) [like](#) · [send a message](#) · [comment](#)
1 month ago
wrote comment 'What has happened here?' on [dataset IL-indeksi 2000 at 16066341](#).

Photo missing [Christine Johnsen](#) [like](#) · [send a message](#) · [comment](#)
1 month ago
According to the all sky cameras, there were som aurora around 19 UT last evening, and later that night around 4 o'clock. The magnetometer measurements show the first event as a strong drop in the H component in Longearbyen, and later in the magnetometers further south. The event later that night is not so easy to detect from the magnetometer measurements.

[PHYS352 Student 3](#) likes this update. 1 month ago

Photo missing [Christer van der Meeren](#) [like](#) · [send a message](#) · [comment](#)
1 month ago
wrote comment 'Difference between IL and AL is often largest outside of the substorms; AL surpasses IL here. This is natural since IL is only local, while AL is a global index.' on [dataset IL-index 1999 at 15263112](#).

Photo missing [PHYS352 Student 3](#) [like](#) · [send a message](#) · [comment](#)
1 month ago
UiB student

Photo missing [Christine Johnsen](#) joined group AGF345_2011 [like](#) · [send a message](#) · [comment](#)
1 month ago

Status

Visit to Ann Arbor University 12.-19 Dec, 2011 [Change »](#)

Random event



Random event from [IL substorms1999](#) 1999-08-09 [Show »](#)

Discussion groups

Substorm Zoo Beta

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My groups

Find groups

Group updates

Group data sets

Group lists

Group comments

Group admin

My groups

AGF345_2011 (Owner)

Substorm school in Svalbard

Go »

PHYS352 (Owner)

Selected topics of ionospheric physics, UIB/IFT

Go »

IL:n testiryhmä (Owner)

Alimyrskyhärvelin testeporukka. Ryhmä perustettu 26.9.2011.

Go »

Playground

Test group. If you want to test something, do it here.

Go »

PHYS352_2012 (Owner)

Selected topics of ionospheric physics

Go »

GIC group

Study the GIC in different substorm phases

Go »

Defenders of Pentagräähm

here be dragons

Go »

Space Physics Girls Only- group :D

Well isn't it clear from the Name...? :)

Go »

Physics elite

If you can identify a substorm, you can join the group.

Go »

Case5nov2001 (Owner)

Examines the spacecraft charging on 5th Nov 2001.

Go »

Guo_etal_study (Owner)

Statistical substorm study in IMAGE UT-sector.

Go »

Bugs

Let me know if you find bugs.

Go »

Workshop13April (Owner)

Workshop on 13th April 2012 at FMI about data analysis of magnetic measurements.

Go »

Eija's test group (Owner)

No description

Go »

COST TOSCA (Owner)

A discussion group for COST ES-1005 action called TOSCA.

Go »

Tools for public outreach

Index comparisons

Solar storms

Historical events

Educational

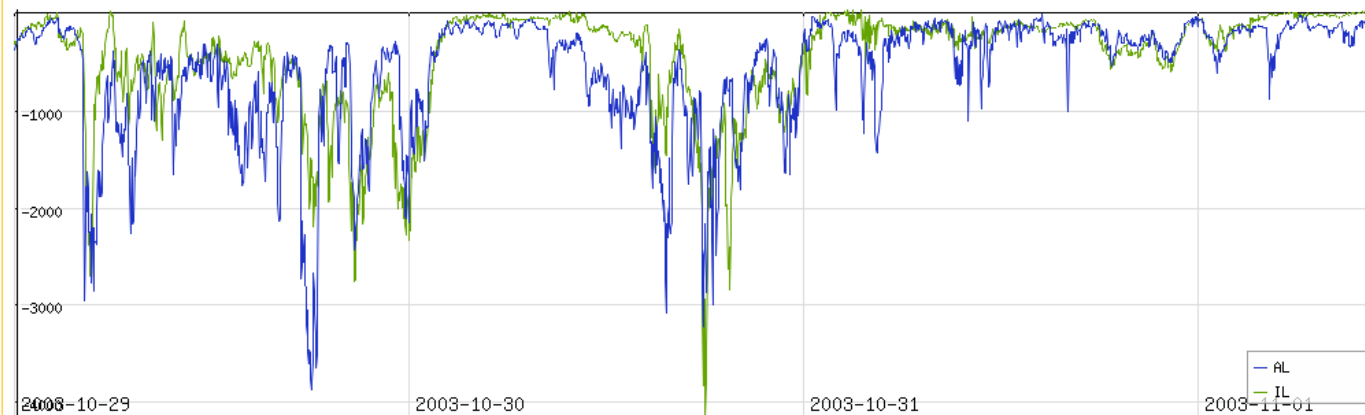
Outreach

Data issues

Satellites

Solar storms

A few of the Solar storms in the observation history.

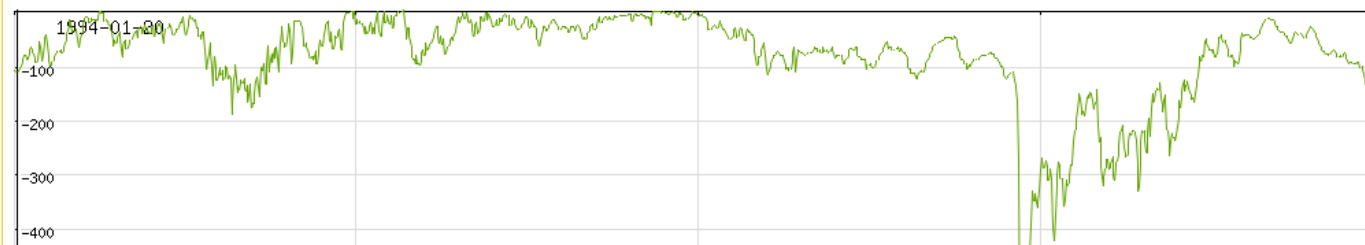


Halloween storms of 2003

Halloween storm on Oct 31, 2003 was a particularly significant event. Energetic storms began two to three years after solar maximum, when solar activity was on the decline. During this time few sunspots are visible, an outbreak of 17 major flares erupted on the sun.

The flares caused the sun's magnetic field lines to stretch then suddenly snap like a rubber band stretched beyond its limit. The result was coronal mass ejections, enormous explosions on the sun's surface that can blast billions of tons of electrified gas and subatomic particles into space at speeds up to 5 million miles per hour. This 'space weather' can and does affect Earth.

[Go »](#)



January 1994 Solar storm

January 20, 1994, a geomagnetic storm temporarily disabled two Canadian communication satellites, Aniks E1 and E2 and the international communication satellite Intelsat

Tools for teaching

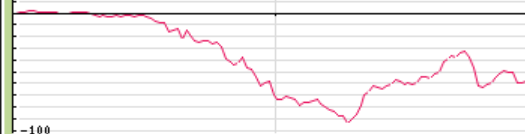
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Lab notebook of Eija Tanskanen

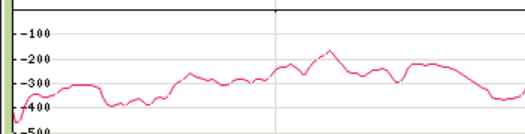
Failed to log in on 2012-5-22 13:28.12.
24 seconds ago (2012-05-22 13:28:17)

Wrote private comment "\What is this?" on dataset IL index at [1998-10-03 23:04](#).



1 hour ago (2012-05-22 12:21:45)

Wrote private comment "\Recovery phase of a large substorm.\\" on dataset IL index at [2003-08-24 20:38](#).



1 hour ago (2012-05-22 11:49:59)

Failed to log in on 2012.5.21 13.49.19.
23 hours ago (2012-05-21 13:49:24)

Created a new event list [ClusterNSC03_05il](#).
6 days ago May 16, 2012 (2012-05-16 13:00:27)

Created a new event list [ICMEbegin96_2011il](#).
6 days ago May 16, 2012 (2012-05-16 12:57:48)

Created a new event list [ICMEbegin96_2011](#).
6 days ago May 16, 2012 (2012-05-16 12:57:06)

Created a new event list [ClusterNSC2005_sc1](#).
6 days ago May 16, 2012 (2012-05-16 12:16:07)

Created a new event list [ClusterNSC2004_sc1](#).
6 days ago May 16, 2012 (2012-05-16 12:13:53)

Created a new event list [Cluster_sc1](#).
6 days ago May 16, 2012 (2012-05-16 12:09:49)

Created a new event list [Cluster_test](#).
6 days ago May 16, 2012 (2012-05-16 11:32:30)

Wrote private comment "\Cluster neutral sheet crossing ends.\\" on dataset IL index at [2004-10-15 15:52](#).



Welcome to Substorm Zoo

Our mission is to provide a best-in-class, browser-based tool for time-series analysis of data derived from magnetometer measurements, satellites and other instrument that provide time-series data of interest to the space science community. The aim is to provide a tool that is best suited for preliminary analyses, rapid data checks and comparisons of various data sets, not for all-encompassing comprehensive analyses.

In addition to data analysis, the website allows identification of important events in the data. The website is dedicated to the analysis of zoo of magnetospheric substorms and other meaningful events. For an account, please see [More information](#).

[To the login page!](#)

[More information](#)



<https://www.substormzoo.org>

Acknowledgements and courtesy to:

Substorm Zoo co-founder and co-developer, Antti Tanskanen, EK, Finland

MIRACLE/IMAGE of IL index.

Kyoto World Data Center of AL and Dst indices.

SuperMAG initiative of SLM index.

SIDC Belgium and NOAA of sunspot numbers.

DTU and Tromsø about individual magnetometer data.

ESA for Cluster data.

Oulu and Kiel universities of cosmic ray data.

ICME lists to E. Kilpua, I. Richardson.

CDAWeb, iSWA and

Illustration of the Sun and planets by Elsa Tanskanen.

We warmly thank all the other data providers not mentioned above and last, but not least

ALL THE USERS ABOUT THE USEFUL COMMENTS AND SUGGESTIONS!