

International Study of Earth-Affecting Solar Transients (ISEST/MiniMax24)

Status Report to VarSITI

Project ISEST/MiniMax24

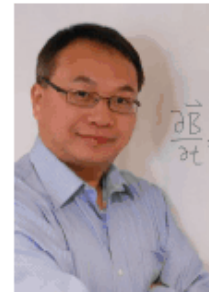
International Study of Earth-affecting Solar Transients

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Jie Zhang



Manuela Temmer



Nat Gopalswamy

The Goal of ISEST

Understand the origin, propagation and evolution of solar transients through the space between the Sun and the Earth, and develop the prediction capability of space weather

Scientific Organization Committee (SOC)

Ayumi Asai

Mario M. Bisi

Kyungsuk Cho

Peter Gallagher

Manolis K. Georgoulis

Nat Gopalswamy (co-leader)

Alejandro Lara

Noe Lugaz,

Alexis Rouillard

Nandita Srivastava

Manuela Temmer (co-leader)

Yuri Yermolaev

Yu-Ming Wang

David Webb

Bojan Vrsnak

Jie Zhang (co-leader)

Kyoto University (Japan)

RAL (UK)

KASI (South Korea)

Trinity College Dublin (Ireland)

Academy of Athens (Greece)

NASA (USA)

National Autonomous University (Mexico)

University of New Hampshire (USA)

CNRS/IRAP (France)

Physical Research Lab (India)

University of Graz (Austria)

Space Research Institute (Russia)

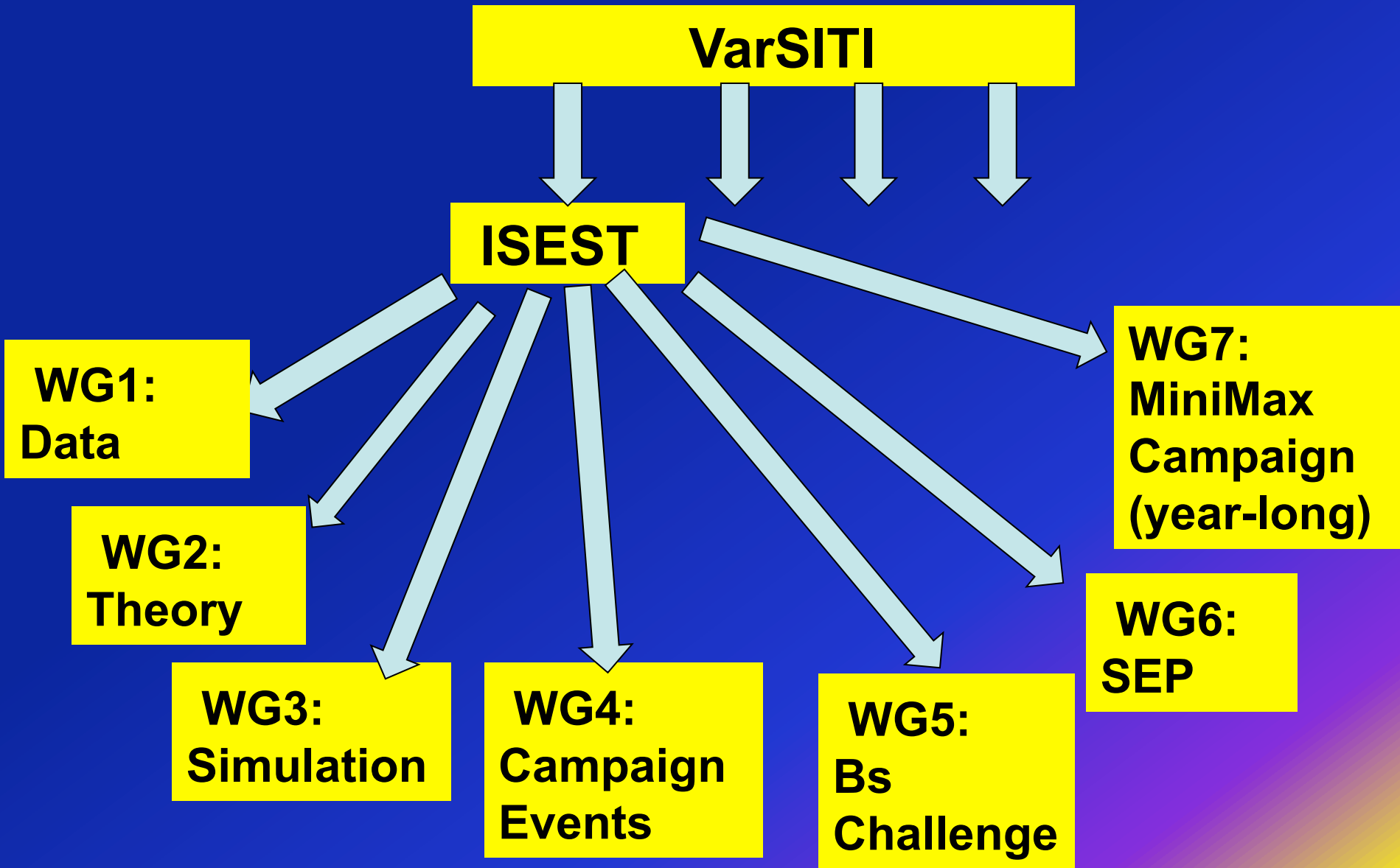
Univ. of Science and Technology (China)

Boston College (USA)

Hvar Observatory (Croatia)

George Mason University (USA)

Working Groups



Working Group Leaders

- WG1 (Data Group):** Jie Zhang (George Mason University, USA)
- WG2 (Theory Group):** Bojan Vrsnak (Hvar Observatory, Croatia)
- WG3 (Simulation Group):** Fang Shen (CSSAR, China)
- WG4 (Campaign Group):** David Webb (Boston College, USA)
Nariaki Nitta (LMSAL, USA)
- WG5 (Bs Group):** Spiros Patsourakos (Univ. of Ioannina, Greece)
- WG6 (SEP group):** Olga Malandraki (NOA, Greece)
Alessandro Bemporad (Turin Astro. Obs., Italy)
- WG7 (MiniMax24 Group):** Manuela Temmer (University of Graz, Austria)

Activity & Schedule

- **2013: ISEST 2013 - Preparation: June 17-20, 2013 at Hvar, Croatia**
- **2014: ISEST-mini workshop: April 18-19, 2014 at Hefei, China; co-organized by Jie Zhang & Yuming Wang**
- **2014: ISEST-special-session in SHINE conference: June 23-27, 2014 at USA; titled as "Earth-affecting CMEs", co-organized by Jie Zhang & Noe Lugaz**
- **2014: ISEST-2014: Oct. 18, 2014, Xian, China; together with STP-13**
- **2015: ISEST-mini workshop: June 12, 2015 at Hefei, China; co-organized by Jie Zhang & Yuming Wang**
- **2015: ISEST-2015: Oct. 26-30, 2015 at Mexico City, Mexico**
- **2016: ISEST-2016: June 06-10, 2016, Albena, Bulgaria**
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- **2017: ISEST-2017: open (Asia or Europe)**

ISEST 2015 Workshop

Oct. 26-30, 2015 at Mexico City, Mexico



About 40 experts and students from nine countries participated in this workshop,

ISEST mini-Workshop

June 12, 2015, HeFei, China.

Campaign study of March 15-17, 2015 event



ISEST Online Portal

ISEST Portal:

- ISEST meeting presentations, WG reports, and WG summaries (2013, 2014, 2015)
- data repository for observations, simulations, analysis
- Campaign events
- Discussions

<http://solar.gmu.edu/heliophysics/>

MiniMax Online Portal

Daily updates of relevant solar events

<https://igam02ws.uni-graz.at/mediawiki/>

Special Issue in Solar Physics

The deadline for the Statement of Interest (SOI) is 15 June 2016, and the deadline for manuscript submission is 15 September 2016.

Guest Editors: Jie Zhang, Alejandro Lara, Nandita Srivastava, and Xochitl Blanco-Cano.

Solar Physics Editor: Cristina Mandrini
(mandrini@iafe.uba.ar).



Report from the MiniMax24 Working Group of ISEST/MiniMax24

Update ...

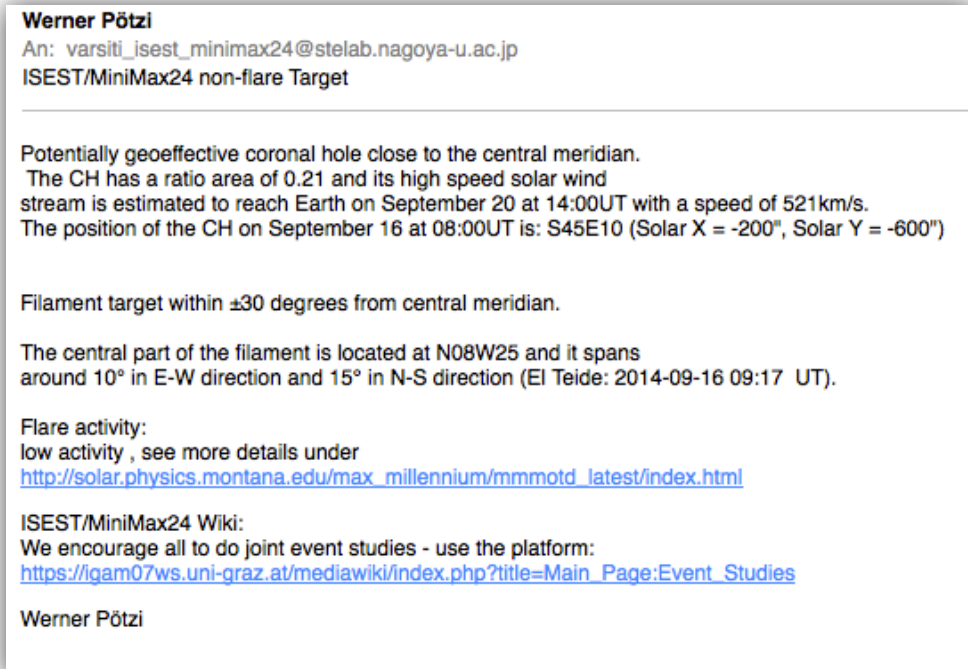
1st General VarSITI Symposium, Albena, Bulgaria (June 6 – 10, 2016)

Diversity of VARSITI

- The MiniMax24 email list reaches more than 534 participants from more than 65 countries.
- Huge platform of experts in different fields of solar and heliospheric physics – we communicate daily!
- Emails are sent by a team of about 7 persons (UNI Graz, Kanzelhöhe Observatory, UNI Zagreb)

Daily email from MiniMax24

- 1. Non-flare Target – selected by the MiniMax24 campaign team (large coronal holes close to central meridian, large filaments within +/- 30° of central meridian likely to erupt)
- 2. Information on current flare activity (MaxMillenium)
- 3. We encourage the community to initiate joint event studies*

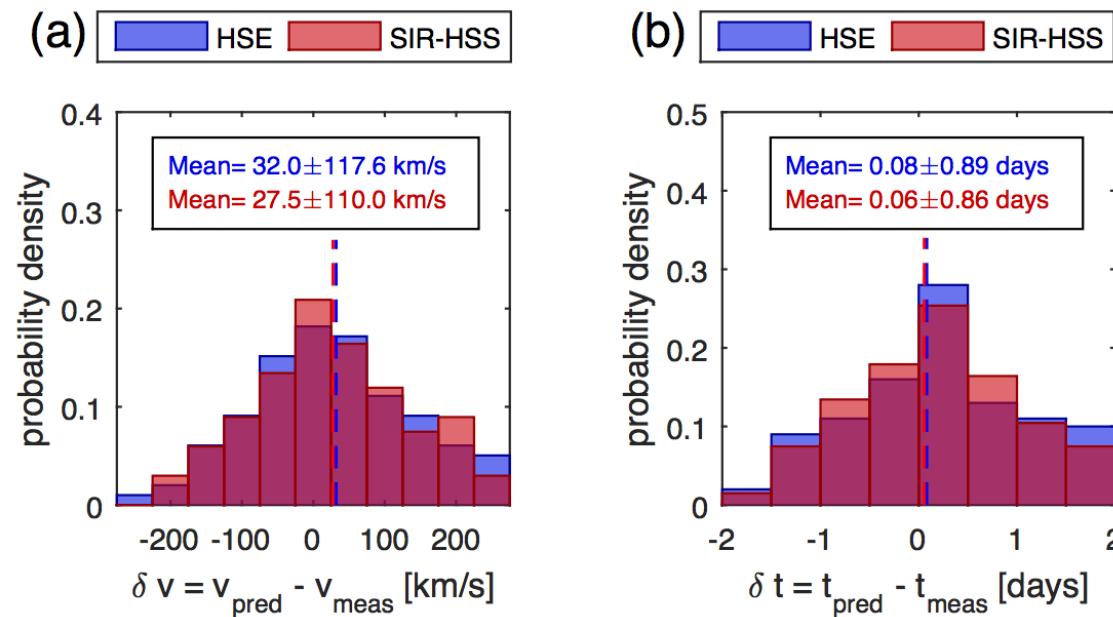


*ISEST wiki platform

http://solar.gmu.edu/heliophysics/index.php/The_IEST_Event_List

Solar wind HSS forecast as part of ESA-SSA

Forecasting of solar wind (SW) high speed streams (HSS) is based on the detection of coronal hole areas (cf. Vrsnak, Temmer, Veronig, 2007).



The SW forecast algorithm from was statistically evaluated and compared to WSA forecasting (Reiss et al., 2016) . Results show:

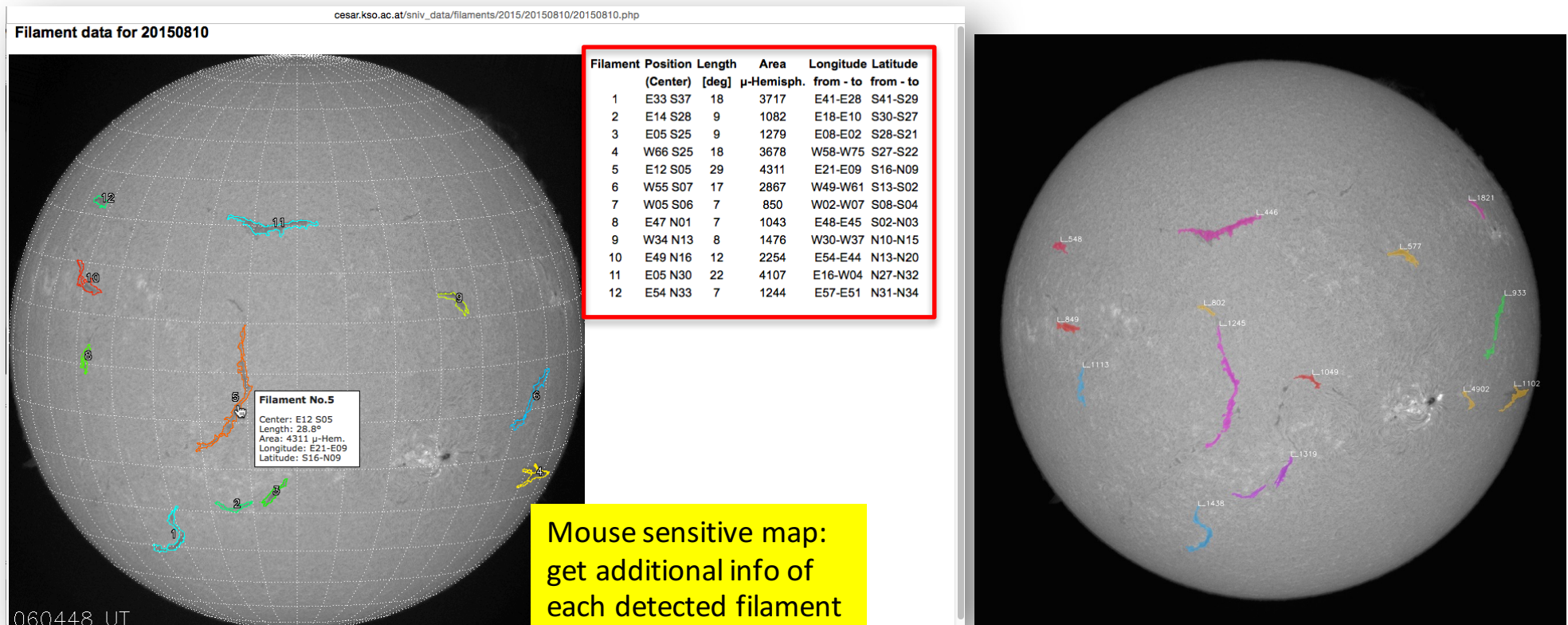
*) uncertainty of $t = \pm 1$ day with speed $v = \pm 120$ km/s

*) 63% correctly predicted HSSs (comparison to a list of HSS from ACE, provided by S. Vennerstroem)

Current users of this service are, ESA-SSA (H-ESC), MiniMax24, AFFECTS (Uni Göttingen, V. Bothmer), AWARE (DTU, S. Vennerstroem) DBM model (Uni Zagreb, B. Vrsnak & T.Zic).

Automatic filament detection at KSO: in operation for MiniMax24 since summer 2015

As a new tool, we present the automatic filament detection algorithm established at Kanzelhöhe Observatory in the frame of the ESA SSA programme. See Pötzi et al., 2015 (Solar Physics).



Service: support of observing campaigns

MiniMax24 supported in 2016 the IHOP255 Hinode/EIS prominence observing campaign (Labrosse, Levens, Schmieder).

Support:

- MiniMax24 team sends daily target locations (current location + 48h and 72h in advance to coordinate Hinode)
- Encouragement of other observers to join the campaign and support with data

Filament target within ± 30 degrees from central meridian.

Central position N09W08 spanning about 10 degrees in E-W and 5 degrees in N-S (Udaipur Observatory, May 21 2014 0700UT)

Central position S37W21 spanning about 10 degrees in E-W and 5 degrees in N-S (Udaipur Observatory, May 21 2014 0700UT)

Central position S23E30 spanning about 10 degrees in E-W and 10 degrees in N-S (Udaipur Observatory, May 21 2014 0700UT)

Support for THEMIS-IHOP campaign on prominences (N.Labrosse, B.Schmieder):

Derotated filament target (central part) for

+24h (May 22 07:00 UT): N09W22 (solar x=370", solar y=150")

S37W35 (solar x=-540", solar y=-520")

S22E19 (solar x=-280", solar y=-330")

+48h (May 23 07:00 UT): N09W35 (solar x=540", solar y=150")

S37W45 (solar x=550", solar y=-560")

S22E05 (solar x=90", solar y=-330")

+72h (May 24 07:00 UT): N09W50 (solar x=710", solar y=140")

S37W59 (solar x=650", solar y=-550")

S22W08 (solar x=100", solar y=-350")

For flare target see:

http://solar.physics.montana.edu/max_millennium/mmmotd_latest/index.html

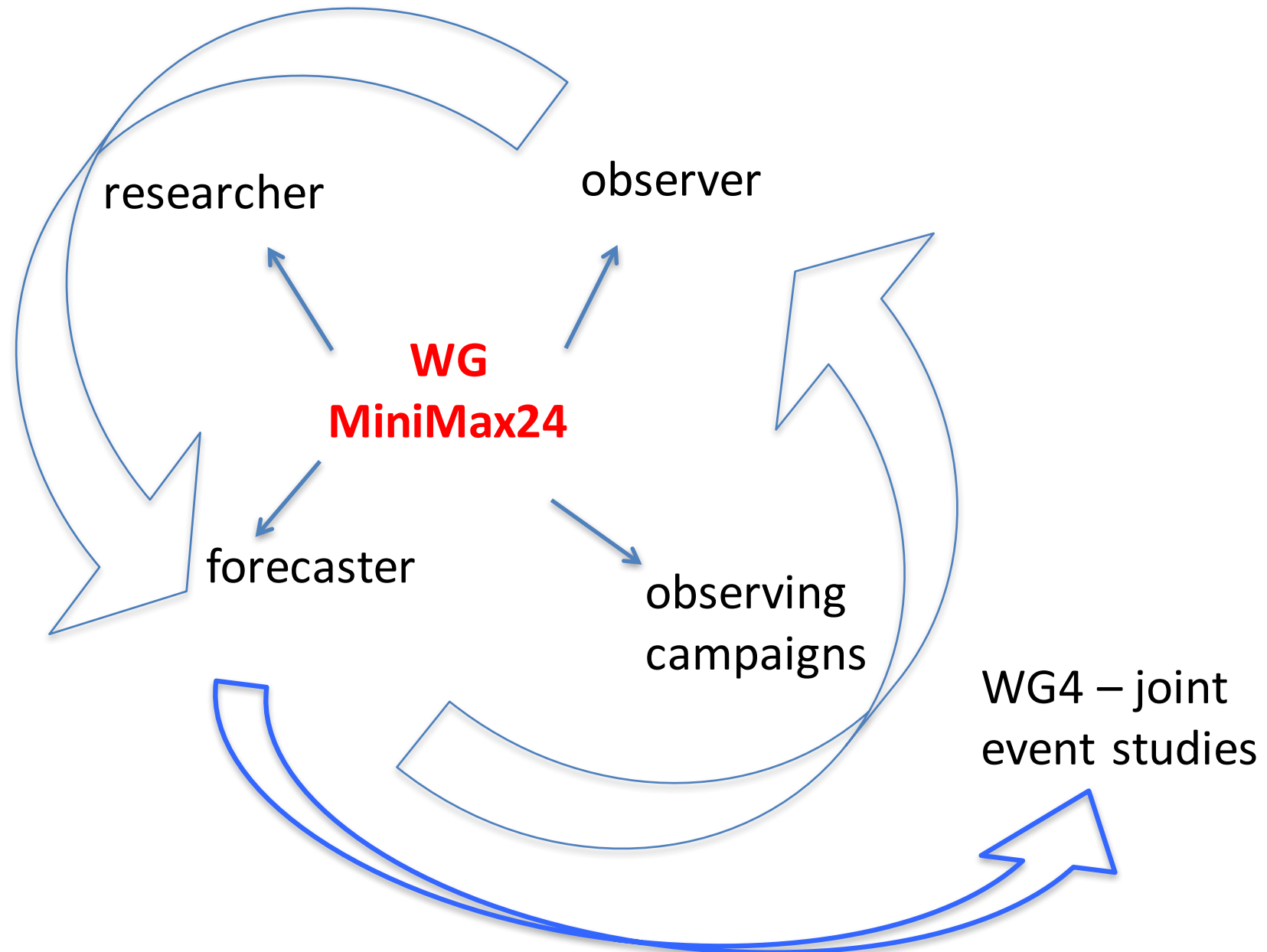
ISEST/MiniMax24 Wiki:

We encourage all to do joint event studies - use the platform:

http://igam07ws.uni-graz.at/mediawiki/index.php?title=Main_Page:Event_Studies

Cheers,
Kamalam

MiniMax24 – *come-into-contact-platform*



Improvements on providing non-flare targets and future plans

Since Sept. 24, 2015 UNIGRAZ is one of ESA's Expert Service Center for *Heliospheric Weather* (<http://swe.uni-graz.at>). In this respect, we will permanently update and maintain our services.

The HSS forecast algorithm, used by MiniMax24 and CME forecast methods, will be improved in the near future. (collaboration with DTU S.Vennerstroem who provides service of automatic ICME/HSS detection from in-situ data).

The automatic algorithm from Kanzelhöhe Observatory for filament detection is actively running for MiniMax24. A statistical evaluation of the method will be given in the near future (Pötzi et al., 2016, in preparation). See <http://cesar.kso.ac.at>.

A great community effort to
study and better understand
solar-terrestrial processes!

