


P2SC-ROB-WR-160 - 20130415 Weekly report #160	P2SC Weekly report	
Period covered: Date: Written by: Approved by:	Mon Apr 15 to Sun Apr 21, 2013 24 Apr 2013 Erik Pylyser Matthew West	Royal Observatory of Belgium PROBA2 Science Center
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1. Science

Solar & Space weather events

The level of solar activity¹ this week. Only M- and X-flares are mentioned, the most energetic one(s) are presented in **bold**:

	Monday 15 Apr	Tuesday 16 Apr	Wednesday 17 Apr	Thursday 18 Apr	Friday 19 Apr	Saturday 20 Apr	Sunday 21 Apr
Activity	low	low	low	low	low	low	low
Flares	-	-	-	-	-	-	-

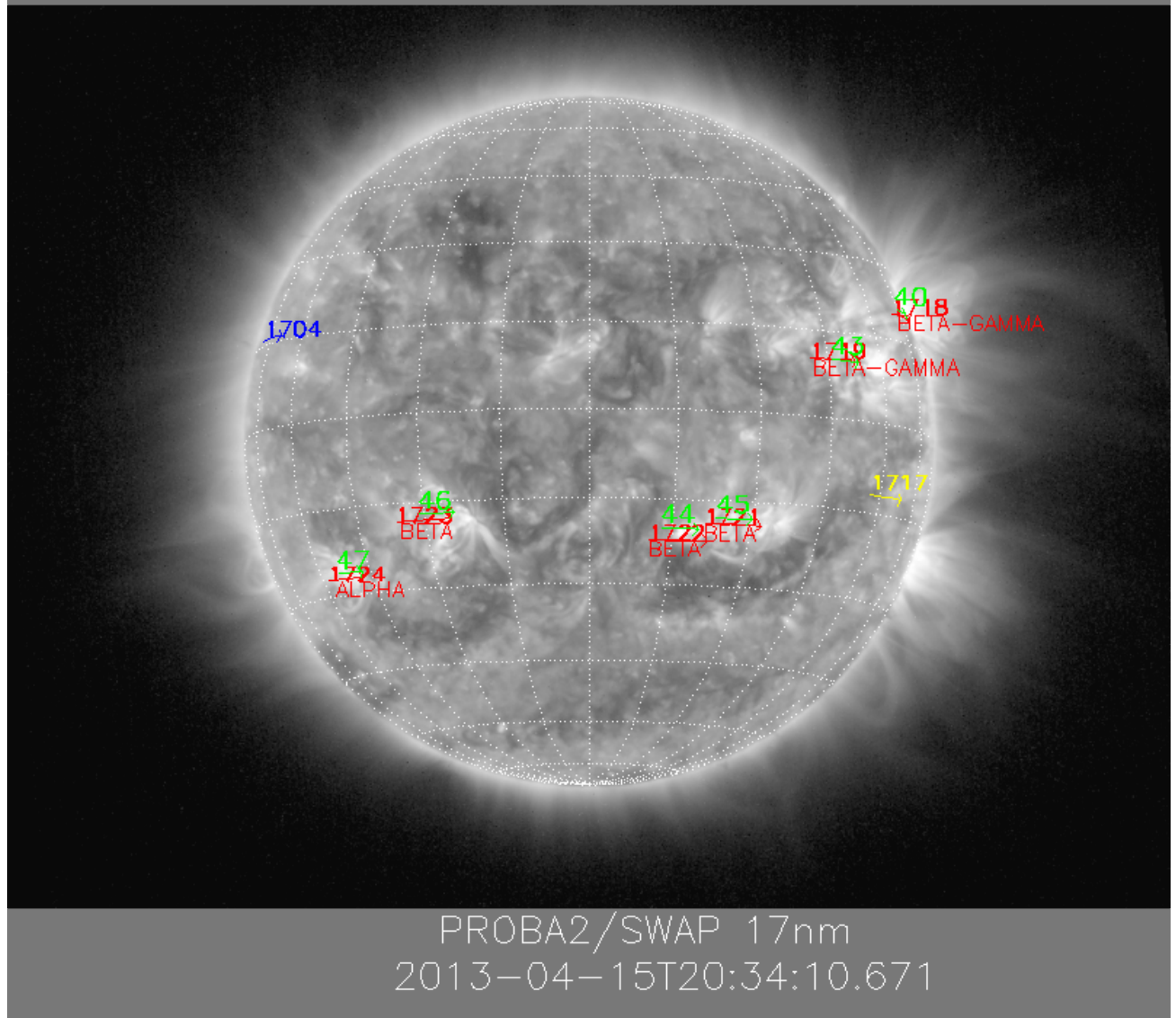
The SWAP images of April 15 and April 21 are shown below, with annotated active regions.

¹ See appendix. All timings are given in UT.

Catania sunspot groups

2013-04-15T08:00

NOAA AR/sunspot
NOAA Halpha plage
NOAA expected region
2013-04-15T00:30



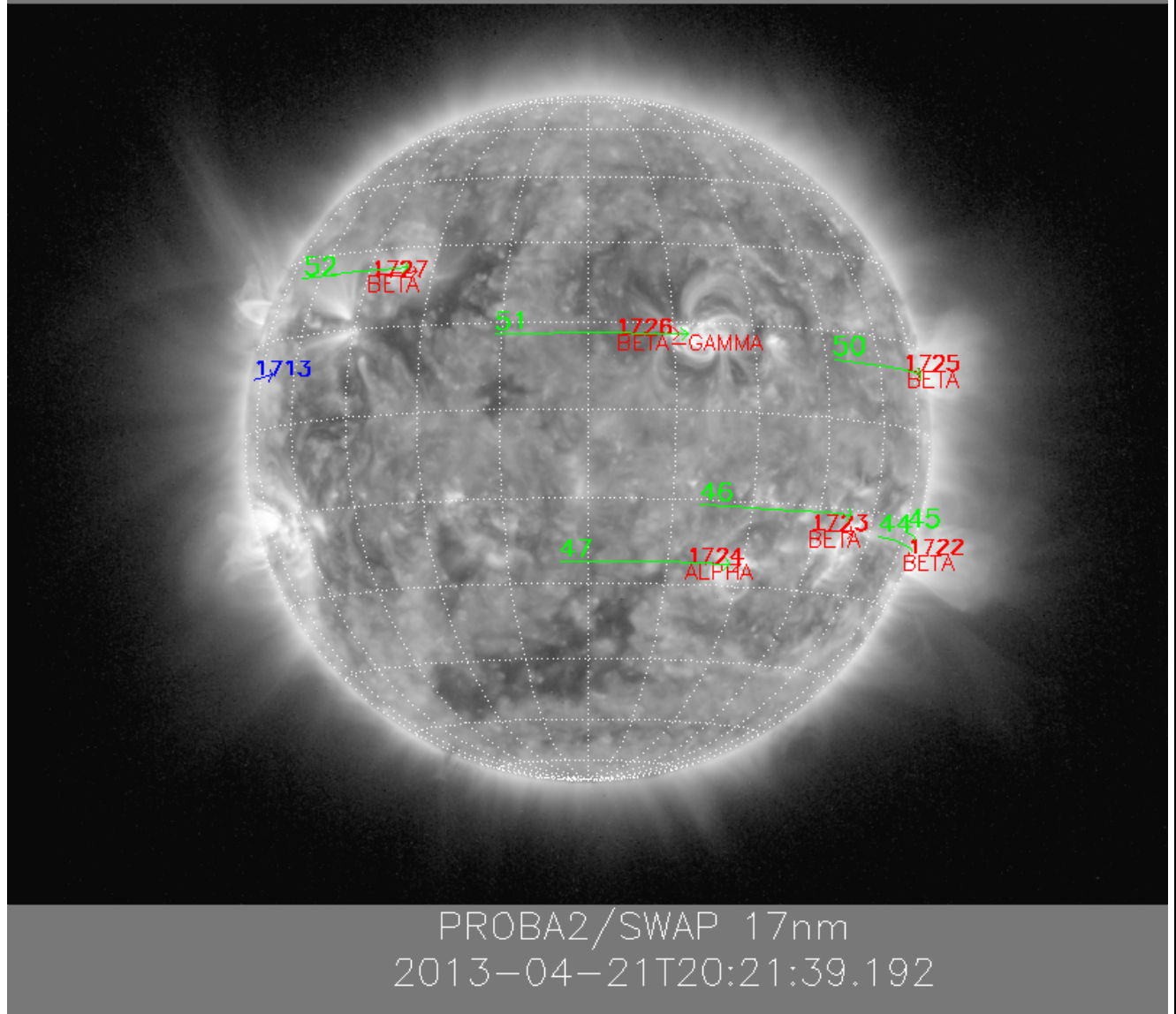
PROBA2/SWAP 17nm
2013-04-15T20:34:10.671

<http://sidc.be/html/CmapPage.html>

Catania sunspot groups

2013-04-19T08:00

NOAA AR/sunspot
NOAA Halpha plage
NOAA expected region
2013-04-21T00:30



Solar Activity

Solar (flaring) activity was **low** during the entire week..

In order to view the activity of this week in more detail, we suggest to go to the following website from which all the daily (normal and difference) movies can be accessed: <http://proba2.oma.be/ssa>. This page also lists the recorded flaring events.

A weekly overview movie can be found [here](#) (SWAP174/AIA304 combination; HelioViewer.org).

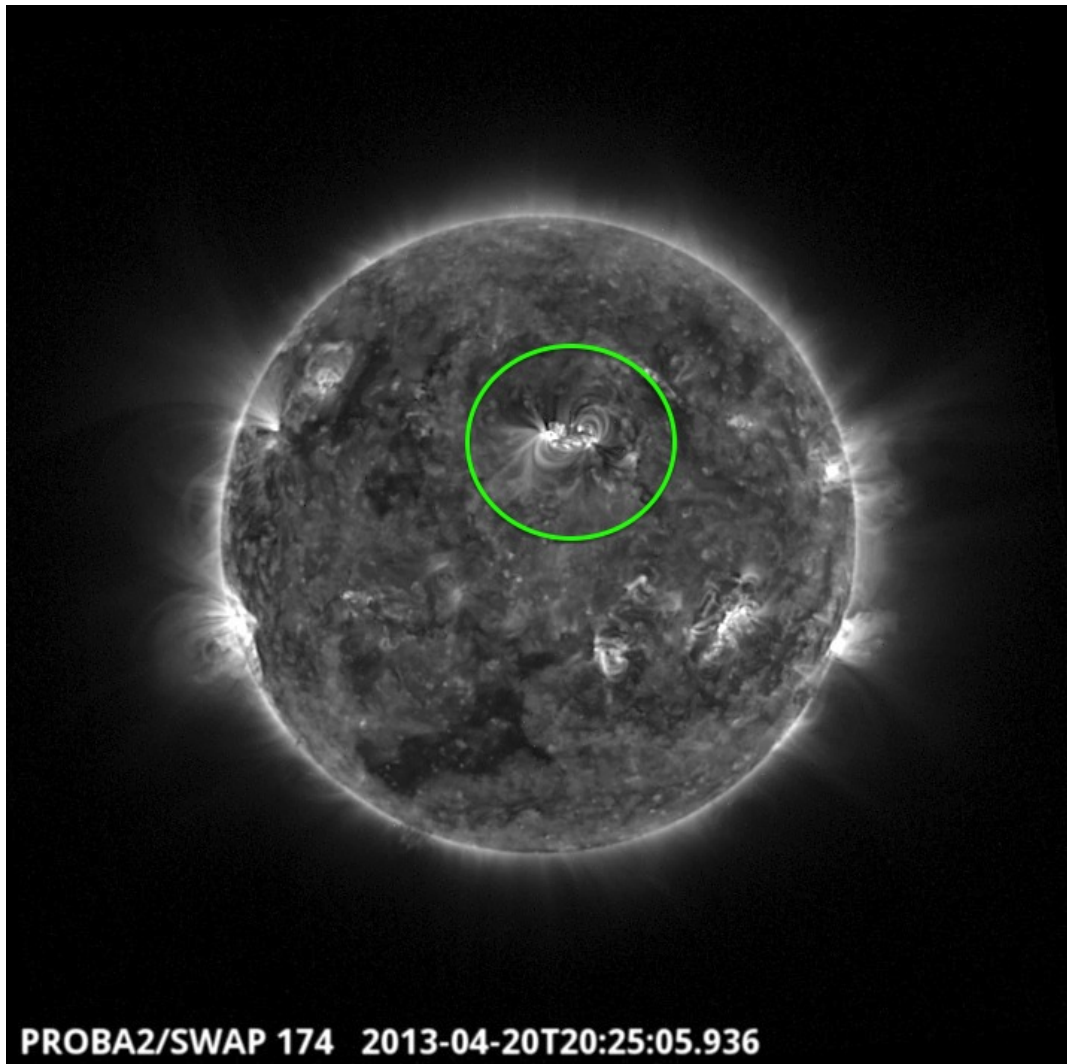
During the week, several interesting events occurred, some of which are presented below.

Thursday 18th:



CME on the west-limb @18:00 with nice post-flare loops afterwards
SWAP difference image ([Movie](#))

Saturday 20th:

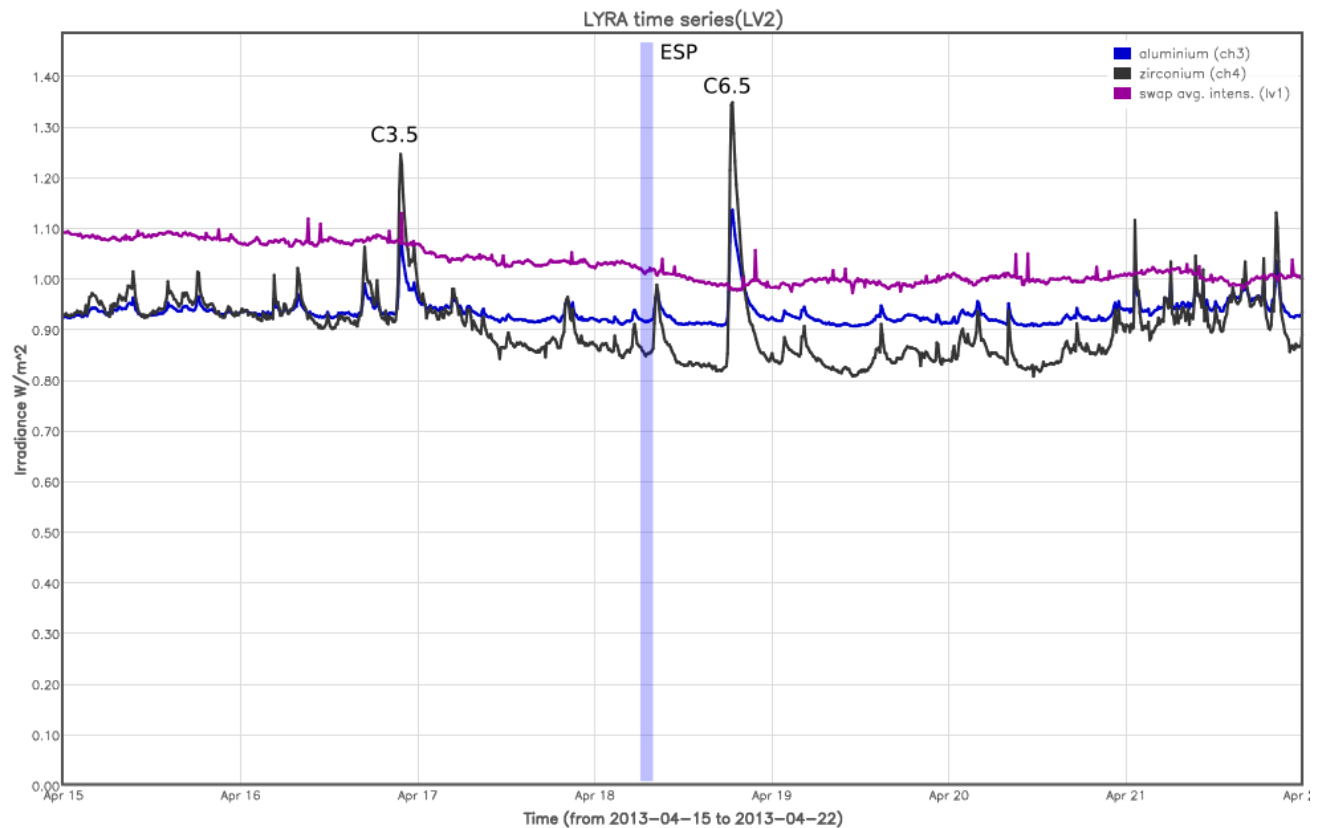


AR 1726 began to get more dynamic on 19 April, with several C-class flares and a small CME on 20 April at 08:00. ([Movie](#))

An overview of the weekly LYRA & SWAP data is provided below:

The following curves are visible:

- black: Zirconium Channel LYRA Unit 2
- blue: Aluminium Channel of LYRA Unit 2
- purple: SWAVINT (solar intensity derived from 'integrated' SWAP images)



The blue shaded periods correspond to, from left to right:

- ESP experiment on Thursday

The orange shaded periods correspond to, from left to right:

- None

The red shaded period corresponds to:

- None

Outreach, papers, presentations, etc.

- The scientific part of the contents of the “Solar Activity” section above is published in this week’s STCE Bulletin (see <http://www.stce.be/newsletter/newsletter.php>)
- ‘Space Weather and Particle Effects on the Orbital Environment of PROBA2’; M. West et al. (Poster); Boulder Space Weather Week; April 16-19, 2013.
- Presentation of the P2SC to the participants of the CHARM annual meeting.

Please also consult <http://proba2.oma.be/science/publications> for a list of interesting articles using SWAP & LYRA data, as well as a link to the complete article list.

Guest Investigator Program

Two Guest Investigator teams have joined the P2SC for a GI program:

- Andrew Jones (LYRA); 'Degradation analysis of SDO-EVE and PROBA-2 LYRA data'; period April 8th - April 19th; Andrew Jones left on April 19th.
- Jason Byrne (SWAP) - 'Studying the Low-Corona Initiation Phase of CMEs'; period April 8th - 29th.

2. LYRA instrument status

Calibration

No calibration this week.

IOS & operations

Monday 15 Apr	Tuesday 16 Apr	Wednesday 17 Apr	Thursday 18 Apr	Friday 19 Apr	Saturday 20 Apr	Sunday 21 Apr
Nominal acquisition + daily U3 + monthly U1	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3	Nominal acquisition + daily U3
LYIOS00323	LYIOS00323	LYIOS00324	LYIOS00324	LYIOS00324	LYIOS00324	LYIOS00324

The following science campaigns were performed by LYRA:

- daily U3 observations campaign
- monthly U1 observations campaign

LYRA detector temperature

LYRA detector 2 temperature globally varied between 47.1 to 43.6 degrees C, taking into account the daily U3 activation periods; the latter result in a temperature increase of about 0.6 degrees C.

To be explored

- None

3. SWAP instrument status

Calibration

No calibration this week.

MCPM errors

The number of MCPM recoverable errors increased from 7357 to 7431.

The number of MCPM unrecoverable errors remained at 1127.

IOS & operations

Monday 15 Apr	Tuesday 16 Apr	Wednesday 17 Apr	Thursday 18 Apr	Friday 19 Apr	Saturday 20 Apr	Sunday 21 Apr
Nominal acquisition	Nominal acquisition	Nominal acquisition	Nominal acquisition + ESP	Nominal acquisition	Nominal acquisition	Nominal acquisition
IOS00462 649 images	IOS00462 633 images	IOS00463 664 images	IOS00463 649 images	IOS00463 665 images	IOS00463 558 images	IOS00463 593 images

Special operations for SWAP, this week:

- ESP jump on Thursday

SWAP detector temperature

The SWAP Cold Finger Temperature, globally varied between -0.73 and -1.61 degrees C.

To be explored

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4. PROBA2 Science Center Status

The main operator is Koen Stegen.

The following changes were made to the P2SC:

- Temporary patch to LYRA degradation code

5. Data reception & discussions with MOC

Passes

The delivery of the passes for this week (passes 10763 to 10826) was nominal, except for:

- None

Data coverage HK

All HK data files (LYRA_AD) have been received, except for:

- None

Data coverage SWAP

All SWAP Science data files (BINSWAP) have been received, except for:

- None

Total number of images between 2013 Apr 15 0UT and 2013 Apr 22 0UT: 4443

Highest cadence in this period: 130 seconds

Average cadence in this period: 136.11 seconds

Number of image gaps larger than 300 seconds: 1

Largest data gap: 34.33 minutes

The large gap is due to the ESP experiment on Thursday.

Data coverage LYRA

All LYRA Science data files (BINLYRA) have been received, except for:

- None

6. APPENDIX Frequently used acronyms

ADPMS	Advanced Data and Power Management System
AOCS	Attitude and Orbit Control System
APS	Active Pixel image Sensor
ASIC	Application Specific Integrated Circuit
BBE	Base Band Equipment
CME	Coronal Mass Ejection
COGEX	Cool Gas Generator Experiment
CRC	Cyclic Redundancy Check
ESP	Experimental Solar Panel
FITS	Flexible Image Transport System
FOV	Field Of View FPA Focal Plane Assembly
FPGA	Field Programmable Gate Arrays
GPS	Global Positioning System
HK	Housekeeping
IOS	Instrument Operations Sheet
LED	Light Emitting Diode
LYRA	LYman alpha RAdiometer
LYTMR	LYRA Telemetry Reformatter (software module of P2SC)
LYEDG	LYRA Engineering Data Generator (software module of P2SC)
MCPM	Mass Memory, Compression and Packetisation Module
MOC	Mission Operation Center
NDR	Non Destructive Readout
OBSW	On board Software
PI	Principal Investigator
P2SC	PROBA2 Science Center
ROB	Royal Observatory of Belgium
SAA	South Atlantic Anomaly
SEU	Single Event Upset
SWAP	Sun Watcher using APS detector and image Processing
SWAVINT	SWAP AVerage INTensity
SWBSDG	SWAP Base Science Data Generator
SWEDG	SWAP Engineering Data Generator (software module of P2SC)
SWTMR	SWAP Telemetry Reformatter (software module of P2SC)
TBC	To Be Confirmed
TBD	To Be Defined
TC	Telecommand
UTC	Coordinated Universal Time
UV	Ultraviolet
VFC	Voltage to Frequency Converter

7. APPENDIX Solar Activity Definitions

In the science section we use the following solar activity standards.

The standard scale for solar activity is:

- very low (almost no flares, only B)
- low (a few C flares)
- moderate (many C flares and at least an M flare)
- high (several M flares and an X flare)
- very high (continuous background of C flares, numerous M flares, more than one X flare)
- (+ extreme?)