After one year of the start of the SAINT action, the first summer school will be held at the UPC in Barcelona (Spain). The school has a two-week program that includes the ESR Workshop, participation of the 2018 campaign, invited scientific and industry lectures, meetings, tutorials, experiments and field activities. On behalf of the organizing committee we hope you will enjoy it.

UPC - ETSEIB
Av. Diagonal 647
08039 Barcelona
Spain
www.lrg.upc.edu/saint
After one year of the kick-off of SAINT we are glad to organize the 1st summer school of the SAINT action. This is a very exciting moment because that will be the first meeting of the action after the launch of ASIM and its commissioning.

The school program is organized in two weeks. The first week includes the activities related to ESR presentations and discussions, tutorials related to the planned campaign, invited science talks and industry talks and meetings. In the second week, more tutorials and experiments are scheduled ending with an observational night at the Pyrenees Eagle Nest lightning instrumented tower.

In addition, the school program includes some social activities during the two weeks.

We hope you will enjoy the school!

Organizing committee

Action
Torsten Neubert
Christoph Köhn

Local
Joan Montanyà Michele Urbani Ferran Fabró
Oscar van der Velde David Romero
1. General information

Dates
The 1st SAINT summer school will be held in Barcelona from the 2nd to the 13th of July 2018. Please see the program for more details and note that for the night of the 12th till the 13th of July observations are scheduled in the Pyrenees.

Venue
The venue of the summer school is at Universitat Politècnica de Catalunya (UPC) at the Barcelona School of Industrial Engineering (ETSEIB). The ETSEIB is located at Avinguda Diagonal 647.

The room is: Aula B.4 (that might change)

Morning sessions on 5 and 6 July, 2018 will be at Aula Capella of the same building.

See the program and the information of this document for the locations of the activities during the second week of the school.

How to arrive
By Metro
From downtown: Take the metro (L3 line, green) to "Zona Universitària"
From the airport: Take the metro (L9 line, orange) to "Zona Universitària"

Metro map:
https://www.metrobarcelona.es/img_lineas/mapaMetro_barcelona.gif

(Map is provided at the end of this document)

You can plan your trip including metro and bus here:

Taxi:
Escuela Tècnica Superior de Ingenieros Industriales de Barcelona
Universitat Politècnica de Catalunya
Avinguda Diagonal 647
08028 Barcelona

Accommodation
July is a busy month in Barcelona, so please book your lodgment as soon as possible.

The UPC has agreements with two residences with available rooms (still) where you can book your lodgement:

Use the promotional code: UPC15

http://www.resainn.com/alojamiento/barcelona/residencia-torre-girona/
http://www.resainn.com/alojamiento/barcelona/residencia-investigadors/
Registration: Deadline 15th of June 2018

- Registration for ESR: Please confirm your attendance to conf.atmos@event.upc.edu. You need to submit your ABSTRACT before June 15, 2018 (see details in the section: Information for Presenters).
- Registration for SAINT members: Please confirm your attendance to conf.atmos@event.upc.edu indicating the days that you will attend.
- Registration for invited (industry and science): you don’t need to confirm your attendance since your host has already provided an invitation. You need to submit your ABSTRACT before June 15, 2018 (see details in the section: Information for Presenters).
- Registration for non SAINT members: Please request your admission at conf.atmos@event.upc.edu. Indicate the days and activities that you would like to attend. Possible payment of a fee (e.g. meals) might be requested.

2. Information for ESR

IMPORTANT: Bring your laptop during the Summer School. You will needed for the tutorials, workshops and activities. See information in the section 5 of this document.

July, 2nd and 3rd – Abstracts and presentation for ESR Workshop IRP
During the first two days, during the ESR Workshop IRP sessions you will give a presentation about your project. Please provide a short abstract (deadline June 15, 2018).
You can download the ABSTRACT TEMPLATE (MsWord format) here:
https://lrg.upc.edu/en/documents/abstracttemplate_1stsss.doc
or visit: https://lrg.upc.edu/en/44iam

E-mail your abstract to: conf.atmos@event.upc.edu before June 15, 2018.

Presentation guidelines:
- Your presentation must not exceed 12 minutes.
- That will allow 8 minutes for discussions.
- Supported formats: PowerPoint and pdf
- You will need to upload your presentation onto the computer available in the room.
- If you use animations, videos or any other multimedia support, be sure that they are integrated in your presentation and works just coping your presentation onto the room’s computer.

Basic guidelines for the contents of your presentation:
- First slide: Name, organization, date and title
- Index, outline or contents of your presentation.
- Enumerate the objectives of your project.
- Introduce the background of your subject.
You should not require more than 10 to 12 slides. Many slides in a short presentation generally distract the audience. Allocate between 1 to 2 minutes per slide.

Do not include too much text on each slide.

July, 5th, 2018 - Poster session with the External Advisory Board
On July, 5th, you will have the possibility to meet the External Advisory Board and discuss your projects with it. This will be combined with a poster session (eventually, the posters might hang during the whole summer school). Thus, please prepare a poster about your work and bring it to Barcelona; the format should be A1 (both landscape or portrait are available).

July, 6th, 2018– Short report ESR Supervision Committee
According to the proposal, we would like you to prepare a short report (max. 10 pages) about your project. It should contain:

"(1) A review of the literature in sufficient depth and breadth to enable a general reader to understand the basis for their project.
(2) A summary of the objectives of the project.
(3) An initial plan for reaching the objectives that includes an indication of how results/data will be analyzed and any additional training to be acquired.
(4) A summary of concerns/challenges with the project and with the supervision."

Please bring this report to the summer school. You will be able to discuss these reports with the ESR Supervision Committee. Also, you can see this as a chance to gain experience in writing and to reflect about your research projects.
Submit your reports to: conf.atmos@event.upc.edu before June 24, 2018.

3. Information for invited speakers
All invited speakers shall submit an abstract of their talk.
You can download the ABSTRACT TEMPLATE (MsWord format) here: https://lrg.upc.edu/en/documents/abstracttemplate_1stsss.doc
or visit: https://lrg.upc.edu/en/44am

E-mail your abstract to: conf.atmos@event.upc.edu before June 15, 2018.

Guidelines for invited presentations
Science speakers: Your presentation needs to provide an introduction and overview of your research field. Include the fundamental references.
You have a total time of 30 minutes. Allocate 10 minutes for discussion and questions with the ESRs.

Industry speakers: We are not looking for talks about only your products, projects or entire organization, but primarily about the way of working within a company, answering questions like:
• What is the work on a typical day of an engineer/scientist in your company?
• What are the main differences between academia and industry?
• How important is the focus on the bottom-line in your daily work?
• How is the company organized on a small scale (project based, matrix structure,...)?
• How do ideas get to the market within your company?
• What is expected of an employee in general? What do you value when you look for an employee?
• If you founded your company (e.g. start-up), provide some advice about entrepreneurship.

The above list is just a suggestion and not all questions need to be answered. Preferably, your presentation should be mostly based on personal experience.

Your allocated time is 45 minutes. Organize your time allocating and promoting discussion with the ESRs.
4. Program at a glance
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<td>ESR Workshop IRP &lt;br&gt; ESR Presentations: ESR1, ESR2, ESR3</td>
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<td>(Room Aula Capella) &lt;br&gt; Industry workshop</td>
<td>Introduction to meteorological radar &lt;br&gt; Venue: Meteorological Service of Catalonia (SMC)</td>
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<td>Departure to Pyrenees Eagle Nest tower</td>
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<td>Invited talks &lt;br&gt; H. Huntreer (DLR)</td>
<td>9:00 h-10:00h Introduction to detection of ionization radiation (Barcelona UPC ETSEIB Building C Room: Master 31-07) Group 1</td>
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<td>Tutorial on lightning location systems (I)</td>
<td>Tutorial on lightning location systems (II)</td>
<td>Workshop on introduction to GIS &lt;br&gt;Venue: SMC</td>
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<td>Activities (e.g. setup of instruments)</td>
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<td>Tutorial on ASIM MMIA &lt;br&gt; O. Chanin A. Ranjbarbazi</td>
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<td>ESR meeting &lt;br&gt;(Room B-4) &lt;br&gt;ESRs with Advisory Board (POSTER)</td>
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<td>ESR Workshop IRP: Small group workshops on topics of campaign</td>
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<td>Tutorial on optical systems for TLE obs. &lt;br&gt; O. van der Velde M. Passas (Only ESR)</td>
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<td>Social afternoon &lt;br&gt;Visit BSC Group 1: 16:15 h Group 2: 16:45 h</td>
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<td>Supervisory Board meeting (15:30-16:30 h)</td>
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2-13 July 2018 Barcelona Spain
Program
Day 1: Monday July 2, 2018

Room: B.4

9:00 h-9:30 h: Opening

ESR Workso IRP (I)

9:30 h-9:50 h – M. Heumesser (ESR 1)
9:50 h–10:10 h – K. Dimitriadou (ESR 2)
10:10 h-10:30 h – C. Maiorana (ESR 3)

10:30-11h Coffee break

ESR Workso IRP (II)

11:00 h-11:20 h – A. Peverell (ESR 4)
11:20 h–11:40 h – Z. Gómez (ESR 5)
11:40 h- 12:00 h – S. Ghilain (ESR 6)
12:00 h- 12:20 h – M. Urbani (ESR 7)

12:30-13:30 h Lunch at restaurant of the ETSEIB (1st floor building H)

ASIM MMIA tutorial for the ESR campaign

13:00 h-14:30 h ASIM –MMIA Tutorial (by Olivier Chanrion)

14:30-15h Coffee break

Optical systems for TLE

15 h-16:30 h Tutorial of optical systems for TLE (Oscar van der Velde and María Passas)
Day 2: Tuesday July 3, 2018

Room: B.4

**ESR Workshop IRP (III)**
9:00 h-9:20 h – N. Kieu (ESR 8)
9:20 h–9:40 h – D. Raposo (ESR 9)
9:40 h-10:00 h – A. Martínez (ESR 10)
10:00 h-10:20 h – M. Niknezhad (ESR 11)

10:30-11h Coffee break

**ESR Workshop IRP (IV)**
11:00 h-11:20 h – M. Gomes (ESR 12)
11:20 h–11:40 h – A. Pizzuti (ESR 13)
11:40 h- 12:00 h – F. Jalled (ESR 14)
12:00 h- 12:20 h – S. Mirpour (ESR 15)

12:30-13:30 h Lunch at restaurant of the ETSEIB (1st floor building H)

**Lightning location systems tutorial I**
13:00 h-14:30 h
T. Neubert, O. Chanrion
N. Pineda

14:30-15h Coffee break

**High speed video for lightning and TLE**
15 h-16:30 h Tutorial of high speed video for lightning and TLE observations (Joan Montanyà and Oscar van der Velde)
Day 3: Wednesday July 4, 2018
Room: B.4

ASIM MXGS tutorial for the ESR campaign

09:00 h-10:30 h ASIM –MXGS Tutorial (by N. Østgaard, L. Husbjerg and J. Navarro)

10:30-11h Coffee break

ESR Workshop IRP (IV)

11:00 h-12:30 h: Objectives, activities and pacification of the campaign.
Moderator: Martin Füllekrug

12:30-13:30 h Lunch at restaurant of the ETSEIB (1st floor building H)

ESR meeting

13:30 h-15:00 h ESR meeting
Moderator: TO DEFINE

Social events:

Visit to the Barcelona Supercomputing Center (https://www.bsc.es):

During the Summer School a list will be distributed to form two groups (maximum 30 per group)

Group 1: From 16:15 to 16:45 h
Group 2: From 16:45 to 17:15 h.

Location: See maps at the end of this document (section 6).

IMPORTANT: We need to be at the BSC entrance at least 10 minutes before the schedule.

Volleyball match:

Location IEM Espai de Mar (Barceloneta beach)
Time: from 18 h to 20 h.
Day 4: Thursday July 5, 2018
Room: AULA CAPELLA

Invited industry
9:00 h- 9:45 h – Martin Seeger (ABB): Electric breakdown in high voltage gas insulated switchgear and circuit breakers: approaches in industrial research
9:45 h- 10:30 h – Frédéric Thérond (Airbus): Title needed

10:30-11h Coffee break

Invited science
11:00 h-11:30 h – Fernanda Sao Sabas (INPE): The Importance of LEONA in South America and FAIRIES’ Effects in the Ionosphere
11:30 h–12:00 h – Jean-Louis Pinçon (LPC2E): TARANIS: a satellite for the study of TLEs and TGFs
12:00 h- 12:30 h – Farhad Rachidi (EPFL), Title needed

12:30-13:30 h Lunch at restaurant of the ETSEIB (1st floor building H)
Room: B.4

Advisory Board and ESR meeting (posters)
13:00 h-14:30 h Poster presentation and discussion of ESR 1 to ESR 6
14:30-15h Coffee break

Advisory Board and ESR meeting (posters)
15 h-16:30 h Poster presentation and discussion of ESR 7 to ESR 15

Dinner 18:15 h
Restaurant LA ESQUINICA at 18:15 h (ends at 20:30 h)
IMPORTANT:
- Allow at least 1 hour to arrive to the restaurant. See the information at the end of this document (section 6).
- Tapas dinner.
- Price aprox. 20 EUR.
Day 5: Friday July 6, 2018

Room: AULA CAPELLA

Invited industry
9:00 h- 9:45 h  – Diana Mihailova (Plasma Matters)
9:45 h- 10:30 h  – Xavier Estaran (UPC): From Science to Market

10:30-11h Coffee break

Invited science

11:00 h-11:30 h  – Heikki Pohjola (EUMETSAT): Meteosat Third Generation Lightning Imager (MTG-LI)
11:30 h-12:00 h  – Heidi Huntrieser (DLR): Thunderstorms and their Impact on Atmospheric Chemistry
12:00 h- 12:30 h  – Hugh Christian(UAH) : The Geostationary Lightning Mapper: Its Design, Performance and Capabilities

12:30-13:30 h Lunch at restaurant of the ETSEIB (1st floor building H)

Room: B.4

Lightning tutorial II
13:30 h- 14:30 h  - Use of LMA data (Oscar van der Velde).

14:30-15h Coffee break

ESR workshop with IRP

15:00 h-16:30 h: Small group workshops on topics of the campaign.

ESR supervisory board meeting
15:30 h-16:30 h
Day 6: Monday July 9, 2018

Introduction to meteorological radar (Venue: Departament de Territori, ROOM: Sala de Mapes. See indications at the end of this document, section 6)
9:00 h- 10:30 h – Oriol Argemí, Fundamentals of meteorological radar

10:30-11h Coffee break

Introduction to meteorological satellites
11:00 h-12:30 h – N. Pineda, Introduction to meteorological satellites

12:30-13:30 h Lunch (not provided)

GIS Workshop (Venue: Departament de Territori, ROOM: Sala de Mapes. See indications at the end of this document, section 6)
13:30 h- 16:30 h – Roger Veciana (SMC), Introduction to GIS tools

During the day the Meteorological Service of Catalonia will be visited.

IMPORTANT: see the software required before the workshop (section 5).
Full name as appears in your ID/passport and ID/passport number shall be provided. A list will be distributed during the first week of the Summer School.

Day 7: Tuesday July 10, 2018

High voltage experiments (Group 1)
Instructors: Joan Montanyà and Pavlo Kochkin
9:30 h to 16:30 h
Group is composed by: Heumesser (ESR1), Dimitradou (ESR2), Maiorana (ESR3), Peverell (ESR 4), Zaida (ESR 5), Simon (ESR 6), Michele (ESR 7), Kieu (ESR 8), Anthony, Chris

Venue: High voltage laboratory LABELEC in Terrassa, see indications at the end of this document (section 6).

Use of high energy detectors (Group 2)
Instructor: Alfredo de Blas
9:00 h to 14:00 h
Group is composed: Andy (ESR 10), Mojtaba (ESR 11), Miguel (ESR 12), Andrea (ESR 13), Farés (ESR 14), Shahriar (ESR 15), Colin, Maja, Clara

Venue: UPC ETSEIB (Barcelona), Building C, Room: Master 31-07
Day 8: Wednesday July 11, 2018

High voltage experiments (Group 2)
Instructors: Joan Montanyà and Pavlo Kochkin
9:30 h to 16:30 h
Group will is composed by: Andy (ESR 10), Mojtaba (ESR 11), Miguel (ESR 12), Andrea (ESR 13), Farés (ESR 14), Shahriar (ESR 15), Colin, Maja

Venue: High voltage laboratory LABELEC in Terrassa, see indications at the end of this document (section 6).

Use of high energy detectors (Group 1)
Instructor: Alfredo de Blas
9:00 h to 14:00 h
Group is composed by: Heumesser (ESR1), Dimitradou (ESR2), Maiorana (ESR3), Peverell (ESR 4), Zaida (ESR 5), Simon (ESR 6), Michele (ESR 7), Kieu (ESR 8), Anthony, Chris

Venue: UPC ETSEIB (Barcelona), Building C, Room: Master 31-07.

Day 9: Thursday July 12, 2018

Departure to the Pyrenees Eagle Nest tower (Tosa d’Alp, 2500 MSL)

Departure from Barcelona and arrival to the Eagle Nest tower:

- Departure to Pyrenees Eagle Nest tower: Train departure: RENFE Line R3 at 9:51 h from Plaça Catalunya (Barcelona). IMPORTANT: There are few trains a day, do not miss the train!
- Train arrives at La Molina station (LAT: 42.344° LON: 1.956°) at 12:39 h
- Transfer from the train station to the gondola lift La Molina by car (LAT: 42.3348° LON: 1.9344°)
- Walk (30 minutes aprox.) from the gondola lift (LAT: 42.3251° LON: 1.9037°) to the Eagle Nest tower and shelter (LAT: 42.3194° LON: 1.8932°)

IMPORTANT: Remember to bring winter clothes and appropriate shoes:
http://www.niudelaliga.cat/
IMPORTANT: The Niu de l’Aliga shelter informed that clean bed sheets and blankets are available, so it is not necessary to bring a sleeping bag.

Briefing.
Preparation of the setup for night observations and instruments.
Night observations.

Day 10: Friday July 13, 2018

Visit to the Eagle Nest Instrumented tower.
Activities
Round table.

Return:

• 12:00 h: Walk (30 minutes aprox.) from the Eagle Nest tower (or from the shelter) to the gondola lift
• 12:30 h take the gondola ligft donw to La Molina.
• 13:00 h transfer (by car) from the gondola lift to La Molina train station.
• Train departure: RENFE Line R3 at 13:59 h from La Molina RENFE station to Barcelona Plaça Catalunya (Barcelona). Arrives at Barcelona Plaça de Catalunya at 16:38 h.
5. **Software to be installed on your laptop**

ESR are required to bring their own laptops.

We ask you to install the following software before the Summer School:

- **MATLAB.** It is not mandatory but if you can install please do it (e.g. license from your institution). That will be very useful. This will be used on the Tutorial on ASIM MXGS (Wednesday July 4, 2018).
- **SCILAB (latest version).** [http://www.scilab.org](http://www.scilab.org) This is required for the Tutorial on Lightning Location Systems II (Friday July 6, 2018).
- **NEW!!!** QGIS. Install QGIS [https://www.qgis.org/es/site/forusers/download.html](https://www.qgis.org/es/site/forusers/download.html) (QGIS 3.2.0 'Bonn'). Choose the 32 or 64 bit installation from “QGIS in OSGeo4W”. This will be used in the Tutorial about GIS on July 9, 2018.
6. Maps
Metro: UPC ETSEIB is at Zona Universitaria L3 stop
Barcelona Supercomputing Center (visit on 4th of July, 2018 at 16:15 h)
IMPORTANT: Allow at least 15 minutes.
Volley ball 18 h at IEM Espai de Mar

From ETSEIB take metro L3. Stop at Passeg de Gràcia. From there take metro L4 and stop at Barceloneta.

Allow at least 1 hour from UPC.
Thursday Dinner (18:15 h to 20:30 h)

IMPORTANT: We will meet at the restaurant at 18:15 h

Restaurant: LA ESQUINICA
Passeig de Fabra i Puig, 296,
08031 Barcelona
Tel.: +34 933 58 25 19

By metro: From UPC take Metro line L3 and change to L5 at Sants Estació. Stop at Virrei Amat or at Vilapicina.
By taxi from UPC: 25 minutes (10 km)

Monday July 9, 2018: Radar, satellite and GIS workshop
Venue is at: **Dept de Territori Sostenibilitat**, ROOM: Sala de Mapes, CHAIR: Nicolau Pineda
Av. de Josep Tarradellas, 2-6, 08029 Barcelona

From UPC ETSEIB take Metro L3, stop at Sants Estació and walk to Av. De Josep Tarradellas 2-6
Tuesday July 10, 2018 /Wednesday July 11, 2018

**DENA (High Voltage laboratory)**

4 Duero St.  08222 Terrassa (Barcelona)

From Barcelona (e.g. Plaça de Catalunya) take Ferrocarrils de la Generalitat de Catalunya (FGC line) to Terrassa. Stop at Vallparadís Universitat.

https://www.fgc.cat/en/

Here is the walk from Vallparadís Universitat station in Terrassa to the laboratory at DENA. Farés Jalled and/or Michele Urbani will guide you from the station to the laboratory.
Alternative (information only in Spanish):

Bus from Barcelona (Diagonal zona universitaria) to Terrassa

https://moventis.es/sites/moventis/files/imce/diptic_expres.cat_e2.2.pdf

In Terrassa stop at “Av. Barcelona-Plaça Catalunya”