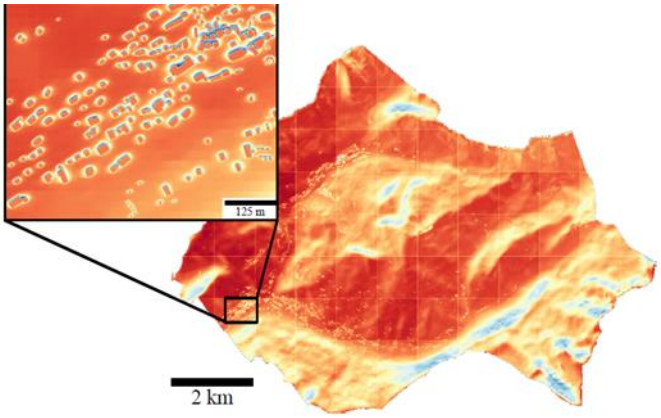
Title of BIP: Data science for solar energy

General information

Objectives and Description:

This is the second edition of the Datasun Autumn's school which was held in 2022 in le Grand Bornand. In this new edition we'll explore the energy transition in territories with a focus on solar energy in mountains.

Mountainous regions are distinctive due to their rich natural resources, including energy, water, and biodiversity. However, they face challenging environmental conditions, such as complex orography and low temperatures, along with a high energy demand. Meeting this demand while limiting greenhouse gas emissions requires the development of local renewable energy sources. Solar energy presents a promising solution, thanks to its broad availability and declining costs. Nevertheless, the mountainous environment can influence its potential.



Irradiance Map in 'Le Grand-Bornand'
Credit: Toscana – A. Ferry

Aussois Village in the French Alps

Methods and outcomes:

During this week we'll explore different aspects in relation to solar energy in mountainous areas, from the prediction of its potential, its impact on the environmental, energetic and economical aspects. Synchronous online sessions with online seminars and asynchronous sessions with paper reading as a preparation for the physical component. Onsite sessions with workshops, presentations and pedagogical visits.

Field of Education:

Energy engineering, data scientists, solar energy

Target audience / Participants profile:

Master students, PhD students in September 2025, with an interest in digital science and solar energy.

No of ECTS issued:

3 ECTS

Language of instruction and requirements:

- English B2
- Basic numerical and simulation background in engineering or physical sciences
- General knowledge about solar energy

Dates for physical activity:

From 17th of November to 21st of November 2025

Location of physical activity:

Chambéry (45° 34' 12'' N, 5° 54' 42'' E), France
CNRS - Centre Paul-Langevin 24, Aussois– French Alps – (45° 23' 16'' N, 6° 74' 17'' E)

Dates for virtual component:

November 2025

Virtual Component Description:

2 first weeks of November, 6 hours (4 x 1.5 hours):

- General presentation of the BIP + resources for preparation
- Seminars

Organizing Board

Receiving/Host university:

Université Savoie Mont Blanc, France (Lamia Berrah, lamia.berrah@univ-smb.fr)

(Monika Woloszyn, monika.woloszyn@univ-smb.fr)

(Jean Yves Ramel, jean-yves.ramel@univ-smb.fr)

Sending/Partner universities:

P1. Universidade da Beira Interior, Portugal (Maria do Rosario Alves Calado, rc@ubi.pt)
P2. Universidad Pública de Navarra, Spain (Martín Gastón Romeo, martin.gaston@unavarra.es)
P3. Universitatea de Vest din Timișoara, Romania (Robert Blaga, robert.blaga@e-uvt.ro)
P4. Universidad de Zaragoza, Spain (María Paz Comech Moreno, mcomech@unizar.es)
P5. Università di Torino, Italy (Nadia Barbero, nadia.barbero@unito.it)

Detailed programme

1. Planned activities during virtual component:

Synchronous activities:

- Presentation of the BIP, including the planification of the online activities
- Online Seminars (attendance is mandatory and the seminar will be on Teams & Zoom)
  Martin Thebault - *Identification of Rooftop PV by aerial imagery*
  Stefan PLassart - *Energy optimisation of real time calculation*
  Alessia Boccalatte - *Large scale solar cadastre*

Non-synchronous activities:

8 papers to read in preparation for physical component

2. Planned activities during physical component:

An intensive week of training through research, alternating between:

Plenary sessions, Data workshops (applied workshops on data manipulation/analysis related to solar energy), Poster presentation (PhD students).

Poster presentation to a panel of judges (on Friday morning)

1st day: Data frugality, IA for the energy in buildings, economy of solar energy + visit INES platform

2nd day: Design of PV plans in mountains + visit of the PV plans

3rd day: Data & solar adoption in territories

4th day: Energy flexibility in montaineous areas

5th day: Remote observation of glaciers + solar energy and avalanches production

<table>
<tr><th>Date</th><th>Monday 17 Nov.</th><th>Tuesday 18</th><th>Wednesday 19</th><th>Thursday 20</th><th>Friday 21</th></tr>
<tr><td>Place</td><td>Le Bourget du Lac and Departure for Aussois</td><td>Aussois</td><td>Aussois</td><td>Aussois</td><td>Aussois, Travel back to Chambéry/Le Bourget du Lac</td></tr>
<tr><td>9 to 10h30</td><td>Pieter De Wilde - Lund University</td><td>To be confirmed</td><td>Mathieu Schumann - EDF</td><td>To be confirmed</td><td>Yajing Yan</td></tr>
<tr><td>10h30-11h</td><td>Break</td><td>Break</td><td>Break</td><td>Break</td><td>Break</td></tr>
<tr><td>11h-12h30</td><td>Clémentine Prieur - UGA - France</td><td>Rossini - PV Central in mountains</td><td>Nik Zielonka - Univ. Geneva</td><td>Workshop 1</td><td>Exams (Only UNITA Students) / Poster session</td></tr>
<tr><td>12h30 to 14</td><td colspan="5">Lunch</td></tr>
<tr><td>14h to 15h30</td><td>Valeria Di Cosmo - Univ. Torino</td><td rowspan="2">Visit of the Aussois PV Central</td><td>Workshop 1</td><td rowspan="2">Activity</td><td rowspan="3">End and travel back to Le Bourget du lac/ Chambéry</td></tr>
<tr><td>15h30 to 17h</td><td rowspan="2">Visit INES platform</td><td>Break</td></tr>
<tr><td>15h30 to 17h</td><td>Poster Presentation</td><td rowspan="2">Workshop 2</td><td>To be confirmed</td></tr>
<tr><td>18 to 19</td><td>Transportation to Aussois CNRS center + dinner</td><td>End of the day / Team Work (UNITA)</td><td>End of the day / Team Work (UNITA)</td><td>Gala dinner</td><td></td></tr>
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Application procedure

How to apply: nomination can be sent to mobilite-unita@univ-smb.fr with CV and motivation letter
Deadline to apply: **1st October 2025**