

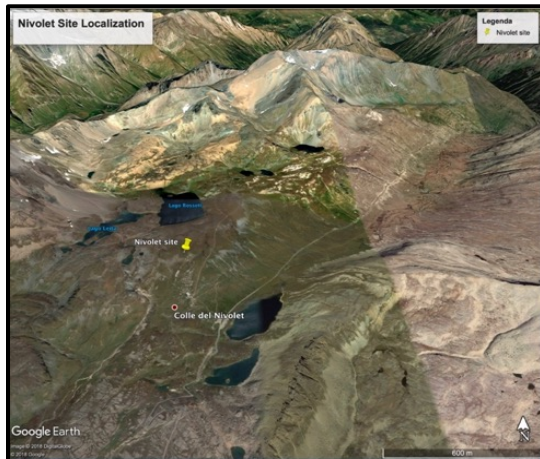
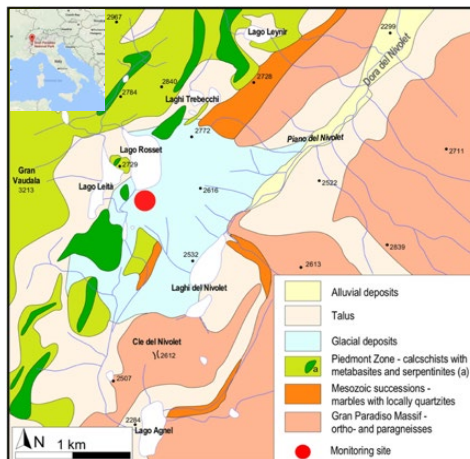
## ECOSYSTEM STATION

<b>Name:</b>	Nivolet – Gran Paradiso National Park (IT-Niv)
<b>Location (lat-long):</b>	Italian Alps, 45.49091 – 7.13943, 2708 m a.s.l.
<b>Environment:</b>	Alpine grassland
<b>Operational history:</b>	2017 – present.
<b>Scientific purpose:</b>	Implementation of an integrated environmental monitoring station to study Critical Zone and ecosystem dynamics in the Gran Paradiso National Park, with a specific focus on high-altitude grasslands. In particular, we provide continuous and long-term observations of the mountain carbon cycle, necessary to assess present conditions and expected future behaviour of Alpine environments under climate and environmental change. The short-term goal for the first five years is to define how CO <sub>2</sub> fluxes are modulated by vegetation, soil properties (including temperature, humidity and TOC) and the underlying bedrock composition. Attention to groundwater dynamics is also given.
<b>Station description:</b>	The Nivolet site, located in the Gran Paradiso National Park (north-western Italy), is a highly-protected, closed hydrological basin between about 2500 and 2700 meters amsl (Fig. 1). This area, usually covered with snow from November to June, is characterized by a complex environment of alpine pastures. The <i>Piani del Nivolet</i> area shows typical glacial and geomorphic landforms and deposits and is drained by the meandering Dora del Nivolet. The outcropping geological formations mainly consist of orto- and para-gneisses, calcschists, metabasites, marbles and dolostones. The site, selected as monitoring, is covered by glacial deposit and the vegetation is mainly composed by <i>Geum montanum</i> L., <i>Carex curvula</i> All., <i>Anthoxanthum alpinum</i> Love et Love ( <i>Anthoxanthum</i> aggr.) and <i>Ranunculus montanus</i> Willd. In 2017 we started measuring CO <sub>2</sub> fluxes (both NEE and ER) at the soil-atmosphere interface using a portable accumulation chamber (Fig. 2), together with air temperature, solar irradiance, temperature and relative humidity of the soil. In 2019 we installed a 4m-tall tower equipped with micrometeorological instrumentation for the measurement of turbulent fluxes using an eddy covariance technique. The site is also part of the European LTER network.
<b>Measured ICOS core parameters:</b>	Wind components; CO <sub>2</sub> /H <sub>2</sub> O; precipitation; Air Temperature and Relative Humidity; Barometric Air Pressure. All raw data

are recorded and synchronized on dataloggers connected to the local area network. The power supply for the instrumentation is based on solar panels, 12V accumulators and batteries.

- Measured ICOS desirable parameters:** vertical profile of soil temperature and water content
- Other measured parameters:** Incident/diffuse PAR, snow depth, CO<sub>2</sub> efflux from the soil, soil texture, TOC and TN of the soil.
- Website/data portal:**
- Responsible organization:** Institute of Geosciences and Earth Resources (IGG) of National Research Council (CNR), Italy.
- Principal investigator:** Antonello Provenzale (antonello.provenzale@cnr.it);
- Site responsible:**
- Funding:** CNR-IGG projects, EU funding

***Simplified geological map (on the left) and an image (on the right) of the Piano del Nivolet Valley with the position of the monitoring site.***



***CO<sub>2</sub> accumulation chamber for measuring Net Ecosystem Exchange (NEE, with transparent chamber) and Ecosystem Respiration (ER, with the chamber shaded by a dark cover)***



***Pian del Nivolet site and the installed micrometeorological tower***