Id	Title	Date	Participants	Description	Conference	Research groups	Journal	DOI
36980845	Quantitative and qualitative analysis of sustainability reporting in Spain-based mining companies	14/9/2023	Yousefian, Mohammad;Bascompta Massanes, Marc;Vintro Sanchez, Carla;Sanmiquel Pera, Lluis;Sidki Rius, Nor	As Corporate Social Responsibility (CSR) has gained significant attention in the mining industry as a means for achieving sustainability in recent decades, companies have been motivated to publish their reports aligned with the benefits of their stakeholders: society and the environment. Spain has made significant efforts to encourage Corporate Social Responsibility (CSR) in its mining industry. The government has introduced various policies and regulations to ensure that mining companies in the country operate in an ethical and sustainable manner. Spanish mining companies have also demonstrated a strong commitment to CSR by implementing initiatives that benefit local communities and support sustainable development. However, there are still challenges in the industry, particularly concerning labor rights and ethical practices in supply chains. Despite these challenges, Spain?s dedication to CSR reporting in the mining industry shows its commitment to responsible business practices and sustainability. There is no research analyzing sustainability reports in the mining industry. This study will analyze CSR reporting as a proxy of the sustainability commitment of some of the most significant mining companies based in Spain over a five-year period. The CSR reporting of the companies will be analyzed through their annual reports. The content analysis is set to be employed to extract necessary information from the sustainability section of top Spainbased mining companies? annual reports regarding main CSR themes including community development initiatives, environmental sustainability efforts, health and safety, human rights, and ethics, after which the data will be analyzed through quantitative methods. The results will reveal the proportion of dedication for each category by the companies, which evaluates the strengths and weaknesses of CSR reporting in the mining	World Sustainability Forum	RIIS - Grup de Recerca en Recursos i Indústries Intel·ligents i Sostenibles		
37021826	Corporate Social Responsibility. A Quantitative approach for the mining sector.	7/9/2023	Bascompta Massanes, Marc;Sanmiquel Pera, Lluis;Vintro Sanchez, Carla;Yousefian, Mohammad;Anticoi Sudzuki, Hernan Francisco	The raw materials sector requires a holistic approach to analyse and quantify the environmental and socio-economic implications of the mining activity for all the stakeholders. Thus, it is proposed a quantitative approach to determine the corporate social responsibility (CSR) impact, applicable at the mine site and corporate levels, based on two steps: 1) a basic CSR index is obtained and 2) a correcting factor is applied, achieving the final, or corrected, CSR index. In the first step, the system can be used at any kind of mining project and stage: prospecting and exploration, development, mining, processing, closure or rehabilitation. It consists of two dimensions, environment and socio-economic, formed by 30 elements that analyse potential positive and negative impacts. It also allows additional elements for particular conditions in each project. The second step consists in applying some corrective factors, defining as relevant the recycling rate, the green energy transition and the regional conditions. These factors can be adapted to future changes over time regarding the supply and demand of each element or mineral. The system proposed can be an important driver to improve the positive implications of the mining industry at all levels, as well as improve transparency, stakeholder engagement, facilitate the administrative processes and increase the returns of the mining activity in the long term.	European Conference on TEaching and Research in Sustainable Resource ExtrAction	RIIS - Grup de Recerca en Recursos i Indústries Intel·ligents i Sostenibles		

37004467	AeroSolfd: leading to cleaner air in transport-related microenvironments	5/9/2023	Agathokleous, Stefanos;Moreno, Teresa;Warth, Tobias;Casado, Carlos;Asbach, Christof;Lehmann, Martin		European Aerosol Conference			
37101690	Modelling and evaluation of aggregate and ornamental rock quality	6/8/2023	Vera Burau, Maria Alejandra;Sanmiquel Pera, Lluis;Bascompta Massanes, Marc;Álvarez Ramírez, Daniel	Minimizing environmental impact is an important concern in all types of mining, but research generally focuses on metal mining. Recently environmental and social aspects are included in the evaluation of some deposits. In non-metallic mining, building materials are widely needed. Special interest is given to calcareous materials, due to their intrinsic characteristics, which are appropriate for construction and have a strong presence in the industry. Calcareous deposits are massive, often superficial, have extensive dimensions, and are frequent, so resource evaluation should be carried out simply and practically. For this, a process must be in place to determine quality production and predict environmental effects. One of the most widely used classification systems in geomechanics is the well-known RMR, which uses parameters such as rock strength, weathering, joint conditions, etc. This system is used to evaluate rock masses and its application field is diverse, so it could be used to evaluate the product quality of a rock mass. This study analyzes a calcareous rock mass from drill holes and field points using observational and geomechanical classification parameters. Geomechanical variables were used previously defined in a block model (BM). The BM was implemented in Vulcan by Maptek, where the available data was interpolated. The BM contains sub-blocks with operational dimensions of 10x10x0.6 meters. Ten interesting variables were considered, and their importance level was established for production purposes, either as aggregate or as an ornamental rock. This weighting may vary depending on the user's interest because if a certain material is intended as an aggregate, strength characteristics will prevail, while in ornamental rocks, layer size is the main characteristic. The methodology is based on selection and quarryability criteria, and a parametric evaluation from drill	International Conference on Mining, Material, and Metallurgical Engineering	RIIS - Grup de Recerca en Recursos i Indústries Intel·ligents i Sostenibles		10.11159/mmme23.126

37089909	Implementació a l?aula del projecte BOSC i sostenibilitat: Curs de formació del professorat	6/7/2023	Mulero Jiménez, Lorena;Cunill Solà, Jordi;Grau Vilalta, Maria Dolors	S?analitzarà la singularitat del curs de formació per al professorat ?Implementació a l?aula del Projecte Bosc i sostenibilitat? (110 inscrits en les tres edicions). El professorat assistent té un paper de co-creació, co-implementació i co-avaluació, que resulta clau per a al implementació del projecte, que té per objectiu donar a conèixer els Objectius de Desenvolupament Sostenible (ODS), prenent com a fil conductor els serveis ecosistèmics del bosc. S?analitzarà la singularitat del curs de formació per al professorat ?Implementació a l?aula del Projecte Bosc i sostenibilitat? (110 inscrits en les tres edicions). El professorat assistent té un paper de co-creació, co-implementació i co-avaluació, que resulta clau per a al implementació del projecte, que té per objectiu donar a conèixer els Objectius de Desenvolupament Sostenible (ODS), prenent com a fil conductor els serveis ecosistèmics del bosc. Peer Reviewed Postprint (published version) Objectius de Desenvolupament Sostenible::3 - Salut i Benestar Objectius de Desenvolupament Sostenible::4 - Educació de Qualitat Objectius de Desenvolupament Sostenible::5 - Igualtat de Gènere Objectius de Desenvolupament Sostenible::6 - Aigua Neta i Sanejament Objectius de Desenvolupament Sostenible::11 - Ciutats i Comunitats Sostenibles Objectius de Desenvolupament Sostenible::15 - Vida d'Ecosistemes Terrestres Objectius de Desenvolupament Sostenible::13 - Acció per al Clima	Congreso Internacional de Docencia Universitaria e Innovación	CITES - Sustainability Science and Technology Research Group		
37132553	Project for secondary-school students: energy used to obtain water	4/7/2023	Gomez Gamisans, Montserrat;Grau Vilalta, Maria Dolors;Xandri, Elvira	The essential services for the well-being of people today are access to water and energy. In addition, it must be taken into account that in many cases one depends on the other for its obtaining. In this way we have two possible relationships: - The water needed to obtain energy. - The energy needed to obtain water. This second option is the one that is being worked on in this project, therefore, it would be necessary to analyze what energy we need to obtain water, both in terms of Water Treatment Plant and drinking water, and with respect to the depuration of wastewater and its discharge and returns in the environment. In the way of managing surface water for obtained drinking water, it is customary to work in water lines taking advantage of the movement due to gravity, but in many cases pumping systems are needed to access the upper parts of the cities and perhaps to raise the water from the river to the treatment plant (WTP); as well as some impulse within the plant itself, especially if closed filters are used. On the other hand, if the groundwater used, the need for pumping is obvious.[2] In the treatment of wastewater, it reaches the Wastewater Treatment Plant (WWTP) by gravity, but once there, the different treatments need energy for their correct operation, although it is also possible to try to prioritize the movement of the water to gravity, part of the process will require mechanical and/or electromechanical equipment with energy consumption. In this project, aimed at Secondary students, the necessary material is provided to the Secondary School indicating the steps to follow, taking into account the two water treatment approaches and the respective energy needs: - Water entering the city for drinking. - Water leaves cities and returns to rivers and streams. Once the task has been proposed to the Secondary Schools, the data is collected through a Google Forms form, which allows	International Conference on Education and New Learning Technologies	CITES - Sustainability Science and Technology Research Group		10.21125/edulearn.2023.0601

37741199	Effective separation of Silica sand from ground pit by HF pretreatment	1/6/2023	Mohanty, Kalyani;Oliva Moncunill, Josep;Alfonso Abella, María Pura	The Denver cell was used to investigate the froth flotation of silica sand using sodium oleate as a collector. The froth flotation tests revealed that there was little difference in the flotation of feldspar and quartz at pH 2?3, using pine oil as a pH regulator. After HF pre-treatment, the floatability of the feldspar significantly increased, while the floatability of quartz showed no changes. HF pre-treatment resulted in the leaching of SiO2 and enrichment of Na, K, and Al on the feldspar surface. As a result, the negative surface charge of feldspar increased at pH 2?3, allowing froth flotation separation for mineral feasibility. This took place via increased electrostatic adsorption between the collector and Na, K, and Al on the feldspar surface, which effectively increased its hydrophobicity and, as a result, improved the floatability of feldspar. An alternative process that exhibited effective separation of quartz and feldspar from the ground pit from the flotation was proposed. Separating K- and Na-feldspar from quartz using electrostatic separation requires preheating the material to 140 C and additional pre-treatment with HF solutions for improved results. This phenomenon proposes silica enrichment research approaches and provides perspectives for the advanced processing of quartz and feldspar in an economically and environmentally friendly manner.	Mediterranean Congress of Chemical Engineering	RIIS - Grup de Recerca en Recursos i Indústries Intel·ligents i Sostenibles		10.48158/MeCCE-15.T2-O-15
36749228	Development of 3D printed microfluidic platforms for the automatic determination of Fe(III) in the bioprocess of recovering valuable metals from electronic waste	1/6/2023	Ricart Fort, David;Lao Luque, Concepcion;Baeza Labat, Mireia;Dorado Castaño, Antonio David		Mediterranean Congress of Chemical Engineering	RIIS - Grup de Recerca en Recursos i Indústries Intel·ligents i Sostenibles		10.48158/MeCCE-15.T2-O-03

36682604	Evaluation of operational temperature range of friction modifiers in ester containing formulations	31/5/2023	Cañellas Palou, Gerard;Emeric Casterà, Ariadna;Combarros, M.;Navarro, Àngel;Beltran, Lluís;Vilaseca Llosada, Montserrat;Vives Costa, Jordi		Mediterranean Congress of Chemical Engineering	RIIS - Grup de Recerca en Recursos i Indústries Intel·ligents i Sostenibles		10.48158/MeCCE-15.T4-O-19
37740944	Construction and demolition waste, mineralogical and chemical characterization of CDW as function of particle size the 4-0.5mm and treatments for potential recycling	30/5/2023	Eljoudiani, Amina;Hoffmann Sampaio, Carlos;Oliva Moncunill, Josep	According to the EU Waste Framework Directive 2008/98/EC, all EU members must take all necessary steps to achieve at least 70% of non-hazardous construction and demolition waste (CDW) re-use, recycling, or other recovery by 2020. Construction and Demolition Waste (CDW) is a priority waste stream that accounts for around 30% of the EU's total waste generation.[1].An consistent method and recovery strategy are challenging since CDW is highly variable across member states and geographical regions. Depending on the geological availability of lithotypes, construction locations, and building designs, CDW is actually very varied. Commonly found in CDW are materials including asbestos, concrete, bricks, rocks, sanitary ware, ceramic tiles, roof tiles, plaster, wood, glass, metals, and plastic. As aggregates for road construction or backfilling, or, with restrictions due to reduced mechanical performances, as recycled aggregates in concrete, downgrade applications are frequently the only viable choice for recycling this sort of trash.Still, virgin aggregates are favored over recycled aggregates because of landfilling's cheap economic costs, a lack of incentives, and occasionally antiquated rules. However, a few studies have already examined the potential inclusion of CDW in new, high-quality building materials, such as terrazzo tiles, which is intriguing due to the environmental benefits in terms of energy and natural resource savings over the production of ceramic tiles	Mediterranean Congress of Chemical Engineering	RIIS - Grup de Recerca en Recursos i Indústries Intel·ligents i Sostenibles		10.48158/MeCCE-15.T3-P-23

36682772	Study of the Interaction Between Esters and Different Friction Modifier Additives in a Group IV Base Stock	23/5/2023	Cañellas Palou, Gerard;Vives Costa, Jordi;Emeric Casterà, Ariadna;Combarros, M.;Navarro, A.;Vilaseca Llosada, Montserrat;Beltran, Lluís		Society of Tribologists and Lubrication Engineers Annual Meeting & Exhibition			
36653898	Black Carbon source apportionment using time-dependent Absorption Angstrom Exponent (AAE)	28/4/2023	Savadkoohi, Marjan;Pandolfi, Marco;Alastuey Urós, Andrés;Querol Carceller, Xavier;Favez, Olivier	Among the aerosol particles optical properties, the Absorption Angstrom Exponent (AAE) is a crucial parameter describing the spectral dependence of light absorption by aerosols. It is intensively employed for black carbon (BC) source apportionment and aerosol characterization (e.g., BC, Brown Carbon ?BrC,? and dust). AAE has been widely investigated using data from filter-based absorption photometers such as the AE33 that measure light absorption at seven wavelengths (370-950 nm). BC source contribution is commonly obtained by applying the most frequent source apportionment method, the Aethalometer model. This model requires a-priori knowledge of the AAE of the fossil and non-fossil (e.g. biomass burning) BC sources and values of around 1 (AAEff; fossil) and 2 (AAEwb; non-fossil) are commonly used. In this work, in order to improve the results of the aethalometer model for BC source apportionment, we investigate the model performances resulting from using site-dependent AAEff and AAEwb determined from the experimental data. These latter were obtained by studying the frequency distributions of experimental AAE calculated from AE33 data collected at urban sites in the frame of the RI-URBANS project. However, AAE can also vary with time depending on changing burning fuels and burning conditions, and single constant AAEff and AAEwb values cannot be representative of the whole measurement period considered. For this reason, we also evaluated the use in the Aethalometer model of experimental time-dependent rolling AAEff and AAEwb. This improved AAE-frequency-distribution-based Aethalometer model could be applied in near-real time to obtain the BC source apportionment. Thus, it could help to improve our understanding of AAE values considering uncertainties to provide a better and more accurate quantity to differentiate between BC sources.	European Geosciences Union General Assembly			10.5194/egusphere-egu23-7014

35150390	Recovery of valuable metals from lithium ion batteries (LIB's)	21/12/2022	Garcia Saez, Lidia		Jornada InnoBages. Impuls de la R+D+I al Bages			
34256230	Análisis de estabilidad y simulaciones de desprendimientos en canteras a partir de modelos 3D obtenidos con vuelos de dron	1/9/2022	Ruiz Carulla, Roger;Camara Zapata, Eduardo;Martinez Bofill, Joan	Se presentan dos casos en canteras donde se trabaja a partir de un modelo 3D del terreno obtenido mediante la reconstrucción fotogramétrica con dron. El primer caso se centra en la delimitación detallada de una masa rocosa inestable y se comparan los resultados de análisis de estabilidad realizados con cuatro metodologías: test cinemático, equilibrio límite mediante el programa RocPlane y equilibrio límite con métodos numéricos en 2D y 3D mediante los programas Slide2D y Slide3D, todos ellos de Rocscience. Se comparan los resultados obtenidos considerando distintos valores de cohesión y ángulo de fricción obtenidos de ensayos de laboratorio sobre el plano de deslizamiento y se debate sobre las incertidumbres que controlan la estabilidad como la presencia de agua y la cohesión. El segundo caso muestra el estudio de una propuesta de geometría futura de taludes muy verticales en una cantera. Se analiza, por un lado, la estabilidad de la geometría futura propuesta y se contrasta con las roturas existentes y, por otro lado, se comparan simulaciones de desprendimientos con la geometría actual y con la propuesta. Se utiliza el programa RockGIS desarrollado en la UPC que permite realizar simulaciones de desprendimientos en 3D y considerando el fenómeno de la fragmentación. Se debate sobre las ventajas e inconvenientes de la geometría propuesta en relación a la estabilidad de los taludes y del riesgo asociado a los desprendimientos. Los dos casos muestran el potencial de realizar un vuelo dron y trabajar a partir de un modelo 3D detallado de la cantera: la caracterización del patrón de discontinuidades de forma masiva, la caracterización de los mecanismos de rotura, la delimitación de volúmenes potencialmente inestable, la definición de la geometría necesaria para realizar análisis de estabilidad en 2D y 3D, así como el escenario donde realizar simulaciones	Simposio Nacional sobre Taludes y Laderas Inestables	EnGeoModels - Monitoring and Modelling in Engineering Geology		

35019418	Experiences of Mining Engineering students in cooperation for development	1/9/2022	Sidki Rius, Nor;Alfonso Abella, María Pura;Martínez Alcalá, Arnau;Gaona Boixader, Roger;Sendrós Gálvez, Miquel;Bel Roset, Guillem;Bascompta Massanes, Marc;Anticoi Sudzuki, Hernan Francisco;Yubero De Mateo, Maria Teresa;Jiménez Franco, Abigail	Future engineers, in addition to technical knowledge, should incorporate in their academic curricula aspects that contribute to make mining a sustainable activity. This will contribute to changing the concept that society has about mining and to be a socially accepted activity. In the mining engineering studies at the Universitat Politècnica de Catalunya (UPC), students have the opportunity to develop cooperation projects together with professors and other staff members. They all collaborate with artisanal miners from different underdeveloped countries, mainly from Latin America, and contribute to making mining more environmentally friendly. Moreover, they have the opportunity to acquire a social sensitivity that can be of great importance during the development of their professional career. This study presents some experiences of undergraduate, master, and doctoral students in cooperation activities in mining. The projects were developed as a collaboration between UPC and universities or NOGs in Latin America. The activities have been carried out in underdeveloped areas where mining is practiced with a high environmental impact and poor use of resources. A survey among the participants in the projects shows the students' favourable perception of this activity. Peer Reviewed Postprint (published version) Objectius de Desenvolupament Sostenible::3 - Salut i Benestar Objectius de Desenvolupament Sostenible::8 - Treball Decent i Creixement Econòmic Objectius de Desenvolupament Sostenible::13 - Acció per al Clima Objectius de Desenvolupament Sostenible::17 - Aliança per a Aconseguir els Objetius	Annual Conference of the European Society for Engineering Education	RIIS - Grup de Recerca en Recursos i Indústries Intel·ligents i Sostenibles		
35019341	Service-learning in engineering: analysis of students experiences in development cooperation	1/9/2022	Alsina Aubach, Montserrat;Alfonso Abella, María Pura;Sidki Rius, Nor;Bel Roset, Guillem;Gaona Boixader, Roger	Future engineers, in addition to technical knowledge, should incorporate in their academic curricula aspects that contribute to make mining a sustainable activity. This will contribute to changing the concept that society has about mining and to be a socially accepted activity. In the mining engineering studies at the Universitat Politècnica de Catalunya (UPC), students have the opportunity to develop cooperation projects together with professors and other staff members. They all collaborate with artisanal miners from different underdeveloped countries, mainly from Latin America, and contribute to making mining more environmentally friendly. Moreover, they have the opportunity to acquire a social sensitivity that can be of great importance during the development of their professional career. This study presents some experiences of undergraduate, master, and doctoral students in cooperation activities in mining. The projects were developed as a collaboration between UPC and universities or NOGs in Latin America. The activities have been carried out in underdeveloped areas where mining is practiced with a high environmental impact and poor use of resources. A survey among the participants in the projects shows the students' favourable perception of this activity. Peer Reviewed Postprint (published version) Objectius de Desenvolupament Sostenible::4 - Educació de Qualitat Objectius de Desenvolupament Sostenible::6 - Aigua Neta i Sanejament Objectius de Desenvolupament Sostenible::3 - Salut i Benestar Objectius de Desenvolupament Sostenible::13 - Acció per al Clima Objectius de Desenvolupament Sostenible::17 - Aliança per a Aconseguir els Objetius	Annual Conference of the European Society for Engineering Education	STNB - Number Theory Barcelona Seminary		

35019203	Characterizarion of illitic materials from the Collsuspina quarry Catalonia, Spain	1/9/2022	Sabaté, Xavier;García-Vallès, Maite;Sidki Rius, Nor;Alfonso Abella, María Pura	Often the use of materials from quarries is not optimised and the activity ceases when there are still enough reserves. In the present study, materials from an inactive quarry have been characterised to determine whether it is still possible to continue quarrying. The quarry is located in the area of Collsuspina, in Catalonia, Spain. The chemical composition was determined by X-ray fluorescence. The mineralogy was determined by X-ray powder diffraction and scanning electron microscopy. Minerals are mainly quartz, feldspars, illite and chlorite. Thermal properties have been established from differential thermal and thermogravimetric analysis (DTA-TG) and dilatometry. The crystalline phases present in different amounts are illite, chlorite, quartz, K-feldspar, albite, calcite and dolomite. The content of illite can reach up to 48 mass% and chlorite is about 11 mass%. This is in agreement with the high plasticity shown by all these clays, which plotted in the very plastic region of the Holtz-Kovacs diagram, except one sample, which pots in the moderate plastic clays zone. DTA shows an endothermic peak at 550 °C associated with the dehydroxylation and a second endothermic occurs at 778 °C, which is produced by the decomposition of calcite. Finally, an exothermic peak, at 890 °C, is attributed to the spinel formation. TG shows a mass loss of 0.9 % at less than 200 °C due to the release of the adsorption water. Between 200 and 400 °C a loss of 0.6 mass% is associated with the oxidation of organic matter. The structural water is released at 450-650 °C and represents a 4 mass% loss. Finally, a 5% of mass loss is produced by the decomposition of carbonate. Dilatometric curves show the characteristic sill of the calcic illites and the melting process starts at 1050 °C and finish at 1150 °C. The coefficient of expansion is 9.77·10-6. The results of the present work show that there is still material in the quarry with ceramic properties suitable	European Symposium on Thermal Analysis and Calorimetry	RIIS - Grup de Recerca en Recursos i Indústries Intel·ligents i Sostenibles		
35019248	The use of borax to gold recovery in artisanal mining: Thermal considerations	1/9/2022	Villegas Flores, Karla Stephanie;Alfonso Abella, María Pura;Bel Roset, Guillem;García-Vallès, Maite	Mercury is still frequently used for gold recovery in artisanal mining, despite the fact that it seriously harms health and is illegal in many countries. An alternative to the use of the mercury amalgamation method by the so-called borax method. This consists of a pyrometalurgical process in which the gold concentrate is mixed with boron and melted, so that when it cools, the gold is separated from the rest of the material with which it is found. This process is carried out in a rudimentary manner. In order to establish a protocol, it is necessary to know the thermal behaviour of the mixture of the concentrate with and the borax. In this way it is possible to determine the optimal ratios between borax and gold concentrate to do the metallurgical processing. In the present work, a mineralogical and thermal characterisation of gold concentrate together with different proportions of borax and Na2CO3 from alluvial gold mining in the area of Suches, Bolivia, was carried out by X-ray powder diffraction and differential thermal analysis-thermogravimetry (DTA-TG). The concentrate was obtained by gravity concentration with the use of carpets to retain the dense particles. This concentrate is mainly composed of quartz, biotite, chlorite, hematite, goethite monazite, zircon, rutile and gold. DTA-TG shows an exothermic peak at 1029 °C related to the melting of the material. In the case of borax addition, the exothermic peak occurs at lower temperatures; with 25 mass% of borax addition, it is at 1024 °C, with 50 mass% of borax, this event occurs at 1000 °C. The addition to this last sample of 10 mass% Na2CO3, temperature lowers to 844 °C. However, the lowest values are obtained with the addition of 75 mass% borax, where the exothermic event occurs at 811 °C. Therefore, the higher the ratio between borax and concentrate, the lower the melting temperature of the mixture. The amount of borax to be added must be	European Symposium on Thermal Analysis and Calorimetry	RIIS - Grup de Recerca en Recursos i Indústries Intel·ligents i Sostenibles		

34223427	Study of immobilized biomass reactors for sulfate reducing activity characterization and improvement	31/8/2022	Castro Carrasco, Rebeca Ignacia;Gabriel Buguña, Gemma;Gamisans Noguera, Xavier;Guimera Villalba, Xavier	Immobilization of non-granular sludge is an auspicious option for sulfate reducing activity improvement. In this study, PVA-biomass granules and alginate-biomass granules were tested for mechanical stability, adsorption capacity and sulfate reduction. Moreover, two configurations of reactors, a Continuous Stirred Tank Reactor (CSRT) and a Column Reactor (CR) were operated, evaluating sulfate and glycerol consumption H2S production in order to improve sulfate-reduction process within SONOVA process. The CR presented a stable sulfate reducing activity, higher production of H2S and low wash out comparing to CSTR. Immobilization of non-granular sludge is an auspicious option for sulfate reducing activity improvement. In this study, PVA-biomass granules and alginate-biomass granules were tested for mechanical stability, adsorption capacity and sulfate reduction. Moreover, two configurations of reactors, a Continuous Stirred Tank Reactor (CSRT) and a Column Reactor (CR) were operated, evaluating sulfate and glycerol consumption H2S production in order to improve sulfate-reduction process within SONOVA process. The CR presented a stable sulfate reducing activity, higher production of H2S and low wash out comparing to CSTR. Peer Reviewed Postprint (published version)	International Conference on Sustainable Chemical & Environmental Engineering	RIIS - Grup de Recerca en Recursos i Indústries Intel·ligents i Sostenibles		
34183731	Development of a low-cost microelectromechanical system for the digitisation of boreholes	1/8/2022	Bonet Dalmau, Jordi;Arumi Casanovas, Arnau;Camara Zapata, Eduardo;Palà Schönwälder, Pere;Bascompta Massanes, Marc	The deviation of drill holes from their theoretical position can lead to failures or dangerous situations due to the risk of fly-rocks when blasting rock. The origin of these deviations may be due to several causes: poor positioning of the drilling machine, deviations of the drill string due to unfavourable geological conditions, wear of drilling tools, etc. A novel equipment has been developed to evaluate boreholes efficiently and safely, being able to validate them and find and quantify potential deviations from the projected trajectory. The system consists of a probe that is introduced into the borehole to determine the heading (dip direction angle) and inclination (dip angle) of the borehole, comparing the real trajectory of the borehole with the projected one. The trajectory of the borehole has been broken down in a set of linear trajectories of length r. Each one of these linear trajectories is fully defined by two angles: dip direction, ¿, and dip, ¿. The 9 DOF sensor BNO055 has been used to determine these angles [1], which integrates a 3-axis accelerometer, gyroscope and magnetometer. As it is only needed the 3-axis accelerometer to determine the inclination and the 3-axis magnetometer to determine the heading, it is used the Fussion Mode Compass of this sensor. The measurement method starts with the probe inserted at the beginning of the borehole, with coordinates (x0, y0, z0), pointing (with angles ¿0, ¿0) to a new point at a distance r, with coordinates (x1, y1, z1). It is assummed as true the hypothesis that if the probe goes down a distance r, it will be at the point (x1, y1, z1), pointing (with angles ¿1, ¿1) to a new point at a distance r, with coordinates (x2, y2, z2). This procedure is repeated until the end of the borehole is reached. The coordinates of each new point n+1 are computed from the previous coordinates and angles of point n by: (¿¿+1, ¿¿+1, ¿¿+1) = (¿¿ + ¿¿, ¿¿ + ¿¿, ¿¿ + ¿¿) ¿¿ =	World Congress on Mechanical, Chemical, and Material Engineering	RIIS - Grup de Recerca en Recursos i Indústries Intel·ligents i Sostenibles		10.11159/mmme22.131

34183711	Analysis of an accident in the mining sector using the Feyer & Williamson method	1/8/2022	Sanmiquel Pera, Lluis;Bascompta Massanes, Marc;Sidki Rius, Nor;Vives Costa, Jordi;Lopez Martinez, Joan Antoni	This research presents the case of the analysis of an accident in an aggregate processing plant through the Feyer & Williamson method. This method was designed to allow the coding of a time sequence of up to 3 events that have preceded a given accident. These events are called Preceding Events and are characterised as determining factors for the genesis of the accident. In addition, causal factors can also be identified, which are considered to have influenced the accident but not in such a decisive way as the events. The method makes it possible to identify 4 types of events and 8 types of causal factors, as well as different types of human error that have directly influenced the origin of the accident. Results: Once all the causes and factors that directly or indirectly influence the origin of the accident analysed according to the method indicated have been identified and classified, all of them are organised graphically, which allows a quick and simple understanding of the circumstances of the accident.	World Congress on Mechanical, Chemical, and Material Engineering	RIIS - Grup de Recerca en Recursos i Indústries Intel·ligents i Sostenibles		10.11159/mmme22.123
34183634	FEM analysis of saline creep behaviour over time	1/8/2022	Sidki Rius, Nor;Bascompta Massanes, Marc;Sanmiquel Pera, Lluis;Parcerisa Duocastella, David;Alfonso Abella, María Pura;Vera Burau, Alejandra;González Jiménez, Gabriel;Biosca Munts, Jose	The case study is a potash ore deposit located in the Spanish Ebro Basin; it is configured by 8 salt lithologies separated by layers of clays. Saline materials have a characteristic called Creep, which is the flow capacity once an underground excavation is opened. This flow can be fast enough to present a safety hazard for the miners and an operational issue due to the cross-section reduction of the drift or even its collapse. Different variables including temperature or pressure influence directly the creep evolution. In recent years, the mining infrastructure of this case study is reaching considerable depths, such as opening underground excavations at more than 900 meters depth. Therefore, it is crucial to control the creep evolution over time. The ore deposit was widely studied and, consequently, there are various technical reports, as well as scientific literature [1,2], defining the geological setting, the saline lithologies and some of their geomechanical parameters. However, there is a lack of knowledge about the saline behaviour and creep evolution over time. For this reason, it is believed essential to form a database from the scientific literature. This database will represent the first step to obtaining a model to analyse its geomechanical behaviour. Different types of methodologies for modelling the ore deposit have been evaluated and, finally, FEM analysis was chosen. It is well known that underground mining can lead to geological reactions in the mining surface field, such as subsidence [3-6]. Various mining and geological factors, including the quality and characteristics of the underground rock or the quality of the surface conditions, can influence its magnitude, shape, mode, and extent of it [7]. The surface of the study mining area is not an exception. In the late 1990s, an increase in the subsidence velocity was detected very close to an urban area, and one neighbourhood had to be evicted [8]. This event led to the	World Congress on Mechanical, Chemical, and Material Engineering	RIIS - Grup de Recerca en Recursos i Indústries Intel·ligents i Sostenibles		10.11159/mmme22.110

34057078	Mercury pollution from the artisanal gold mining in the La Paz department, Bolivia	24/7/2022	Villegas Flores, Karla Stephanie;Alfonso Abella, María Pura;Freixas, Anna;Higueras Higueras, Pablo León;Aranibar Jiménez, Ana María;González Valoys, Ana	Bolivia is the only country in the Andean region that still allows the use and import of mercury, which is being used in artisanal and small-scale gold mining. In the department of La Paz there is a large gold mining activity, which is mainly developed as artisanal mining through cooperatives. Gold is exploited from primary orogenic-type deposits, and from placer-type deposits, where gold is free. In both cases, miners still use mercury to gold recovering. In this study, an assessment of gold pollution and the efficiency of gold processing by amalgamation was carried out to demonstrate the need to abandon these practices. A significant part of the mercury still used in South America is obtained through Bolivia. Eradication in this country would therefore have important consequences for the elimination of mercury use on a continent-wide scale. A sampling of water and hair from the Apolobamba, Sorata and Cotapata areas was performed. Also, the gold content was determined in the ores and mine tailings. The obtained results indicate the THg concentration in water is usually below the tolerable limits indicated by the World Health Organization. However, mercury concentration in hair from habitants of the areas close to the primary gold processing indicated a high level of pollution. On the other hand, gold deposits in this area often exceed 30 g/tone Au. After gold recovering, tailings still contain high amounts of gold, being recovered less than 50% of the total gold from the ore. This economic aspect is important to convince miners that amalgamation is an undesirable method, both because of the pollution it causes and because of its low economic efficiency. Acknowledgements: This research was financed by the project AECID: A3/042750/11 and CCD 2019-B005, 2020-B006 and 2021-G007.	International Conference on Mercury as a Global Pollutant	RIIS - Grup de Recerca en Recursos i Indústries Intel·ligents i Sostenibles		
35059077	Rate-dependent behaviour of fracture propagation in salt rock	1/7/2022	Escanellas Tur, Andreu;Camara Zapata, Eduardo;Liaudat, Joaquín;Carol, Ignacio	This paper describes an on-going experimental and numerical modelling research project on salt rock specimens. The experimental part of the study consists of a number of Mode I fracture tests with the WST (Wedge-Splitting Test) configuration, which are performed at different loading rates and complemented by a series of standard uniaxial creep tests. The preliminary WST results show a greater mechanical fracture work accompanied with lower force peaks, for the slower tests. As a first attempt to represent the experimental results, an in-house Finite Element model has been used, which combines an inviscid discrete fracture approach with a Maxwell chain model for the continuum material. The simulations show a decrease of the mechanical work needed for opening the fracture and higher peak force, as foreseen by the ongoing experimental results, but not with the same intensity, which seems to indicate that work dissipation may not be caused eclusively by the bulk viscosity. This paper describes an on-going experimental and numerical modelling research project on salt rock specimens. The experimental part of the study consists of a number of Mode I fracture tests with the WST (Wedge-Splitting Test) configuration, which are performed at different loading rates and complemented by a series of standard uniaxial creep tests. The preliminary WST results show a greater mechanical fracture work accompanied with lower force peaks, for the slower tests. As a first attempt to represent the experimental results, an in-house Finite Element model has been used, which combines an inviscid discrete fracture approach with a Maxwell chain model for the continuum material. The simulations show a decrease of the mechanical work needed for opening the fracture and higher peak force, as foreseen by the ongoing	Conference on the Mechanical Behaviour of Salt	GGMM - Group of Geotechnics and Mechanics of Materials		10.1201/9781003295808-17

33771111	Tribological behaviour of steel optmised automotive AW/FM oil additives in front of non-common materials	21/5/2022	Cañellas Palou, Gerard;Emeric Casterà, Ariadna;Combarros, M.;Navarro, A.;Beltran Giralt, Luis;Vilaseca Llosada, Montserrat;Vives Costa, Jordi	In the recent years, new component designs and materials have been continuously incorporated in vehicle production in order to reduce weight and increase autonomy. The use of new pieces and materials has triggered a huge number of tribological challenges for current oil formulations, commonly designed to work with steel-steel contacts (St-St). Lightweight alloys, such as aluminum, are optimum candidates to substitute ferrous based components +,?. The AIM of this study is to evaluate the performance of 3 commercial steel antiwear (AW) and/or friction modifier (FM) additives in front of aluminum-steel contact (Al-St).	Society of Tribologists and Lubrication Engineers Annual Meeting and Exhibition	RIIS - Grup de Recerca en Recursos i Indústries Intel·ligents i Sostenibles		
33796495	Exposición ocupacional de mercurio en mineros auríferos del departamento de La Paz - Bolivia	27/4/2022	Villegas Flores, Karla Stephanie;Higueras Higueras, Pablo León;Alfonso Abella, María Pura	Bolivia es el único país de la región andina que aun permite el uso e importación de mercurio, el cual se está utilizando en la minería artesanal y a pequeña escala para la obtención del oro. La manipulación y exposición del mercurio es directa durante la amalgamación y refogado, por ello, se ha realizado una investigación para conocer la contaminación por mercurio de aguas y su afección en la salud de los mineros. Se han analizado las concentraciones de THg en cabellos de los mineros ubicados en los municipios de Pelechuco y Coroico, ubicados en las áreas protegidas de Cotapata y Apolobamba, respectivamente. Los resultados muestran una media de 969.2 ng/g de Hg, con 4 muestras por encima de los 1000 ng/g en Coroico, y una media de 127.1 ng/g en Pelechuco. Esta diferencia de concentraciones se debe a las diferencias en el procesamiento causadas por las características de los yacimientos, siendo en el primer caso un yacimiento primario donde el uso de Hg es mayor.	Congreso Ibérico de Geoquímica	RIIS - Grup de Recerca en Recursos i Indústries Intel·ligents i Sostenibles		

32083525	Impacto del cambio climático en acuíferos kársticos del Pirineo. El caso del Port del Comte, Lleida (España)	17/11/2021	Jódar Bermúdez, Jorge;Herms Canellas, Joan Ignasi;Lambán Jiménez, Luis Javier;Martos, Sergio;González Ramón, Antonio;Soler Gil, Albert;Custodio Gimena, Emilio	Las zonas de alta montaña generan la mayor parte de recursos hídricos de los que se abastecen los ecosistemas ubicados en las zonas bajas. Cuando las montañas constituyen en sí un acuífero, el agua recargada permanece más tiempo en la cuenca, proporcionando así un recurso hídrico estratégico en las estaciones secas. Esto es especialmente importante en el área mediterránea, propensa a la sequía, y donde la disponibilidad de agua es escasa y depende en gran medida de la escorrentía de las cuencas de cabecera. En este marco, es fundamental evaluar el impacto del Cambio Climático (CC) en la disponibilidad de recursos hídricos en zonas de montaña, ya que esto ayudará a diseñar las medidas de adaptación más adecuadas para minimizar los efectos adversos del CC. En el presente trabajo se evalúa el impacto potencial del CC en la infiltración y los recursos hídricos disponibles en el acuífero kárstico asociado a las Fuentes del Cardener, ubicado en sector oriental del Port del Comte (Alt Urgell y Solsonès, NE España). Para ello, se utilizan los resultados de los modelos climáticos regionalizados derivados del Proyecto Europeo CLYM'PY (POCTEFA). Estos modelos simulan la evolución climática según diferentes trayectorias de concentración representativa (RCP, por sus siglas en inglés), las cuales están definidas y adoptadas por el Grupo Intergubernamental de Cambio Climático (IPCC). De todos los modelos climáticos disponibles se seleccionan aquellos que consideran los escenarios el RCP4.5 y RCP8.5, y se analiza cómo se propagaran en el futuro la magnitud y las tendencias de los cambios previstos en las variables hidrometeorológicas que definen el funcionamiento del acuífero (precipitación, temperatura, evapotranspiración). Las variaciones a futuro de las diferentes variables	Congreso Ibérico de las Aguas Subterráneas			
32086010	Production and Microstructure of Al-Ni-Y and Al-Ni-Y-La Powder by Centrifugal Atomization	18/10/2021	Cegarra Salges, Sasha Alejandra		European Powder Metallurgy Congress and Exhibition			

32064980	Study of immobilization methods for sulfate-reducing sludge characterization through H2S production evaluation	3/9/2021	Castro Carrasco, Rebeca Ignacia;Gamisans Noguera, Xavier;Gabriel Buguña, Gemma;Guimera Villalba, Xavier	Immobilized sulfate reducing sludge present a solution for fast analysis of H2S production and accurate mass transfer studies using amperometric microsensors. For this purpose, polymer carrier alginate, PVA and agar were mixed with sludge and placed in a flat plate bioreactor. Kinetic rates were calculated and long-term assays were performed to evaluate sulfate consumption, COD removal and resistance in order to select the optimal immobilization method. The selected method was also validated following the activity of immobilized sulfate-reducing sludge in the monitoring platform Peer Reviewed Postprint (author's final draft) Objectius de Desenvolupament Sostenible::13 - Acció per al Clima Objectius de Desenvolupament Sostenible::6 - Aigua Neta i Sanejament	Mediterranean Congress of Chemical Engineering	RIIS - Grup de Recerca en Recursos i Indústries Intel·ligents i Sostenibles		10.48158/MeCCE-14.DG.11.06
32027618	Analysis of the surveying errors in the Cabanasses Ramp breakthrough	4/8/2021	Sanmiquel Pera, Lluis;Bascompta Massanes, Marc;Anticoi Sudzuki, Hernan Francisco;Sidki Rius, Nor	The Cabanasses Ramp is a complex tunnel designed to access the Cabanasses Mine and improve the environmental conditions, safety and production capacity. Its construction started in July 2012, finishing in 2020. Until now, the only access to the Mine was through 2 mine shafts called ?Pozo 2? and ?Pozo 3?. The Cabanasses Mine is located in Súria (Bages, Catalonia, Spain). The Ramp will be about 5.1 km length, descending more than 800m with a high gradient, with a maximum slope of 21%. One the first surveying works carried out during the construction of this ramp was the transmission of the orientation and cartographic system, between surface and underground workings, by means of the vertical shafts. In the study [1], it was assessed the accuracy of this operation in a case study using the two-shaft plumbing and gyroscopic methods in order to compare and analyze the planimetric displacement of the baseline due to different sources of error in each method. The second group of topographic works were the planimetric and altimetric polygonal surveys that were carried out in the mine branch and the advance branch from the outside. It is important to note that from the mine branch, only 0.5 km were excavated, while the rest of the ramp, 4.6 km, was excavated from the outside branch. The ramp in the mine started near the INT11N-INT10N base located about 3 km from the entrance shafts, and about 600 m from the breakthrough (meeting point of the ramp between the outside branch and the mine branch). It is well known that some errors are always found in the planimetric and altimetric polygonal surveys. In fact, several studies indicate that these errors are due to the propagation of errors in the measurement of angles and distances at each station of the polygonal [2, 3]. Moreover, these errors,	World Congress on Mechanical, Chemical, and Material Engineering	RIIS - Grup de Recerca en Recursos i Indústries Intel·ligents i Sostenibles		10.11159/mmme21.114

32010500	Characterization of Clays in Catalan Potash Basin. Influence on the Geomechanicalconditions in Potash Mining	4/8/2021	Sidki Rius, Nor;Bascompta Massanes, Marc;Sanmiquel Pera, Lluis;Parcerisa Duocastella, David;Alfonso Abella, María Pura;González Jiménez, Gabriel R.		World Congress on Mechanical, Chemical, and Material Engineering	RIIS - Grup de Recerca en Recursos i Indústries Intel·ligents i Sostenibles		10.11159/mmme21.109
32023996	Difusió i priorització dels ODS en els joves: des de Primària a la Universitat	1/7/2021	Mulero Jiménez, Lorena;Grau Vilalta, Maria Dolors;Torra Bitlloch, Immaculada;Cunill Solà, Jordi	En aquest treball, s?estudia com conscienciar els estudiants de secundària sobre el medi ambient i la sostenibilitat. Es pretén que prenguin consciència del seu paper com a transformadors del món. Per aconseguir-ho, treballem a través dels Objectius de Desenvolupament Sostenible (ODS) buscant formes d?integrar-los al seu entorn estudiantil diari. Les mostres d?estudiants tenen des de 9 fins als 50 anys, amb nivell diferent de familiarització amb els ODS. Peer Reviewed Postprint (author's final draft) Objectius de Desenvolupament Sostenible::2 - Fam zero Objectius de Desenvolupament Sostenible::3 - Salut i Benestar Objectius de Desenvolupament Sostenible::1 - Fi de la Pobresa Objectius de Desenvolupament Sostenible::4 - Educació de Qualitat Objectius de Desenvolupament Sostenible::5 - Igualtat de Gènere Objectius de Desenvolupament Sostenible::11 - Ciutats i Comunitats Sostenibles Objectius de Desenvolupament Sostenible::13 - Acció per al Clima Objectius de Desenvolupament Sostenible::17 - Aliança per a Aconseguir els Objetius Objectius de Desenvolupament Sostenible::6 - Aigua Neta i Sanejament Objectius de Desenvolupament Sostenible::9 - Indústria, Innovació i Infraestructura Objectius de Desenvolupament Sostenible::10 - Reducció de les Desigualtats Objectius de Desenvolupament Sostenible::12 - Producció i Consum Responsables Objectius de Desenvolupament Sostenible::16 - Pau, Justícia i Institucions	Congrés Internacional de Docència Universitària i Innovació	CITES - Sustainability Science and Technology Research Group		

32012738	A novel bioscrubber for the treatment of high loads of ammonia from polluted gas	25/6/2021	Morral Moltó, Eloi;Gamisans Noguera, Xavier;Dorado Castaño, Antonio David	At present, the management of industrial waste is one of the major problems of society development. A wide range of pollutants are emitted from industrial facilities such as odorous compounds, VOC?s, NH3 or H2S. Ammonia (NH3) is a colourless, strongly odorous, toxic, reactive and corrosive gas that is a by-product of the biological degradation of urea, proteins and amino acids found in the organic fraction of municipal solid wastes. Traditionally, physical-chemical process has been used for the abatement of gaseous pollutants such as adsorption with activated carbon, wet-scrubbing, incineration, and air stripping. However, high operational cost and secondary pollutant streams are the main disadvantages of this kind of treatments (Dorado et al., 2015). For this reason, in the few past decades, the biological treatments have been increasing their interest in the treatment of a wide range of pollutants. Low operational cost and reduction or elimination of secondary pollutants emissions are the main advantages of this kind of treatment.	International Conference on Sustainable Solid Waste Management	RIIS - Grup de Recerca en Recursos i Indústries Intel·ligents i Sostenibles		
32023968	Learn about the water around you: use with secondary-school students	25/3/2021	Mulero Jiménez, Lorena;Pàmies Fernandez, Joaquim;Grau Vilalta, Maria Dolors	In this paper, we present the Manual per a l?estudi de la qualitat i consum de l?aigua (Manual on water quality and consumption). It is part of the BOSC i sostenibilitat project, which seeks to tie the Sustainable Development Goals to woodlands. Our work is based on a series of open-access websites belonging to the administration. They allow secondary school students to take a first-hand look at the state of the bodies of water in their area, and to evaluate their water footprint and the carbon footprint associated with their water consumption. During the 2019-2020 school year we ran a pilot test of the program with secondary-school teachers, which allowed us to develop a working method that is currently being used at 30 secondary schools in Catalonia. Using the results, we can compare both the state of the bodies of water in the areas studied and the water footprint of project participants. Our goal is to raise secondary-school students? awareness of the need to conserve such a valuable resource, and to encourage them to save water by analysing how much is consumed in their own homes. To this end, students study their water bill and determine which hydrographic basin their home is located in. Next, they evaluate the general state and environmental status of the body of water selected. Finally, each participant calculates their water footprint based on habits.	International Congress on Water and Sustainability	CITES - Sustainability Science and Technology Research Group		

29184327	Baseline hydrogeochemical characteristion of a vulnerable pristine high-mountain karst aquifer in the southeastern Pyrenees. The Port del Comte massif (Topic 7 - Karst Hydrogeology)	27/9/2019	Herms Canellas, Joan Ignasi;Jódar Bermúdez, Jorge;Soler Gil, Albert;Vadillo, Iñaki;Lambán Jiménez, Luis Javier;Martos, Sergio;Custodio Gimena, Emilio;Jorge, Joan	High mountain karst aquifers located in pristine zones are often an important source of water supply downstream. These hydrological systems with typically short transit times are very vulnerable and there is a general consensus regarding the necessity of their protection. Despite of that, most of these high-mountain hydrogeological systems are not sufficiently characterized neither well understood. From the perspective of climate change impact on groundwater resources, karst aquifers located in the drought-prone Mediterranean areas are currently on the focus of research. The predicted scenarios of both an increasing of temperatures and a decreasing of precipitations may likely impact aquifers recharge. In this regard, a baseline hydrogeochemical characterization of these high mountain aquifers is the first step to understand their hydrological behavior, and therefore adapting to climate change in relation to groundwater resources. This research is focused on the Port del Comte (PC) carbonate massif, which is located in the southernmost part of the Catalan Pyrenees (northeastern Spain). The elevation of the massif ranges from 900 to 2387 m a.s.l, and it covers an area of approximately 110 km2. The PC constitutes an independent structural and regional hydro-geological unit, and contains one of the most important karst aquifers of the Catalan Pyrenees, formed by Lower Eocene ? fissured and karstified limestones and dolomites. No previous studies regarding the geochemical and isotopic groundwater baseline characterization of this aquifer are available. This work presents the results of the groundwater and precipitation sampling campaigns conducted during the period Oct 2013 ? Oct 2015. A total of 43 springs were visited for groundwater sampling twice per year (i.e. before snowfall and after snowmelt seasons). The	International Association of Hydrogeologists Congress			
29184225	Typology of karst aquifers in Europe: a review : GeoERA RESOURCE project, CHAKA work package	26/9/2019	Pardo Iguzquiza, Eulogio;Marechal, Jean-Christophe;Ladouche, Bernard;Herms Canellas, Joan Ignasi	Although karst aquifers represent a widespread groundwater resource in Europe, there is no unified classification and each country has adopted his own typology, taking into account the characteristics of their own karst aquifers. The main objective of the CHAKA (CHAlk and KArst) work package, part of the GeoERA RESOURCE project (http://geoera.eu/projects/resource9/), is to achieve a joint classification typology that should be applicable to a large spectrum of karstic environments, and to associate it to recommendations regarding aquifer management (aquifer protection, monitoring strategies, exploitation, etc.). This presentation describes the current state of the art, in the sense of reviewing the existing methods/approaches used in the different partner countries to classify karst aquifers taking into account the responses from time series analysis. The existing approaches of carbonate aquifer characterization are studied and the differences and complementarity of the different approaches are discussed. The potential gaps are also identified.	International Association of Hydrogeologists Congress			

26984927	The forest and climate change: example of application in open science schooling	1/7/2019	Mulero Jiménez, Lorena;Grau Vilalta, Maria Dolors;Torra Bitlloch, Immaculada	This work is an application of Open Science Schooling (OSS) where schools, in cooperation with other stakeholders, become an agent of community well-being; families are encouraged to become real partners in school life and activities; professionals from enterprise, civil and wider society are actively involved in bringing real-life projects into the classroom. Specifically, it has been working with a European project: Project Erasmus+ Open Science Schooling: Fostering re-engagement in science learning through open science schooling. Developed at the secondary school Pere Fontdevila in Gironella, a direct application of OSS has been carried out around the forest. Secondary school youth work forest as a key element in the fight against the climate change and study its role in energy saving. In a first phase of awareness of the magnitude of their role in energy saving, the students have been taking part of an action named SAVEnergy. The project SAVEnergy is promoted by Universitat Politècnica de Catalunya through the research group EXPLORATORI: natural resources. It has been installed a device that measures the electric consumption at the electric board at home of every student participating in the project. The goal is become aware of energy consumption at their own homes. From this point, and to be able to extrapolate individual energy saving and pass globally, students have worked on CO2 emissions into the atmosphere. For this reason, a study of the emissions from Spanish State since 2007 to 2017 has been carried out, applying statistical techniques. In addition, to saving energy and get to know how to study the effect of this savings on a global level, students have closed the cycle studying a source of renewable energy from the forest: biomass. To put their knowledge into practice and learn through the experience they have built a biomass boiler	International Conference on Education and New Learning Technologies	CITES - Sustainability Science and Technology Research Group		10.21125/edulearn.2019.0357
25827012	E-waste valorisation by recovering valuable metals with microorganisms	26/6/2019	Benzal Montes, Eva;Cano Larrotta, Ana Maria Jose Candelaria;Sole Sardans, M. Montserrat;Lao Luque, Concepcion;Gamisans Noguera, Xavier;Dorado Castaño, Antonio David	The effectiveness of bioleaching in copper recovery from printed circuit boards by Acidithiobacillus ferrooxidans has been evaluated under a wide range of conditions demonstrating the suitability of the technology and their limits. The process has been tested using a column reactor simulating conditions found at industrial scale and operating in continuous mode. Moreover, new strategies have been adapted to increase the efficiency of the operation and to reduce the time required for this purpose. Taking into account the complex composition of electronic waste, the limitations of applicability, for instance due to the accumulation of toxic metals in the solution, have been also identified by microrespirometric measurements. Experiments carried out at laboratory scale verifies the proof of concept of the biotechnology for this application, recovering 37% of copper using flasks with a concentration of 7.5 g/L of e-waste in 6 hours. This efficiency was improved in the case of the packed column, where 50% of copper was recovered using the same amount of e-waste at the same period time. New strategy was developed to increase the kinetic of reaction and overcome transport limitations for the leaching solution, achieving copper recoveries up to 80% in the same period than previously reported. Regarding toxicity assays, the methodology used allows to identify that, depending on the concentration and the time exposed, nickel, copper and aluminium affected the microorganisms? activity, inactivating them. It was concluded that aluminium resulted more toxic than copper, which in turn was more toxic than nickel, at the conditions tested. The effectiveness of bioleaching in copper recovery from printed circuit boards by Acidithiobacillus ferrooxidans has been evaluated under a wide range of conditions demonstrating the suitability of the technology and their limits. The process has been tested using a column reactor simulating	International Conference on Sustainable Solid Waste Management	BIOGAP - Biological Treatment of Gaseous Pollutants and Odours Group		

32085929	Fabricación de polvo de cobre por atomización híbrida	25/6/2019	Cegarra Salges, Sasha Alejandra;Pijuan Casas, Jordi;Hernández Rossi, Ricardo;Riera Colom, Maria Dolores		Congreso Español de Pulvimetalurgia y Congreso Iberoamericano de Pulvimetalurgia	RIIS - Grup de Recerca en Recursos i Indústries Intel·ligents i Sostenibles		
26630141	A novel bioscrubber for the abatement of gaseous ammonia emissions at high loads: characterization of the absorption step	19/6/2019	Morral Moltó, Eloi;Gabriel Buguña, David;Dorado Castaño, Antonio David;Gamisans Noguera, Xavier	At present, the management of industrial and municipal wastes is one of the major problems of society development. A wide range of pollutants is emitted from industrial facilities such as VOCs, NH3 or H2S, apart from odours. Among them, the presence of high concentrations of ammonia (NH3) can be alarming on the exhausted gas of composting plants, reaching often concentrations up to 300-500 ppmv. Besides, concentration peaks up to 700-1000 ppmv have been also reported [1]. Ammonia is a colorless, strongly odorous, toxic, reactive and corrosive gas that is a by-product of the biological degradation of urea, proteins and amino acids found in the organic fraction of municipal solid wastes [1][2]. Traditionally, physical-chemical processes such as activated carbon, wet-scrubbing, incineration, and air stripping have been used for the abatement of gaseous pollutants. However, high operational cost and secondary pollutant streams are the main disadvantages of this kind of treatment [3]. Biofiltration is an environmentally friendly technique which interest in implementation has been increasing in the few past decades. Low operational costs and reduction or elimination of secondary pollutants are their main advantages. . Bioreactors are classified in biofilter (BF), biotrickling filter (BTF) and bioscrubber (BS) depending on their set up and performance. Bioscrubbers seems to be the best option when hydrophilic compounds (such as ammonia) are treated. A bioscrubber is formed with one absorption column and a stirred tank (bioreactor). In the column the polluted gas is mixed with the liquid phase, thus the pollutant is transferred from the gas phase to the liquid phase. The liquid phase is constantly recirculated between the column and the tank, where the pollutant absorbed in the column is degraded by the suspended biomass in the bioreactor [4]. The aim of this work was to	International Congress of Chemical Engineering	RIIS - Grup de Recerca en Recursos i Indústries Intel·ligents i Sostenibles		

29208428	Typology of karst aquifers and recommendations for their management ? GeoERA RESOURCE project, CHAKA work package	17/6/2019	Marechal, Jean-Christophe;Charlier, Jean-Baptiste;Ladouche, Bernard;Herms Canellas, Joan Ignasi	Karst aquifers represent a widespread groundwater resource in Europe. Classically, due to their high degree of heterogeneity, the understanding of karst aquifers hydrogeology relies on the monitoring of the main outlet of the aquifer, considering it as the right proxy in order to characterize the karst as a whole entity. Until now, the proposed approach has focused on discharge time series analysis using several types of tools (spectral analysis, recession curve analysis...). During the last decades additional parameters are being monitored (temperature, turbidity, electrical conductivity, etc). They provide promising information about the karst hydrodynamics and vulnerability that should be used in order to propose a new and more complete typology of karst aquifers. ?Resources of groundwater harmonized at cross-border and pan-European scale? (RESOURCE) project is a part of GeoERA (Establishing the European Geological Surveys Research Area to deliver a Geological Service for Europe) research programme, which is established and run by a group of 33 national and 15 regional geological survey organisations from Europe. The main objective of the CHAKA (CHAlk and KArst) work package, which is part of the RESOURCE project (http://geoera.eu/projects/resource9/), is to develop a joint methodological framework for characterizing karst aquifer resources with the aim of solving water management issues (quantity and quality). The approach will be constructed, tested and validated in various geological environments (limestone, chalk, dolomite, covered/barren karst systems) and different hydrogeological datasets (measurements from springs or wells/piezometers, frequent vs. scarce measurement	International Karstological School “Classical Karst”			
25400503	Análisis de un accidente del sector minero mediante el método del árbol de causas y el método de Feyer & Williamson	6/6/2019	Sanmiquel Pera, Lluis;Bascompta Massanes, Marc;Felipe Blanch, Jose Juan de;Vintro Sanchez, Carla;Anticoi Sudzuki, Hernan Francisco;Freijo Alvarez, Modesto	Fundamento y Métodos: En esta investigación se presenta el caso del análisis de un accidente del sector minero a través de 2 métodos distintos: 1) árbol de causas, 2) Feyer & Williamson. En el método del árbol de causas se identifican y codifican causas inmediatas y causas básicas según el método de clasificación del INSHT. Seguidamente se ordenan esquemáticamente en forma de árbol, desde el accidente, pasando por causas inmediatas y finalizando en causas básicas. Normalmente, si la investigación del accidente ha sido o ha podido ser adecuada, se puede identificar una causa básica detrás de cada causa inmediata. El método de Feyer & Williamson, ha sido diseñado para permitir la codificación de una secuencia temporal de hasta 3 acontecimien denominan Acontecimientos Precedentes y se caracterizan por ser factores determinantes para la génesis del accidente. Así mismo se identifican también factores causales que se considera que han influido en el accidente pero no de una manera tan determinante como los eventos. El método permite identificar 4 tipos de eventos y 8 tipos de factores causales, así como distintas clases de errores humanos que han influido directamente en el origen del accidente. Resultados: Una vez realizada la identificación y clasificación de todas las causas y factores que influyen de una forma directa o indirecta en el origen del accidente analizado según cada método de análisis, se procede a la organización gráfica de todos ellos a partir de cada metodología. Así mismo, se realiza una comparación entre los 2 métodos resaltando ventajas e inconvenientes entre los mismos. Fundamento y Métodos: En esta investigación se presenta el caso del análisis de un accidente del sector minero a través de 2 métodos distintos: 1) árbol de causas, 2) Feyer & Williamson. En el método del árbol de	International Congress on Occupational Risk Prevention	RIIS - Grup de Recerca en Recursos i Indústries Intel·ligents i Sostenibles		

29184163	3D geological modelling as a tool for supporting spring catchment delineation in high-mountain karst aquifers: the case study of the Port del Comte (Eastern Pyrenees) aquifer	24/5/2019	Herms Canellas, Joan Ignasi;Nuñez Genestós, Joan Agustí;Colomer, Montse;Arnó Pons, Georgina;Jódar Bermúdez, Jorge;Soler Gil, Albert;Griera, Albert	High mountain karst aquifers (HMKA) represent important and vulnerable natural water resources that must be protected, even more those aquifers located in the drought-prone Mediterranean area. In this geographical framework, climate models simulations accounting for the last emission scenarios considered in the 5th IPCC (2013) assessment report forecast an increase in temperature and a decrease in precipitation. The joint effect of such climate conditions will likely impact the recharge of the Mediterranean HMKA. Despite the importance of these systems for water resources, most of them are still vaguely characterized. In this sense, the use of 3D geological models (3DGM) helps to understand the geometry and conceptualize the functioning of karst systems. One of the most known methodologies is the KARSYS approach (Malard, A. et al 2012, Jeannin et al 2013, Turk, J., et al 2013 and Ballesteros, D., et al 2015 among others). This study presents the first 3DGM of the Port del Comte aquifer (Catalan Pyrenees), a HMKA formed by Lower Eocene fissured and karstified limestones and dolomites. The elevation of the massif ranges between 900 to 2387 m a.s.l., and it has an area of 110 km2. The unconfined aquifer has a very thick unsaturated zone (aprox. 1000 m). The mean groundwater discharge of (aprox. 15 hm3/yr) postulates this aquifer as one of the most important HMKA of the area. The massif constitutes an independent structural and regional hydro-geological unit, where apart from the karst development, the geologic structure and stratigraphy influence both the storage capacity of the aquifer and the location of the main springs discharging the system. The existing structural and conceptual geological model (Vergés, 1999), the available geological maps (ICGC, 2007) and new geological field campaigns have provided the basis	European Meeting on 3D Geological Modelling			
26999446	Open schooling: application in the study of the forest	12/3/2019	Mulero Jiménez, Lorena;Torra Bitlloch, Immaculada;Grau Vilalta, Maria Dolors	In this work, it has been doing a comparison between some really knowing methodologies of student-centred learning -Learning by doing; method Montessori; Constructivism; Constructionism and the innovating system Open Schooling. The objective is being able to evaluate it. Specifically, it has been working with an European project: Project Erasmus+ Open Science Schooling: Fostering re-engagement in science learning through open science schooling. The most important goal of the project consists in encouraging ?Open Science Schooling? where schools, in cooperation with other stakeholders, become an agent of community well-being; families are encouraged to become real partners in school life and activities; professionals from enterprise, civil and wider society are actively involved in bringing real-life projects into the classroom. The project is composed of three periods and nine phases, furthermore a conclusive phase. The blue period, the first one, aims to create consensus and readiness among partners, teachers and students and to mobilise the resources to collaborate with the project, locally and transnationally. The Green Period, the second one, will create the knowledge, experience and documentation on which the project outcomes will be based; the resource creation will follow the project?s five didactic challenges, stepwise building up capacity and resources towards the Red Period: the production and sharing of final results. The project?s final period, the Red Period, will transform the produced raw material, including from the Open Science Schooling Encounter, into high-quality useful outcomes. The outcome presentation will build on the project?s attractive access design that was developed along the project. The final production will, of course, be accompanied by systematic and powerful local and European level sharing and dissemination.	International Technology, Education and Development Conference	EXPLORATORI - EXPLORATORI Natural Resources		10.21125/inted.2019.2116

29184122	Estimación de tiempos de tránsito en acuíferos kársticos de alta montaña del Pirineo oriental mediante isótopos ambientales. El macizo del Port del Comte (Lleida, España)	15/11/2018	Herms Canellas, Joan Ignasi;Jódar Bermúdez, Jorge;Lambán Jiménez, Luis Javier;Martos, Sergio;Jorge, Joan;Vadillo, Iñaki;Soler Gil, Albert;Custodio Gimena, Emilio	En el presente trabajo se estima el tiempo de tránsito del agua subterránea que descarga por los manantiales principales del Macizo del Port del Comte. Para ello se utilizan dos métodos diferentes: (1) la aproximación clásica que estudia cómo se amortigua en el agua de descarga la amplitud de la variación estacional del contenido isotópico de la recarga, y (2) la modelación numérica de los procesos de flujo y transporte con modelos agregados. El método clásico sobreestima los tiempos de tránsito con un factor de proporcionalidad de 1,9. Los tiempos de tránsito estimados mediante modelación numérica varían entre 1,7 y 2,9 años.	Congreso Ibérico sobre Agua subterránea, medio ambiente, salud y patromonio			
23522061	Técnicas de minería de datos para la mejora de la seguridad en explotaciones a cielo abierto	25/10/2018	Sanmiquel Pera, Lluis;Bascompta Massanes, Marc;Rossell Garriga, Josep Maria;Vives Costa, Jordi;Guasch Cascallo, Eduard		Congreso Nacional de Áridos	RIIS - Grup de Recerca en Recursos i Indústries Intel·ligents i Sostenibles		

23517488	Ventajas en la adquisición de datos topográficos con drones y posterior diseño de explotaciones mineras a cielo abierto mediante ?softwares? específicos	25/10/2018	Sanmiquel Pera, Lluis;Bascompta Massanes, Marc;Parcerisa Duocastella, David;Anticoi Sudzuki, Hernan Francisco;Felipe Blanch, Jose Juan de		Congreso Nacional de Áridos	RIIS - Grup de Recerca en Recursos i Indústries Intel·ligents i Sostenibles		