GEOSCOPIE

La plateforme d'intelligence économique pour les géosciences

BULLETIN DE VEILLE GEOSCOPIE n°50 – Septembre 2017

Edito

Chers lecteurs, adhérents, membres et partenaires,

Voici le n°50 du bulletin de veille Géoscopie. 50, déjà ! Depuis 2012, le POLE AVENIA collecte et qualifie les actualités disponibles sur le WEB sur les filières de l'énergie du sous-sol et les thématiques technologiques associées. En 2015, l'effort de veille technologique et marché du POLE AVENIA est monté en gamme avec la création, en partenariat avec la société TKM, d'une base de données de brevets, publications scientifiques, projets collaboratifs et actualités sourcées et classifiées à partir d'un jeu de plusieurs centaines de mots-clés. **La base de données IP-Metrix/Géoscopie contient aujourd'hui près de 30 000 articles**.

Elle peut être interrogée à tout moment, gratuitement pour un niveau basique de recherche et pour les membres du POLE AVENIA, pour une recherche personnalisée et ciblée à partir de vos jeux de mots-clés, par exemple en amont d'un projet de R&D ou d'innovation pour évaluer l'état de l'art et la concurrence ou identifier les experts sur toute thématique. Contact : geoscopie@pole-avenia.com ou 05 64 17 15 35.

En vue de faire évoluer ses outils et services de veille au plus près de vos besoins, le POLE AVENIA souhaiterait mieux connaître l'usage qui en est fait, vos suggestions d'amélioration ou d'évolutions pensées et plus généralement vos besoins en intelligence économique. Pour ce faire, il vous invite donc vivement à répondre à l'enquête en ligne en cliquant ICI.

Merci pour vos retours et bonne lecture à tous !

L'équipe du POLE AVENIA

SOMMAIRE DU BULLETIN DE VEILLE GEOSCOPIE N°50

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ACTUALITES

Les Géosciences en France

19/06/2016 – L'Alsace championne de la géothermie profonde [source] - A Vendenheim, le premier forage géothermique du territoire de l'Eurométropole a commencé. A l'échelle de la région, lAlsace compte deux installations en fonctionnement et 6 projets de centrale géothermique.

26/06/2017 – Mont-de-Marsan : la retenue d'eau qui sauve la géothermie [source] - Afin de stocker l'eau chaude issue des sources de géothermie montoises, un bassin de 300 000 mètres cubes est en cours de construction, sur la commune de Mazerolles.

11/07/2016 – Quand Limoges dresse l'inventaire de ses cavités souterraines [source] - Le recensement des cavités souterraines a débuté à Limoges, avec des mesures de gravimétrie pour détecter les anomalies.

18/08/2017 - Sécheresse : 71 % des nappes phréatiques ont un niveau inférieur à la normale [source] - Dans son dernier rapport mensuel, le Bureau de recherches géologiques et minières fait état d'une réalité inquiétante: 71 % des nappes phréatiques françaises ne sont pas à l'équilibre, elles sont trop basses par rapport à la normale.

06/09/2017 – Hulot planifie la fin de la production d'hydrocarbures en France [source] - Le ministre de la Transition écologique présente ce mercredi un projet de loi qui prévoit la fin de la recherche, puis de l'exploitation des gisements existants, sur l'ensemble du territoire français.

De nombreuses réactions se sont fait entendre dans l'industrie suite à la première annonce du projet de loi le 23 juin dernier, dont voici une sélection :

07/07/2017 – Hydrocarbures : la filière dit son inquiétude après l'annonce de l'interdiction de nouveaux forages [source] - Basé à Pau et fédérant 180 structures, le Pôle Avenia évoque "l'incompréhension et l'inquiétude" de ses adhérents.

17/07/2017 – Pourquoi Nicolas Hulot a tort de vouloir se passer du pétrole français [source] - On consomme 75 millions de tonnes d'hydrocarbures en France par an. La production française n'en couvre qu'1%, mais c'est tout bénéfice: la chaine de production est française, de la tête de puits au réservoir de la voiture, en passant par les raffineries locales.

19/07/2017 – La France ne doit pas interdire l'exploration d'hydrocarbures [source] – Olivier Appert, conseiller à l'Ifri et membre de l'Académie des Technologies, dénonce une décision purement symbolique, qui ne diminuera en rien les émissions de gaz à effet de serre, mais qui nuira à notre balance commerciale et à nos entreprises.

Nouvelles des membres du pôle

19/08/2017 – TEP ASD : un centre de mesures physiques pour nos industries [source] - Inauguré en mars dernier par le Directeur Général Exploration-Production de Total et en présence de François Bayrou, maire de Pau, ce centre de mesures physiques permettra d'étalonner les instruments de mesures des fabricants et contracteurs de sondes diagraphiques.

21/06/2017 - Vallourec inaugure un nouvel équipement de pointe pour le perçage des tubes [source] - Vallourec, leader mondial des solutions tubulaires premium, met en service un nouveau perceur haute performance pour augmenter la productivité et réduire la consommation d'énergie.

28/06/2017 - Hélioparc à Pau : une success-story économique béarnaise [source] – A 30 ans, la technopole paloise abrite désormais plus de 1300 emplois. Une concentration de matière grise et technicité qui en fait l'atout numéro 1 du Béarn pour son développement.

29/08/2017 - Total achète Maersk Oil: décryptage d'une acquisition à 6,3 milliards d'euros [source] - Total a annoncé le 21 août l'acquisition de Maersk Oil. Il s'agit de la plus grosse opération engagée par la quatrième compagnie gazière et pétrolière internationale depuis la fusion d'Elf avec TotalFina au début des années 2000.

04/09/2017 - Le BRGM récupère les terres rares issues des déchets électroniques [source] - Omniprésentes dans notre quotidien, des ordinateurs aux smartphones en passant par les voitures ou les avions, les terres rares sont absentes de la chaîne de recyclage. Le projet Extrade, coordonné par le BRGM et cofinancé par l'ANR pourrait changer la donne.

05/09/2017- Qu'est-ce que la méthanation ? [source] - A Fos-sur-Mer (Bouches-du-Rhône), le projet « Jupiter 1000 », développé par GRTgaz en coopération avec RTE, Atmostat, TIGF et d'autres partenaires, vise à tester à partir de 2018 un démonstrateur intégrant power-to-gas et méthanation.

28/08/2017 - Le géomagnétisme, ou les secrets du magnétisme de la Terre [source] - Des chercheurs de l'Institut de physique du Globe de Paris, l'IPGP nous expliquent cette science, le géomagnétisme, qui recèle encore bien des mystères..

Marché de la géothermie

01/07/2017 - U.S. DOE announces funding for 6 geothermal Deep Direct-Use research projects [source] – The U.S. Department of Energy (DOE) announced up to $4 million in funding for six geothermal Deep Direct-Use (DDU) research projects

to conduct feasibility studies of large scale, low-temperature deep-well geothermal systems and cascaded surface technologies.

20/07/2017 - Berkeley Lab to lead $9m research on commercialization of EGS [source] – The Lawrence Berkeley National Laboratory is leading new $9 million U.S. DOE funded project aimed at removing technical barriers to commercialization of enhanced geothermal systems (EGS), a clean energy technology with the potential to power 100 million US homes.

21/07/2017 - Djibouti secures $27m loan from Kuwait for geothermal drilling campaign [source] - The Kuwait Development Fund has granted a $27 million loan to the Geothermal Energy Development Office of Djibouti, for the drilling of up to 10 wells and the construction of a 15 MW geothermal power plant.

02/08/2017 - Un consortium sino-kenyan remporte le contrat de construction d'une nouvelle centrale géothermique à Olkaria [source] - Au Kenya, KenGen, la principale société de production et de distribution d'énergie du pays, a attribué un contrat de construction d'une centrale géothermique d'une capacité installée de 61 MW à un consortium composé de Yantai Jereh Petroleum Equipment & Technologies (Chine) et de H-Young & Co (Kenya).

31/08/2017 - EU-funded GEOTHERMICA Project receives 35 applications [source] - Earlier this month, the GEOTHERMICA Project reported that it had received 35 applications from 11 countries for a call for funding which ran out July 10. GEOTHERMICA is a EU co-operation project involving 16 administrative and research centers in 13 countries in Europe.

01/09/2017 - Ethiopia Electric Power issuing drilling tender for Tendaho geothermal project [source] - The Ethiopian Electric Power company is inviting qualified bidders to express interest for the procurement of full drilling services at the Dubti Field, for the Tendaho Geothermal Power Project.

01/09/2017 – Indonesia-New Zealand partnership on geothermal to intensify [source] - As Indonesia aims to reach its goal of 9,5 GW in geothermal power generation capacity by 2025, its long partnership with New Zealand in this sector is set to reach new heights, helping Southeast Asia's largest economy maximize its unharnessed geothermal potential.

Marché du stockage géologique

07/07/2017 - Houston startup plans to store wind energy underground [source] - Texans have long stored oil, natural gas and other forms of energy in underground salt caverns, so it's only natural that a Houston startup wants to store wind energy there, too. The method is in the company's name, Apex-CAES, where CAES stands for compressed air energy storage.

22/07/2017 - German energy company wants to build flow batteries in old natural gas caverns [source] - A German energy company recently announced that it's partnering with a university to build a massive flow battery in underground salt caverns that are currently used to store natural gas..

23/08/2017 - Captage et stockage de CO2: la Norvège passe la seconde [source] - Statoil va développer, en Norvège, un projet de collecte et de stockage sous-marin de CO2 industriel. Une opération qui pourrait intéresser aussi des entreprises anglaises.

Technologies / transferts technologiques

16/06/2017 - Drilling competence vital for geothermal energy industry [source] - A recent workshop in Norway discussed how vital drilling competence is for the geothermal sector and how the Norwegian oil and gas experience can play a part.

10/07/2017 – 5 projects to receive up to $15m in joint geothermal/ oil DOE research program [source] – The projects will address two topic areas: 1) Wellbore Diagnostics and Integrity assessment in legacy wells, and 2) Sensors and Tools for Autonomous Completions and Long Term Monitoring of Wellbore Integrity.

28/07/2017 - Minerais et métaux : la face cachée de la transition énergétique [source] - La Banque mondiale a présenté le 18 juillet une étude soulignant les énormes besoins de minerais et de métaux associés à la transition « bas carbone » dans le monde. Un aspect souvent ignoré de cette transition.

01/08/2017 – MGX Minerals Commences Pilot Plant Testing for Li-1 Lithium Recovery System [source] – The Li-1 pilot plant is capable of processing 20 m3/day and will be expanded to a 100m3/day capacity. Initial testing is focused on lithium-rich brine samples obtained from MGX lithium and petrolithium properties as well as oil & gas partners.

01/08/2017 - Big data points humanity to new minerals, new deposits [source] – Researchers have found a way to predict minerals missing from those known to science, where to find them, and where to look for new deposits of valuable minerals like gold & copper.

22/08/2017 – New integrated heat flow mapping product improves petroleum & geothermal prospectivity [source] - TERRAFLUX is derived from the integration and interpretation of spatially-continuous geological datasets such as basement composition, basement terranes and crustal thickness, including Frogtech Geoscience's proprietary SEEBASE depth-to-basement map..

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AGENDA DU POLE AVENIA ET DE SES PARTENAIRES

Date	Événement	Lieu
3-7 Septembre 2017	**4th EAGE Sustainable Earth Sciences (SES) Conference** Bringing together geoscientists working in CO2 storage, geothermal applications, deep earth storage solutions and related topics. More information HERE	MALMÖ, Sweden
12-13 Octobre 2017	**5th European Geothermal Workshop** with a focus on **Characterization of Deep Geothermal Systems.** Organized by the Karlsruhe Institute of Technology (KIT) - More info HERE	KARLSRUHE, Germany
17-18 Octobre 2017	33ème édition des **Journées Annuelles d'EVOLEN 2017** Energie : Source de Développement – Infos ICI	PARIS, France
17-18 Novembre 2017	3ème édition **des 24H de l'innovation au centre de la Terre** (cf. ci-dessous et ICI)	PAU, France

COMMUNICATION DU POLE AVENIA

Les 24H de l'innovation au centre de la Terre, 17-18 novembre 2017 à Pau.

Entreprise, start-up, vous avez un projet ? une problématique ? une idée à développer ? un domaine à investiguer ? des talents à repérer ? Proposez votre sujet pour qu'il soit développé en 24h chrono par une équipe pluridisciplinaire d'étudiants ! Toutes les infos ICI

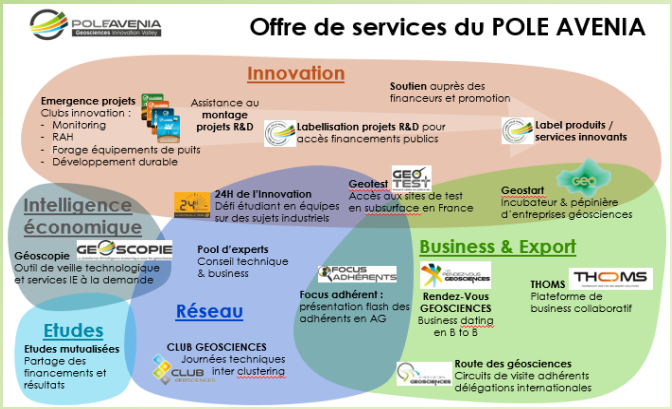
Etudiant-e, créatif-ve et motivé-e ? En 24h chrono, relevez le défi de l'innovation et développez en équipe des projets d'entreprises ! Durant 24h, dépassez vos limites, boostez votre créativité et montrez aux entreprises que vous êtes l'innovateur de demain ! Toutes les infos ICI

Le catalogue des plateformes technologiques du dispositif Extra & Co est disponible.

Le dispositif Extra&Co est né de la volonté commune de 4 organismes de recherche publique labellisés instituts Carnot (ISIFoR – coordinateur du dispositif, BRGM, ICÉEL et M.I.N.E.S) de regrouper et valoriser les compétences et équipements de leurs 2000 chercheurs & ingénieurs dans le domaine des ressources minérales et énergétiques du sous-sol (minerais métalliques, minerais non-métalliques, hydrocarbures), au service des entreprise de la de la filière économique des Industries extractives et Première Transformation (IEPT).

Découvrez les 35 plateformes technologiques du catalogue Extra & Co en cliquant ICI

LE POLE AVENIA ACCOMPAGNE VOS PROJETS RDI & D'ENTREPRISE – Que vous soyez un laboratoire académique ou une entreprise, l'accompagnement de vos projets de recherche, développement et innovation ou de vos projets de création ou croissance d'entreprise est au cœur de la mission du POLE AVENIA. Notre équipe, assistée d'un comité d'experts, vous aide à structurer et maturer vos projets, à identifier d'éventuelles compétences manquantes ; nous vous mettons en relation avec des partenaires potentiels, nous vous orientons vers les guichets de financement les plus adaptés à vos besoins, nous labellisons vos projet et les soutenons auprès des financeurs, nous les faisons connaître à vos futurs clients, nous accueillons votre start-up au sein de notre incubateur GEOSTART, etc.



Faites-nous connaître votre projet et vos besoins en nous retournant une fiche d'intention de projet

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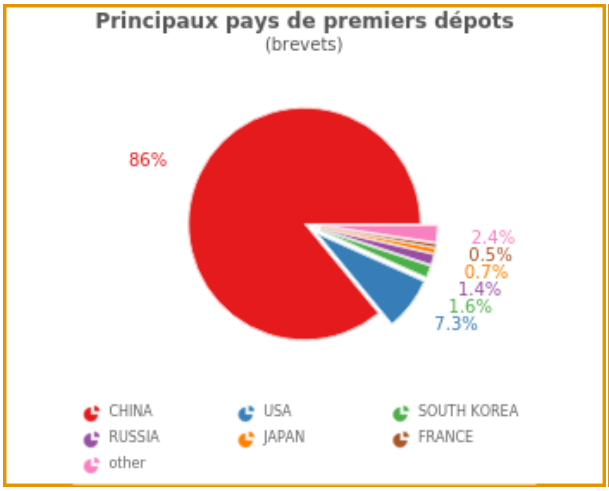
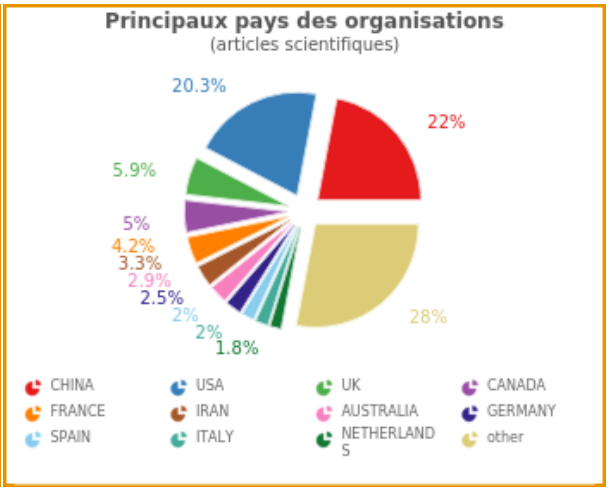
TABLEAUX DE BORD DE L'ACTIVITE SCIENTIFIQUE ET TECHNIQUE

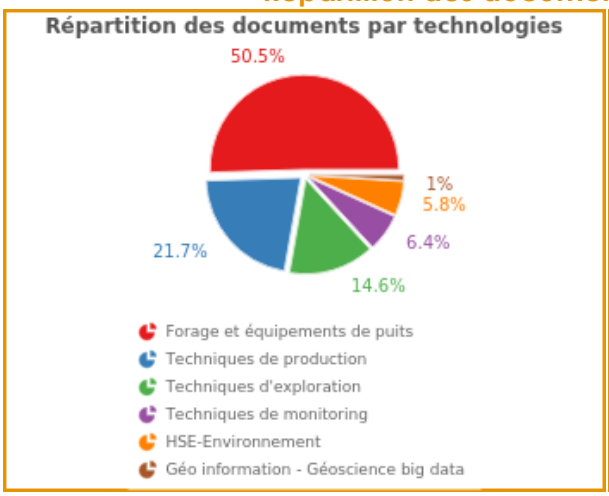
Répartition géographique des brevets et des publications scientifiques

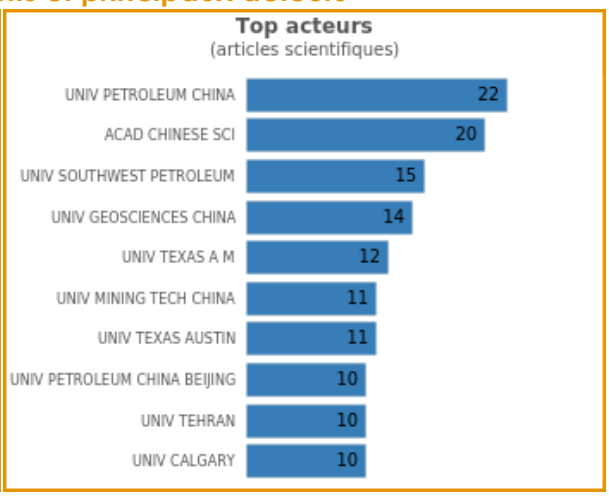
(Toutes thématiques du POLE AVENIA confondues, période Juin-Juillet 2017 : 2230 documents)



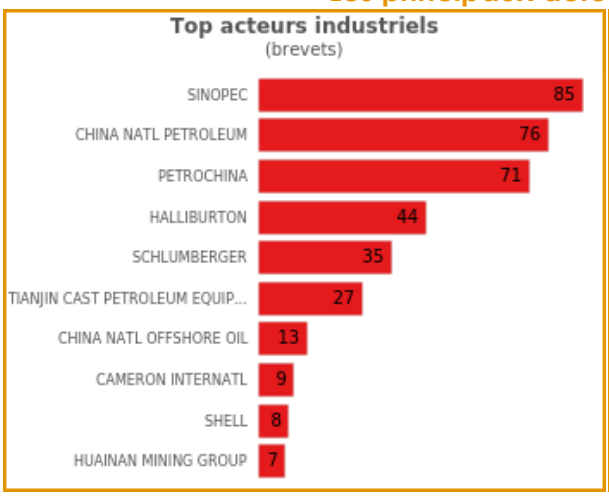


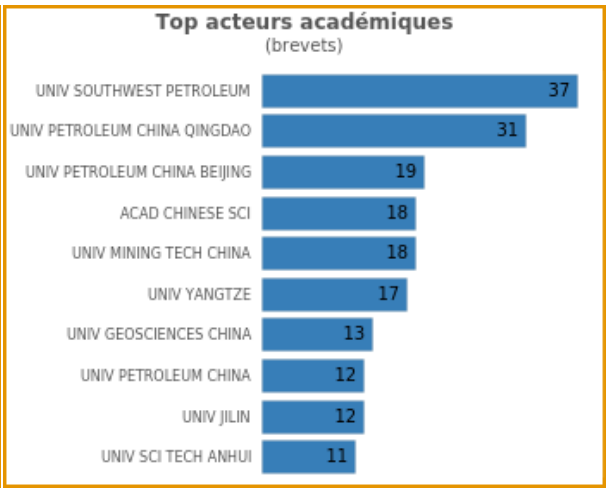
Répartition des documents et principaux acteurs





Les principaux acteurs dans les brevets





LES BREVETS

Géo information - Géoscience big data

27/06/2017 - CN106897843 **BASED ON THE INTERNET OF THINGS AND CLOUD COMPUTING SCHEDULING AND STORAGE AND TRANSPORTATION OF WASTE OIL RECOVERY MONITORING SYSTEM (MACHINE TRANSLATION)** - FENG YAN - The present invention relates to a method based on Internet of Things and cloud computing scheduling and transportation system to oil recycling monitoring via the Internet of the drums, tankers, storage tanks connected with cloud computing server to collect information through the Internet of Things transmitted to the cloud server for storage, processing and scheduling, and the information is displayed on the display screen according to...

18/05/2017 - CA2948884 **ADAPTIVE ENSEMBLE-BASED METHOD AND DEVICE FOR HIGHLY-NONLINEAR PROBLEMS** - CGG - Device, medium and method for generating an image of a subsurface of the earth. The method includes generating an ensemble of realizations (M) based on data related to the subsurface; applying an objective function (O) to members (m) of the ensemble of realizations (m) and corresponding estimated data to estimate a mismatch; selecting a best sensitivity matrix (G) from a plurality of sensitivity matrices associated with the objective function...

Techniques d'exploration

12/05/2017 - FR3043481 **GENERATION OF FAULT DISPLACEMENT VECTOR AND/OR FAULT DAMAGE ZONE IN SUBSURFACE FORMATION USING STRATIGRAPHIC FUNCTION** - GEOQUEST SYSTEMS (NETHERLANDS); SCHLUMBERGER (FRANCE) - A method, apparatus, and program product may model a subsurface formation by computing an iso-surface for an iso-value from a three-dimensional stratigraphic function (436) for a volume of interest in the subsurface formation, computing first and second strike traces (454, 456) following a topography of the computed iso- surface on respective first and second sides of a fault (452) in the volume of interest, extracting seismic data (458, 460)...

22/06/2017 - WO17105410 **SYSTEMS AND METHODS FOR SURFACE DETECTION OF ELECTROMAGNETIC SIGNALS FROM SUBSURFACE ENVIRONMENTS** - HALLIBURTON (USA) - Electromagnetic field monitoring methods and systems for obtaining data corresponding to subsurface rock formations. An electromagnetic field monitoring system includes an electromagnetic transmitter located downhole in a well bore and configured to radiate electromagnetic radiation into a subsurface formation; a fiber optic cable coupled with a fiber optic interrogator, the at least one fiber optic cable and the interrogator located at the...

22/06/2017 - US2017176639 **THERMAL MATURITY ESTIMATION VIA LOGS** - SCHLUMBERGER (FRANCE) - The systems and methods provided herein relate to extracting maturity-based properties from input log data obtained by a downhole well logging tool. A maturity inversion is performed using the input log data, a log response model, and at least one maturity model to extract maturity-based properties from the input log data. The maturity-based properties are provided in an output log, such that subsequent down hole operation of the formation may...

01/06/2017 - WO17091191 **FRACTURE MAPPING WITH AUTOMATED TEMPORAL ANALYSIS** - HALLIBURTON (USA) - An illustrative fracture mapping system includes: a data acquisition unit collecting measurements deformation measurements during a fluid injection phase of a hydro-fracturing operation; and a processing system implementing a formation mapping method. The formation mapping method includes: obtaining an initial fracture map having a location and geometry for one or more fractures activated during the fluid injection phase, the fracture…

04/05/2017 - US2017123097 **REAL-TIME TRUE RESISTIVITY ESTIMATION FOR LOGGING-WHILE-DRILLING TOOLS** - BAKER HUGHES (USA) - Systems, methods, and devices for evaluation of an earth formation intersected by a borehole using a logging tool. Methods include making EM measurements on a single logging run while drilling using an EM tool on a tool string in a substantially horizontally aligned section of the borehole at a plurality of borehole depths; estimating, at each of the plurality of borehole depths, a true resistivity of a volume of interest of the formation in...

Forage et équipements de puits

06/06/2017 - US9670732 **BATCH DRILLING USING MULTIPLE MUDLINE CLOSURE DEVICES** - CHEVRON (USA) - A method of offshore batch drilling includes attaching a first MCD to a high pressure wellhead of a first subsea well and attaching a second MCD to a high pressure wellhead of a second subsea well. The method further includes drilling a section of

the first subsea well to below a surface casing of the first subsea well through the first MCD. The method also includes drilling a section of the second subsea well to below a surface casing of the...

23/05/2017 - US9657561 **DOWNHOLE POWER CONVERSION AND MANAGEMENT USING A DYNAMICALLY VARIABLE DISPLACEMENT PUMP** - ISODRILL - A dynamically controllable variable displacement axial piston pump is described. In an embodiment, the pump comprises a rotating cylinder with hydraulic pistons that contact the face of a swash plate. The angle of the swash plate can be controlled to thereby control the movement of the pistons, the displacement of the pump, and the power generated by the pump.

22/06/2017 - US2017176228 **DRILLING FLUID LOSS RATE PREDICTION** - GEOQUEST SYSTEMS (NETHERLANDS); SCHLUMBERGER (FRANCE) - Methods, computing systems, and computer-readable media for predicting drilling fluid loss rate. The method includes obtaining data representing a drilling fluid loss rate from a first well while drilling the first well, and obtaining a mechanical earth model of a subterranean volume. The first well extends at least partially through the subterranean volume, and the mechanical earth model includes data representing formation strain in...

22/06/2017 - US2017176404 **METHOD AND RELATIVE SYSTEM FOR THE DETECTION AND QUANTIFICATION OF THE H2S IN DRILLING MUD** - GEOLOG - Method for the detection and quantification of the H 2 S which measures concentration of the H 2 S in the drilling mud including the steps of measurement of the initial concentrations of H 2 S in free form and of the hydrogen sulphide HS - and sulphide S 2- ion species, dissolved in the sample of mud; acidification of the sample of mud, to generate gaseous H 2 S, making the hydrogen sulphide (HS -) and sulphide (S 2-) ions dissolved…

22/06/2017 - WO17105418 **DATA TRANSMISSION ACROSS DOWNHOLE CONNECTIONS** - HALLIBURTON (USA) - Various embodiments include methods and systems structured to transmit data from downhole sensors to the surface at a well site. The transmission can be implemented to overcome downhole connections that can act as obstructions to direct electrical and optical communication in a wellbore. Electrical signals from one or more sensors in a sensor unit, located on a side of a downhole connection in a wellbore opposite the surface of the wellbore,...

08/06/2017 - US2017159369 **EARTH-BORING TOOLS INCLUDING SELECTIVELY ACTUATABLE CUTTING ELEMENTS AND RELATED METHODS** - BAKER HUGHES (USA) - Method of operating earth-boring tools may involve activating a selectively activatable hydraulic fracturing device secured to the earth-boring tool to impact an underlying earth formation with a fluid from the selectively activatable hydraulic fracturing device. A crack may be at least one of initiated or propagated in a portion of the underlying earth formation utilizing the fluid in response to activation of…

04/06/2017 - CA2913933 **WELL ABANDONMENT TOOL AND METHOD OF USE** - WINTERHAWK WELL ABANDONMENT - A tool is provided for use in closing and sealing the cased bore of a well to be abandoned. The tool is run into the bore, the tool having a stack of pleated rings slidably mounted on a tubular mandrel. The tool is engaged with the casing and a charge of hot asphaltic sealant is discharged from a conveyed container to flood the stack and tool annulus. The stack is compressed axially to partly flatten and radially expand the rings to...

18/05/2017 - US2017139076 **HYDROCARBON DETECTION IN OIL AND GAS WELLS USING FIBER OPTIC SENSING CABLES** - UNIV BOARD REGENTS TEXAS SYSTEM - Methods and systems that provide ways to detect the hydrocarbon flow while eliminating the hydrogen darkening effect in the downhole environment by separated strain and temperature measurement. The methods and systems use fiber optic sensing cables for real-time detection of hydrocarbon fluids (oil, gas, condensate or combination) in oil and gas wells, for example in cemented annuli between either a rock…

18/05/2017 - US2017137689 **ENVIRONMENTALLY FRIENDLY LUBRICANT FOR DRILLING PROCESSES** - EARTH LUBRICANTS - Yellow grease is an inexpensive, environmentally friendly commodity that can be used as a lubricant on oil drilling sites as well as for many other applications. The present invention outlines use of yellow grease and a lubricant on drilling sites.

Techniques de production

17/05/2017 - KR101736148 **GROUNDWATER INFLOW CONTROL VALVE EQUIPPED WITH A GEOTHERMAL WELLHOLE UPPER PROTECTIVE PIPE** - AHN KEUN OOK; GETTING JIKEI - Heat transfer rate control valve is provided in the groundwater well hole upper portion protective tube is disclosed. The groundwater water exchange rate control valve is provided in the heat well hole upper portion is inserted into the interior of the protective tube is a geothermal wells casing; and coupled to the top of the palace casing the discharge port on the side to form a porous protective tube; the geothermal heat hollow, is coupled...

29/06/2017 - WO17109553 **INJECTION RATE TUNING FOR OILFIELD OPERATIONS** - HALLIBURTON (USA) - Optimized enhanced oil recovery can include tuning of injection rates during a recovery operation. The injection rate of injection fluid pumped into a formation can be controlled to alternate between monotonically increasing and monotonically decreasing during the enhanced recovery operation. Injection rates can be monotonically increased to a maximum level (e.g., as defined by physical constraints of the system) and then monotonically...

22/06/2017 - US2017174978 **NANOPARTICLE DESIGN FOR ENHANCED OIL RECOVERY** - IBM (USA) - The present invention relates generally to hydrocarbon recovery, and more particularly, a method of designing a nanoparticle tailored to support hydrocarbon recovery in a subterranean formation, a method for using nanoparticles to extract hydrocarbon from a subterranean formation, and a nanoparticle structure. Embodiments may including determining environmental conditions of a subterranean formation, defining nanoparticle parameters based on...

08/06/2017 - US2017158945 **CONTROLLED RELEASE SOLID SCALE INHIBITORS** - ECOLAB USA (USA) - Compositions and methods of preparation and use for controlled release scale inhibitors used in hydraulic fracturing operations in oil and gas wells. The controlled release scale inhibitors comprise modified polyphosphate glasses having predetermined dissolution rates for controlled release of chemical inhibitors in induced hydraulic fractures in hydraulic fracturing treatment of oil and/or gas wells.

05/05/2017 - FR3043083 **AMPHIPHILIC BLOCK POLYMERS SOLUBLE IN STRONGLY SALINE MEDIUM** - RHODIA (FRANCE) - The present invention relates to the preparation of polymers that are of use in particular as a rheology agent, and are suitable for use in very concentrated saline media, which comprises a step of micellar radical polymerization in which are brought into contact, in an aqueous medium: - hydrophilic monomers; - hydrophobic monomers in the form of a micellar solution, containing micelles comprising these hydrophobic monomers; - a radical...

Techniques de monitoring

15/06/2017 - WO17099751 **JOINT MULTI-PHYSICS MONITORING OF PRODUCTION WELLS WITH FIBER OPTICS** - HALLIBURTON (USA) - A fiber optic distributed sensing system for installation within a wellbore is provided. The system includes a first set of downhole sensors having one or more nuclear sensors with nuclear field sensitivity. The system additionally includes, a second set of downhole sensors having one or more ElectroMagnetic (EM) sensors with electromagnetic field sensitivity. The fiber optic distributed sensing system also includes a processor system...

22/06/2017 - WO17105416 **LARGE AREA SEISMIC MONITORING USING FIBER OPTIC SENSING** - HALLIBURTON (USA) - A system and method for effective seismic monitoring of large area subsurface reservoirs, for instance, the system comprising: multiple electro acoustic technology assemblies comprising electrical seismic sensing elements, electronic circuits for converting the electrical seismic sensing signals to frequencies, amplification circuitry to amplify the frequencies, an acoustic source that converts the amplified frequencies to an acoustic frequency...

22/06/2017 - WO17105426 **REAL-TIME BOTTOM-HOLE FLOW MEASUREMENTS FOR HYDRAULIC FRACTURING WITH A DOPPLER SENSOR IN BRIDGE PLUG USING DAS COMMUNICATION** - HALLIBURTON (USA) - A system and method for obtaining real time down hole flow measurements and proppant concentrations between perforations and/or perforation clusters during hydraulic fracturing in multistage stimulated wells.

HSE-Environnement

11/05/2017 - US2017130575 **SMART SEAL METHODS AND SYSTEMS** - CAMERON INTERNATL (USA) - An apparatus for monitoring the condition of a seal, such as a seal in a blowout preventer or in another oilfield device, is provided. In one embodiment, the apparatus includes a blowout preventer including a seal and a blowout preventer seal-monitoring system that includes a sensor positioned within a body of the seal and a data analyzer. The data analyzer has a processor and is configured to monitor a condition of the seal through analysis of...

11/05/2017 - US2017129982 **SHORT-CHAIN FLUOROCARBON-GRAFTED ELASTOMER BLOWOUT PREVENTER PACKERS AND SEALS FOR ENHANCED H2S RESISTANCE** - HYDRIL USA (USA) - A packer unit to be used in an annular blowout preventer. The packer unit includes an elastomer body including a compound of a nitrile rubber base polymer having a polymer chain, and a quantity of fluorine atoms attached to the polymer chain. The compound includes between 50 and 60 percent of the nitrile elastomer, between 25 to 35 percent carbon black, and the rest includes other materials. The quantity of fluorine atoms comprises short-chain...

LES PUBLICATIONS SCIENTIFIQUES

Geo information - Geoscience big data

Simulation–Regression Approximations for Value of Information Analysis of Geophysical Data **- 2017 - Mathematical Geosciences** - CTR IBM T J WATSON RESEARCH (USA); DEPT MATHEMATICAL SCIENCES (NORWAY); UNIV STANFORD (USA) - Value of information analysis is useful for helping a decision maker evaluate the benefits of acquiring or processing additional data. Such analysis is particularly beneficial in the petroleum industry, where information gathering is costly and time-consuming. Furthermore, there are often abundant opportunities for discovering creative information gathering schemes, involving the type and location of geophysical measurements. A consistent...

Structuring an artificial intelligence based decision making tool for cyclic steam stimulation processes **- 2017 - Journal of Petroleum Science and Engineering** - DEPT ENERGY MINERAL ENGINEERING (USA) - Cyclic steam stimulation (CSS) is one of the more popular EOR techniques due to the existence of giant heavy oil reserves existing in different parts of the world. Numerical reservoir simulation plays a critical role in investigating the mechanisms and optimizing field development strategies of CSS processes. An artificial neural network (ANN) based model is considered to be a powerful subsidiary tool of high fidelity models for its fast...

Machine Learning of Mineralization-Related Geochemical Anomalies: A Review of Potential Methods **- 2017 - Natural Resources Research** - UNIV GEOSCIENCES CHINA (CHINA) - Research on processing geochemical data and identifying geochemical anomalies has made important progress in recent decades. Fractal/multi-fractal models, compositional data analysis, and machine learning (ML) are three widely used techniques in the field of geochemical data processing. In recent years, ML has been applied to model the complex and unknown multivariate geochemical distribution and extract meaningful elemental associations...

Intelligent tool to design drilling, spacer, cement slurry, and fracturing fluids by use of machine-learning algorithms **- 2017 - SPE Drilling and Completion** - RESERVOIR FOCUS (USA); SHELL (USA); UNIV TEXAS A M (USA) - Design of drilling fluids, spacers, cement slurries, and fracturing fluids is often done by trial and error in the laboratory. In the first step, the required properties of these fluids are categorized and then efforts will be started with a rough idea of the optimal composition. This first guess usually depends on the experience of the laboratory analyst or fluid engineer. Afterward, the trial-and-error testing starts, and it continues until...

Techniques d'exploration

Passive seismic reflection interferometry: A case study from the aquistore CO2 storage site, Saskatchewan, Canada **- 2017 - Geophysics** - GEOLOGICAL SURVEY CANADA (CANADA); UNIV DELFT TECH (NETHERLANDS) - Seismic reflection interferometry has recently been tested in a few resource-exploration applications. We have evaluated passive seismic interferometry results for data from the Aquistore CO2 storage site, Saskatchewan, Canada, with the objective of testing the method's ability to image the subsurface geology and its potential for time-lapse imaging. We analyzed passive seismic data recorded along two perpendicular geophone lines for two time...

Key technology development on the calibration system of rock mechanics parameters **- 2017 - Earth Science Frontiers** - PETROCHINA (CHINA); UNIV PEKING (CHINA) - The rock mechanics parameter modeling plays an important role in the researches of in situ stress modeling, sweet-spot prediction and well-network optimization. One of the most used methods, i.e., using conventional logging data to calculate the rock mechanical parameters combined with interpolation of geological statistics to establish the 3D model of rock mechanical parameters, ignores, to some...

Ambient noise tomography reveals upper crustal structure of Icelandic rifts **- 2017 - Earth and Planetary Science Letters** - UNIV CAMBRIDGE (UK) - The structure of oceanic spreading centres and subsurface melt distribution within newly formed crust is largely understood from marine seismic experiments. In Iceland, however, sub-aerial rift elevation allows both accurate surface mapping and the installation of large broadband seismic arrays. We present a study using ambient noise Rayleigh wave tomography to image the volcanic spreading centres across Iceland.

Wavefield analysis of crosswell seismic data **- 2017 - Arabian Journal of Geosciences** - UNIV ILORIN (NIGERIA); UNIV STANFORD (USA) - Despite the numerous advantages of crosswell seismic data over surface seismic data, crosswell seismic geophysics is still underutilized and underdeveloped. The factors limiting the full utilization of crosswell data include the lack of standardized methods for processing and imaging the data, crosswell data being not well understood. To improve the understanding of crosswell data, we performed acoustic and elastic modeling...

Forage et équipements de puits

Enhancing the rheological properties and shale inhibition behavior of water-based mud using nanosilica, multi-walled carbon nanotube, and graphene nanoplatelet **- 2017 - Egyptian Journal of Petroleum** - DEPT PETROLEUM NATURAL GAS ENGINEERING (PAKISTAN); UNIV SINDH (PAKISTAN); UNIV TEKNOLOGI MALAYSIA (MALAYSIA) - Five different drilling mud systems namely potassium chloride (KCl) as a basic mud, KCl/partial hydrolytic polyacrylamide (PHPA), KCl/graphene nanoplatelet (GNP), KCl/nanosilica and KCl/multi-walled carbon nano tube (MWCNT) were prepared and investigated for enhancement of rheological properties and shale inhibition. Nanoparticles were characterized in drilling mud using transmission electron microscope (TEM) analysis. Mineralogical analysis of...

Analysis and quantification of wellbore tortuosity **- 2017 - SPE Production and Operations** - GYRODATA (USA); SANDRIDGE ENERGY (USA) - Small-scale wellbore tortuosity-variations in attitude on a length scale smaller than standard survey intervals of 30 m (100 ft)-is generally neglected because of its small effect on the final position of the well and its unclear relation to traditional dogleg severity (DLS). However, it is well-known that such tortuosity may have significant influence on the drilling process and on drilling efficiency. Furthermore, it is a crucial factor for...

Polymer-Cement Composites with Self-Healing Ability for Geothermal and Fossil Energy Applications **- 2017 - Chemistry of Materials** - LAB NATL ENERGY TECH (USA); LAB NATL PACIFIC NORTHWEST (USA) - Sealing of wellbores in geothermal and tight oil/gas reservoirs by filling the annulus with cement is a well-established practice. Failure of the cement as a result of physical and/or chemical stress is a common problem with serious environmental and financial consequences. Numerous alternative cement blends have been proposed for the oil and gas industry. Most of these possess poor mechanical properties, or are not designed to work in high...

Analyzing wellbore stability in chemically-active anisotropic formations under thermal, hydraulic, mechanical and chemical loadings **- 2017 - Journal of Natural Gas Science and Engineering** - SAUDI ARAMCO (SAUDI ARABIA); UNIV NEW SOUTH WALES (AUSTRALIA) - Several factors influence the stress state in subsurface rocks. In addition to pore pressure and far-field in-situ stresses, thermal and chemical gradients have substantial bearings on the in-situ stress state during and after drilling operations. Drilling inclined boreholes through laminated formations such as shaley sands presents several challenges. Due to their laminated nature, shales demonstrate high degree of elastic anisotropy...

Cuttings transport modeling in underbalanced oil drilling operation using radial basis neural network **- 2017 - Egyptian Journal of Petroleum** - UNIV BIRJAND TECH (IRAN) - Underbalanced drilling is one of the drilling methods for better drilling according to its advantages. Cuttings transport effects on cost, time, and quality of oil/gas wells in drilling operation. Inefficient cleaning of wellbore may cause many drilling problems. Prediction and measuring of the cleaning efficiency in the wellbore annulus is a complex problem according to many effective factors.

Stochastic analysis of torsional drill-string vibrations considering the passage from a soft to a harder rock layer **- 2017 - Journal of the Brazilian Society of Mechanical Sciences and Engineering** - UNIV FED RIO JANEIRO (BRAZIL) - The drilling process is considered one of the most expensive and complex in the oil and gas industry. This paper is focused on the dynamics of a drill-string in which stick–slip oscillations can happen, reducing operational performance and increasing the costs. The main concern of this work is to analyze the consequences of a passage from a soft to a harder rock layer in the system response and how uncertainties influence this response. A one...

A compact single conductor transmission line launcher for telemetry in borehole drilling **- 2017 - IEEE Transactions on Geoscience and Remote Sensing** - UNIV MICHIGAN (USA) - A very compact and conformal launcher for single conductor transmission lines (SCTLs) at the HF-band is presented. Also the concept of using drill pipes as the conductor of SCTL is introduced for the first time to satisfy the need for cost-effective and real-time data communication in drilling process. It is shown that a TM surface wave can be launched effectively making use of the drilling mud...

Investigations on the surface well cement integrity induced by thermal cycles considering an improved overall transfer coefficient **- 2017 - Journal of Petroleum Science and Engineering** - UNIV OKLAHOMA (USA) - Wellbore cement is used as a mechanical and hydraulic barrier in order to support casing and to prevent vertical and horizontal fluid migration, making wellbore cementing jobs one of the most important operations in thermal recovery projects. Drilling high quality wells requires the use of high-performance drilling muds that can support and protect the wellbore during the drilling process. Drilling mud will create an internal and external...

Vibration characteristics analysis and experimental study of horizontal drill string with wellbore random friction force **- 2017 - Archive of Applied Mechanics** - UNIV SOUTHWEST JIAOTONG (CHINA); UNIV SOUTHWEST PETROLEUM (CHINA) -

For the nonlinear vibration of the drill string in the drilling process, vibration characteristics analysis and experimental study of the drill string are conducted, which are to analyze the drill string dynamic characteristics with wellbore random friction force on the basis of the horizontal well. Firstly, considering the wellbore random friction force, the analysis models of the drill string vibration and the drilling efficiency of the...

Polymer-Cement Composites with Self-Healing Ability for Geothermal and Fossil Energy Applications **- 2017 - Chemistry of Materials** - LAB NATL ENERGY TECH (USA); LAB NATL PACIFIC NORTHWEST (USA) - Sealing of wellbores in geothermal and tight oil/gas reservoirs by filling the annulus with cement is a well-established practice. Failure of the cement as a result of physical and/or chemical stress is a common problem with serious environmental and financial consequences. Numerous alternative cement blends have been proposed for the oil and gas industry. Most of these possess poor mechanical properties, or are not designed to work in high...

Techniques de production

Tuning Foam Parameters for Mobility Control using CO2 Foam: Field Application to Maximize Oil Recovery from a High Temperature High Salinity Layered Carbonate Reservoir **- 2017 - Energy and Fuels** - ABU DHABI NATL OIL (UNITED ARAB EMIRATES); CTR ADNOC TECHNICAL INNOVATION (UNITED ARAB EMIRATES) - This paper investigates the reduction in gas mobility during the EOR (enhanced oil recovery) process of gas injection due to the presence of foam, thereby increasing sweep efficiency. The presented work is focused on developing a systematic approach to tune the CO2 foam parameters based on two separate core flooding experiments, one conducted at variable foam qualities…

Heat extraction performance of EGS with heterogeneous reservoir: A numerical evaluation **- 2017 - International Journal of Heat and Mass Transfer** - ACAD CHINESE SCI (CHINA) - Strong heterogeneity does exist in engineered heat reservoirs of enhanced geothermal systems (EGSs) due to different rock formation, pre-existence of natural fractures and uncertainties associated with the stimulation processes. Exploring the influence of reservoir heterogeneity on EGS heat extraction is of considerable importance to predict and fully evaluate the performance of EGSs.

Computed-tomography-scan monitoring of foam-based chemical-enhanced-oil-recovery processes in fractured carbonate cores **- 2017 - SPE Journal** - IFP ENERGIES NOUVELLES (FRANCE); SOLVAY (BELGIUM) - Waterflooding is often inefficient in carbonate reservoirs because of the presence of fractures and unfavorable wettability. Oil recovery can be improved by enhancing the following drive mechanisms: • Capillary imbibition with wettability modifiers • Viscous drive by increasing the pressure gradient in the fracture network • Water/oil gravity drainage with low-interfacial-tension (IFT) surfactant formulations that also reduce oil trapping...

Research on microscopic oil displacement mechanism of CO2 EOR in extra-high water cut reservoirs **- 2017 - Journal of Petroleum Science and Engineering** - INST RESEARCH PETROLEUM EXPLORATION DEVELOPMENT (CHINA) - In China, CO2 EOR technology is mostly applied in small scale field test after water flooding. Microscopic mechanism of CO2 EOR at extra-high water cut stage is not clear to us. Based on the characteristics of residual oil after water flooding, three types of ideal core models were designed including dead-end model, shaped island model and cluster model. The microscopic experiments were carried out in high temperature high pressure...

Design, modeling, and evaluation of a doublet heat extraction model in enhanced geothermal systems **- 2017 - Renewable Energy** - LAB IDAHO NATL (USA); UNIV OKLAHOMA (USA) - A conceptual Enhanced Geothermal System (EGS) model, where water is circulated through a pair of parallel injection and production wells connected by a set of single large wing fractures, is designed, modeled, and evaluated in this work. The water circulation and heat extraction in the fractured reservoirs is modeled as a fully coupled process of fluid flow and heat transport. Using a newly developed, open-source, finite element based...

Polymers for enhanced oil recovery: fundamentals and selection criteria **- 2017 - Applied Microbiology and Biotechnology** - UNIV CENTRAL RAJASTHAN (INDIA) - With a rising population, the demand for energy has increased over the years. As per the projections, both fossil fuel and renewables will remain as major energy source (678 quadrillion BTU) till 2030 with fossil fuel contributing 78% of total energy consumption. Hence, attempts are continuously made to make fossil fuel production more sustainable and cheaper. From the past 40 years, polymer flooding...

A wellbore/formation-coupled heat-transfer model in deepwater drilling and its application in the prediction of hydrate-reservoir dissociation **- 2017 - SPE Journal** - UNIV CHINA PETROLEUM EAST CHINA (CHINA); UNIV OKLAHOMA (USA) - On the basis of the wellbore and reservoir heat-transfer process during deepwater drilling, a heat-transfer model between wellbore and formation is built up for two different conditions: without riser and with riser. Wellbore

and formation temperature distributions under different drilling-fluid-injection temperatures, flow rates, circulating times, and drilling depths are simulated by use of this model. Taking the hydrate-phase equilibrium...

Flow behaviours comparison of crude oil–polymer emulsions **- 2017 - International Journal of Ambient Energy** - UNIV CONCORDIA (CANADA); UNIV UNITED ARAB EMIRATES (UNITED ARAB EMIRATES) - The flow characteristics of crude oil–polymer (COPE) emulsions were investigated in terms of viscosity and shear stress. Two commonly used polymers in the enhanced oil recovery were employed. These two different polymers are Alcoflood and Xanthan gum. Rheostress RS100 was used in this study for measuring and analysing the experimental measurements. A cone and plate sensor of RS100 rheometer was utilised for this investigation. The...

Techniques de monitoring

Initial 4D seismic results after CO2 injection start-up at the aquistore storage site **- 2017 - Geophysics** - GEOLOGICAL SURVEY CANADA (CANADA); UNIV LEEDS (UK) - The first post-CO2-injection 3D time-lapse seismic survey was conducted at the Aquistore CO2 storage site in February 2016 using the same permanent array of buried geophones used for acquisition of three previous pre-CO2-injection surveys fromMarch 2012 to November 2013. By February 2016, 36 kilotons of CO2 have been injected within the reservoir between 3170 and 3370 m depth.

Fluid injection monitoring using electrical resistivity tomography — five years of CO2 injection at Ketzin, Germany **- 2017 - Geophysical Prospecting** - CTR GFZ GERMAN RESEARCH FOR GEOSCIENCES (GERMANY); INST GEOPHYSICS (CHINA); SINTEF (NORWAY); UNIV LEIPZIG (GERMANY) - Between the years 2008 and 2013, approximately 67 kilotons of CO2 have been injected at the Ketzin site, Germany. As part of the geophysical monitoring programme, time-lapse electrical resistivity tomography has been applied using crosshole and surface-downhole measurements of electrical resistivity tomography. The data collection of electrical resistivity tomography is partly based on...

Time-lapse electrical resistivity imaging of the thermally affected zone of a Borehole Thermal Energy Storage system near Torino (Northern Italy) **- 2017 - Journal of Applied Geophysics** - TECHGEA (ITALY); UNIV STUDI TORINO (ITALY) - A Borehole Thermal Energy Storage living lab was built up nearby Torino (Northern Italy). This living lab aims at testing the ability of the alluvial deposits of the north-western Po Plain to store the thermal energy collected by solar thermal panels and the efficiency of energy storage systems in this climatic context. Different monitoring approaches have been tested and analyzed since the start of the thermal injection in April 2014....

The Spanish National Earthquake Catalogue: Evolution, precision and completeness **- 2017 - Journal of Seismology** - UNIV ZARAGOZA (SPAIN) - This paper details the evolution, precision and completeness of the earthquake catalogue compiled by the Spanish National Geographic Institute. Over 100,000 earthquakes are included in this database, occurred in a region embracing Spain, Portugal, Morocco, Andorra and parts of France and Algeria. The catalogue has improved along time, thanks to the development of the seismic network and the upgrades of the routine data....

HSE-Environnement

Footprint, weathering, and persistence of synthetic-base drilling mud olefins in deep-sea sediments following the Deepwater Horizon disaster **- 2017 - Marine Pollution Bulletin** - NEWFIELDS ENVIRONMENTAL FORENSICS PRACTICE (USA); PAYNE ENVIRONMENTAL CONSULTANTS (USA) - Olefin-based synthetic-based drilling mud (SBM) was released into the Gulf of Mexico as a result of the Deepwater Horizon (DWH) disaster in 2010. We studied the composition of neat SBM and, using conventional GC-FID, the extent, concentration, and chemical character of SBM-derived olefins in > 3600 seafloor sediments collected in 2010/2011 and 2014. SBM-derived (C14–C20) olefins occurred...

Assessment of biodegradation and toxicity of drill-muds used in an onshore active field located in Edo State, Nigeria **- 2017 - Jordan Journal of Biological Sciences** - UNIV BENIN (NIGERIA) - The biodegradation and toxicity of two drill-muds used in an onshore oil field located in Edo State were examined. Biodegradation of drill-muds by two bacterial and fungal isolates; Citrobacter sp., Staphylococcus sp., Aspergillus sp. and Penicillium sp. were carried in a shake flask experiment using mineral salts medium at 120 rpm for 28 days.

Oil Based Drilling Fluid Waste: An Overview on Environmentally Persistent Pollutants **- 2017 - IOP Conference Series: Materials Science and Engineering** - UNIV ROBERT GORDON (UK) - Operational discharges of spent drilling fluid, produced water, and accumulated drill cuttings from oil and gas industry are a continuous point source of environmental pollution. To meet the strict environmental standard for waste disposal, oil and gas industry is facing a numerous challenges in technological development to ensure a clean and safe environment.