



## BULLETIN DE VEILLE GEOSCOPIE n°42 – 18 avril 2016

### Edito

Bonjour à tous,

Voici la troisième édition du bulletin de veille Géoscopie « nouvelle formule » où vous découvrirez les actualités et une sélection de brevets et publications scientifiques des deux derniers mois sur les axes marchés et thématiques technologiques du POLE AVENIA.

Toutes ces publications sont issues de la **base de données IP-Metrix/Géoscopie** mise en place en 2015 par le POLE AVENIA en tandem avec la société TKM, spécialisée en intelligence économique et veille technologique, selon une stratégie de recherche basée sur un jeu de plusieurs centaines de mots-clés liés aux géosciences et à l'ingénierie du sous-sol.

La base documentaire IP-Metrix/Géoscopie, qui contient déjà **plus de 20 000 entrées** classées dans les différentes rubriques filières, marchés et technologiques, est accessible à toute structure désireuse via un abonnement annuel dont le tarif est différencié entre adhérents et non adhérents au POLE AVENIA et selon le type de structure (laboratoires, PME, ETI & Grands groupes).

L'équipe du POLE AVENIA vous invite à lui remonter toute question ou jeu de mots-clés sur vos thématiques spécifiques pour tester le contenu de la base documentaire IP-Metrix/Géoscopie et apprécier l'intérêt d'un éventuel abonnement ou d'une éventuelle prestation en contactant [geoscopie@pole-avenia.com](mailto:geoscopie@pole-avenia.com).

Une manifestation consacrée à l'intelligence économique, avec démonstration de l'outil de veille IP-Metrix/Géoscopie sera par ailleurs organisé pendant la première quinzaine de juillet (date à confirmer).

Nous vous souhaitons une bonne lecture de ce nouveau bulletin!

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## ACTUALITES

### Les Géosciences en France

#### 18/03/2016 - Déchets nucléaires : ce qui se prépare 500 m sous terre près de Bure [\[source\]](#)

En 2006, il a été inscrit dans la loi française que le stockage géologique en profondeur constituait la meilleure solution pour gérer ces déchets « ultimes ». C'est près de Bure, dans la Meuse, que ce stockage doit avoir lieu à partir de 2025 dans le cadre du projet Cigéo.

#### 21/03/2016 - Jean-Louis Olivet, nouveau président d'AVENIA, qui dynamise les géosciences [\[source\]](#)

Il vient d'être élu président de ce pôle de compétitivité dédié aux géosciences, unique en France, et basé à Pau. Avec pour défi de tisser des liens entre deux mondes qui ne se parlent pas, celui du pétrole et des énergies renouvelables.

#### 22/03/2016 - Terres rares: quelle stratégie française ? [\[source\]](#)

Une étude publiée par l'IRIS (Institut de relations internationales et stratégiques) décrit les propriétés remarquables et les multiples applications des terres rares et pointe le fait que la France ne dispose pas à ce jour de stratégie opérationnelle propre aux terres rares.

#### 06/04/2016 - Gaz de schiste : ni cet excès d'honneur, ni cette indignité [\[source\]](#)

Le gaz de schiste est présenté par certains économistes comme une manne miraculeuse, tandis que certains écologistes y voient une menace de catastrophes majeures. L'arrivée fin mars en Norvège du premier bateau exportant du gaz de schiste américain en Europe devrait permettre de dépasser cette opposition caricaturale et de prendre en compte différentes dimensions du débat.

#### 26/02/2016 - Géodernergies lance ses premiers projets dédiés à une énergie sans carbone [\[source\]](#)

Créé en juillet 2015, le Groupement d'intérêt scientifique Géodernergies réunit industriels et organismes publics de recherche pour promouvoir une utilisation rationnelle et une gestion durable du sous-sol au service d'une énergie décarbonée, et l'émergence de filières consacrées. Les cinq premiers projets viennent de démarrer.

### Nouvelles des membres du pôle

#### 27/01/2016 – Antea Group finalise l'acquisition d'IRH Environnement [\[source\]](#)

C'est le rapprochement de deux acteurs bien connus de l'ingénierie qui vient de se conclure : le rachat d'IRH Environnement par Antea Group.

#### 05/02/2016 - IFPEN : les investissements en exploration-production et raffinage en 2015 [\[source\]](#)

La chute des cours a amplifié la baisse attendue des investissements en exploration-production (pétrole et gaz naturel) dans le monde qui ont diminué drastiquement de près de 140 milliards de dollars, atteignant un niveau de 539 milliards de dollars durant l'année 2015.

#### 26/02/2016 - Pétrole : en France, le producteur Vermilion reste rentable [\[source\]](#)

L'excédent de production de 2 millions de barils/jour, qui contribue à l'effondrement des cours du baril, divisés par 4 depuis l'été 2014, provoque une succession de mauvaises nouvelles dans le monde de l'exploitation pétrolière et chez ses sous-traitants. C'est la panique partout ou presque, car le Canadien Vermilion, premier producteur de pétrole brut en France, très présent en Aquitaine, garde son calme.

#### 26/02/2016 - Skills4Energy : Meetic des talents techniques [\[source\]](#)

Après un parcours professionnel dans les métiers de la maintenance pétrolière, Arthur Boivin a créé en mars 2015, à Pau, une société capable de répondre aux besoins en talents techniques des secteurs de l'énergie.

#### 25/03/2016 - Total dispose du plus puissant calculateur mondial de l'industrie [\[source\]](#)

La puissance de "Pangea", le calculateur du groupe énergétique Total, inauguré en 2013, a été multiplié par trois. Il est passé de 2,3 Pétaflops à 6,7 Pétaflops soit l'équivalent de plus de 80 000 ordinateurs portables.

#### Revue *Ingénieurs Géologues* : numéro spécial « Géologie et transition énergétique » [\[source\]](#)

### Marché de la géothermie

#### 30/01/2016 – Paris : le nouveau quartier Clichy Batignolles mise sur la géothermie [\[source\]](#)

Eau de Paris va forer un puits de quelque 700 mètres de profondeur, jusqu'à la nappe d'eau souterraine de l'Albien, présente dans une grande partie du bassin parisien et riche d'une eau à 28°Celsius. L'installation de géothermie permettra à la régie publique d'éviter l'émission de 4000 tonnes de Co2, soit l'équivalent de 15% de ses émissions annuelles de CO2.

#### 05/02/2016 - ENGIE exploitera le Réseau de chaleur géothermique de Dammarie-les-Lys [\[source\]](#)

La ville de Dammarie-les-Lys (Seine et Marne) a une nouvelle fois choisi ENGIE Réseaux, filiale d'ENGIE, pour l'exploitation de son réseau de chaleur, avec le projet de l'alimenter à près de 90 % en énergie géothermique.



## 24/03/2016 - Le Japon aide le Kenya à miser sur la géothermie [\[source\]](#)

Au Kenya, la Vallée du Rift dispose de l'une des plus grandes centrales géothermiques du monde. L'usine d'Olkaria est un projet inédit, mené par le Kenya et le Japon et destiné à fournir à un maximum de Kenyans une énergie renouvelable à bas coût.

## 26/02/2016 - Exergy wins European Geothermal Innovation Award 2016 [\[source\]](#)

Exergy was announced as the winner of the European Geothermal Innovation Award 2016 during the opening session of GeoTHERM exhibition and Congress in Offenburg, Germany. The award was given for the 2-pressure-level cycle on a single-disk turbine demonstrated in Denizli Tosunlar geothermal plant, Turkey.

## 29/01/2016 - 2016 Outlook: Future of Geothermal Industry Becoming Clearer [\[source\]](#)

With an installed global power capacity of 12.6 GW and growing, the year ahead for geothermal power production expansion has a positive outlook.

## Marché du stockage géologique

### 05/02/2016 - PHMSA issues advisory bulletin on underground gas storage facilities [\[source\]](#)

The US Pipeline and Hazardous Materials Safety Administration issued an advisory bulletin for natural gas storage facility operators. It urged them to closely monitor operations to identify the potential for leaks and failures caused by corrosion, chemical or mechanical damage, or other material deficiencies in piping, tubing, casing, valves, etc.

### 25/03/2016 - Pilot plant to turn CO2 into house parts and paving stones [\[source\]](#)

A pilot plant at the University of Newcastle near Sydney, Australia, will test the commercial potential of mineral carbonation. The plant will bind CO2 with crushed serpentinite rocks to create magnesium carbonate, which can be used to produce building and construction materials such as cement, paving stones and plasterboard.

## Techniques et technologies pour les géosciences

### 18/03/2016 - BSEE and Nasa join forces to reduce offshore drilling risks [\[source\]](#)

US-based Bureau of Safety and Environmental Enforcement (BSEE) and Nasa have signed a 5 year agreement that will allow BSEE to capitalise on the available risk management approaches from the aeronautics industry, and strengthen offshore worker and environmental protection on the Outer Continental Shelf.

### 15/02/2016 - Blackstone sets up fund for struggling offshore drillers [\[source\]](#)

Blackstone, one of the world's largest investment firms, has set up a fund to finance the troubled offshore drilling industry.

### 01/03/2016 - Technology keeps drilling industry alive for next upturn [\[source\]](#)

Technology transfer from other industries is making an impact on how the industry conducts its drilling operations, maintains safety and reduces risk. The next generation of drilling technology is already in development, preparing for the next upswing in oil and gas markets.

### 15/02/2016 - Monitoring systems help improve mooring integrity, performance [\[source\]](#)

Corrosion, wear, installation damage, flaws in manufacturing, material incompatibility, and even design errors can lead to degradation and deterioration that impact mooring system functionality and compromise safety.

### 15/02/2016 - Diamond Offshore and GE O&G enter into industry's first performance-based subsea blowout preventer service agreement [\[source\]](#)

Diamond Offshore Drilling, Inc. and GE Oil & Gas today announced the offshore drilling industry's first-of-its-kind contractual service agreement (CSA) that transfers full accountability for BOP performance to GE Oil and Gas. In this Pressure Control by the Hour™ model, Diamond Offshore will compensate GE Oil and Gas only when the BOP is available.

### 28/03/2016 - Earthquakes caused by fracking now included in USGS seismic risk maps [\[source\]](#)

Earthquakes caused by human activity will now be included in the U.S. Geological Survey's seismic risk maps, the agency said on Monday after a sharp rise in quakes linked to waste water disposal wells used by the oil and gas industry in Oklahoma.

### 29/01/2016 - Pennsylvania methane plan emphasizes best technology, leak detection [\[source\]](#)

Pennsylvania's government developed a four-point strategy to limit methane emissions from natural gas operations in the state. The plan would require the best available technology (BAT) on new well pads and more stringent leak detection and repair (LDAR) measures during exploration and development, processing, and transmission.

### 29/01/2016 - DNV: Six new technologies to be deployed in upstream O&G by 2025 [\[source\]](#)

The year 2025 will see an upstream O&G industry where technologies such as fully-automated drilling operations, autonomous inspection of pipelines and the rig-less plugging and abandonment of wells will be in operation. So says a new report by Norway's DNV GL – a technical consultant to the oil & gas, energy and maritime sectors



## AGENDA DU POLE AVENIA ET DE SES PARTENAIRES

Date	Événement	Lieu
9-12 mai 2016	<a href="#">10th CO2GeoNet Open Forum</a> on "CO2 STORAGE, the cornerstone of our low carbon future", conference and parallel workshops	Venise, Italie
18 mai 2016	<a href="#">OFFSHORE ONSHORE ENERGY DAY</a> , une journée de RDV d'affaires organisée par le cluster RACE	Lyon
6 juin 2016	<b>AG + Focus Adhérents du POLE AVENIA</b> , suivis de l' <b>inauguration</b> de l'incubateur/pépinière <b>GEOSTART</b>	Pau
7 juin 2016	<a href="#">RDV GEOSCIENCES</a> Journée de <b>Rendez-vous d'affaires internationaux</b> . Pays invité en 2016: la Norvège Organisé par le POLE AVENIA en partenariat avec le GEP-AFTP, l'AFPG, l'EGEC, le cluster RACE et l'Institut Carnot ISIFOR	Pau Palais Beaumont
19-24 septembre 2016	<a href="#">Journées de la Géothermie 2016</a> (organisation AFPG) & <a href="#">European Geothermal Congress 2016</a> (organisation EGEN)	Strasbourg, Palais des Congrès
25-29 septembre 2016	"Groundwater and society: 60 years of IAH" (International Association of Hydrogeologists) - <a href="#">43rd IAH International Congress</a>	Montpellier
4-6 octobre 2016	<a href="#">5ème Colloque Franco-Espagnol sur le Stockage du CO2</a> suivi d'un <b>colloque international sur la microfluidique appliquée aux milieux poreux</b> . Organisé par ICMCB, IPRA, BRGM, Club CO2 & POLE AVENIA	Bordeaux & St Emilion
12-14 octobre 2016	<b>JEMP2016</b> : <a href="#">13èmes Journées d'étude des Milieux Poreux</a> , organisées par l'IPRA (UPPA) et le FIC (French Interpore Chapter)	Anglet
24-28 octobre 2016	<b>RST2016</b> : 25ème édition des <a href="#">Rencontres des Sciences de la Terre</a> organisées par la Société Géologique de France (SGF) et le laboratoire M2C de l'université de Caen/Rouen	Caen

### COMMUNICATION DU POLE AVENIA



**GEOSTART**, premier projet d'incubateur/pépinière d'entreprises dédié aux géosciences en France. Un partenariat HELIOPARC /POLE AVENIA pour apporter une assistance pluridisciplinaire (marketing, finance, juridique, technologique et humaine) à la création de votre entreprise et faciliter l'accès au marché via le réseau du POLE AVENIA et le tissu d'acteurs spécialisés dans le domaine des géosciences et des technologies supports implantés à proximité. **Inauguration le 6 juin après l'AG + Focus Adhérents du POLE AVENIA.**

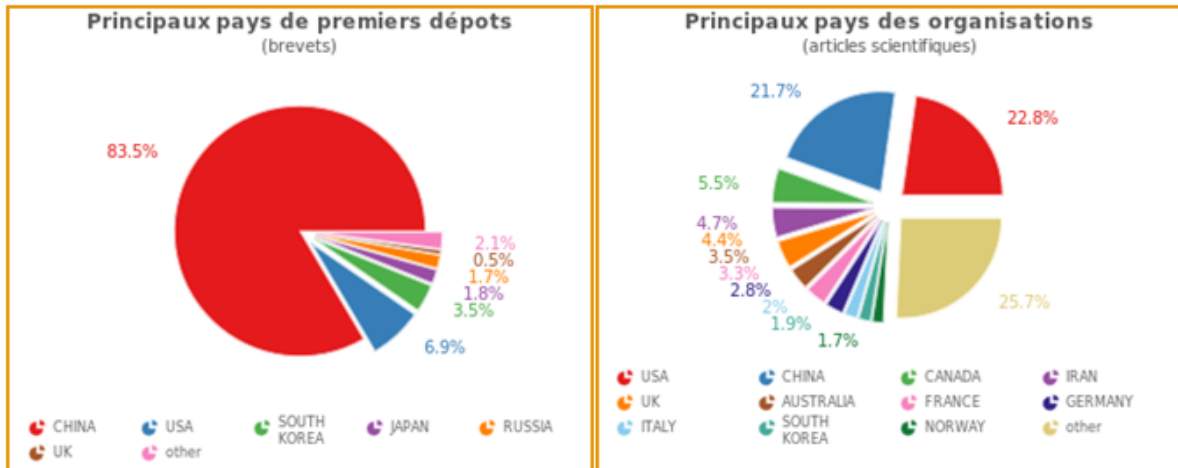


Le **7 juin** prochain au Palais Beaumont de Pau, le POLE AVENIA et CCI Aquitaine Réseau Entreprises Europe organisent les **RENDEZ-VOUS GEOSCIENCES 2016**. Rendez-vous incontournable des acteurs des domaines des géosciences, de l'énergie et de l'environnement, l'édition nationale 2015 avait rassemblé plus de 150 personnes et facilité plus de 500 rendez-vous. **En 2016, nos rendez-vous d'affaires deviennent internationaux, avec la Norvège comme pays invité.** Entreprises, structures d'accompagnement, laboratoires de R&D et établissements de formation : venez rencontrer vos homologues et futurs partenaires français et étrangers pour échanger sur vos compétences et besoins et démarrer de nouvelles coopérations ! [En savoir plus](#)

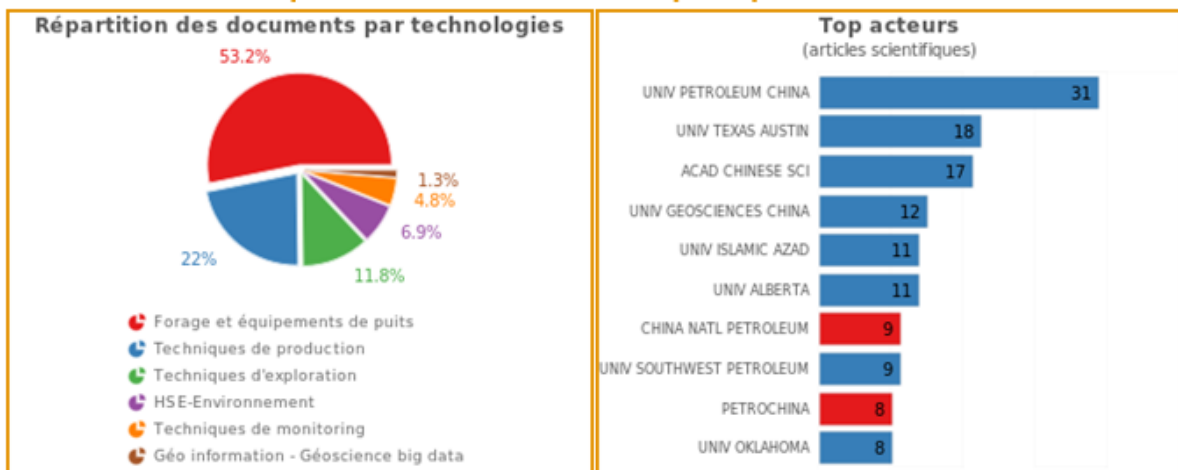


## TABLEAUX DE BORD DE L'ACTIVITE SCIENTIFIQUE ET TECHNIQUE

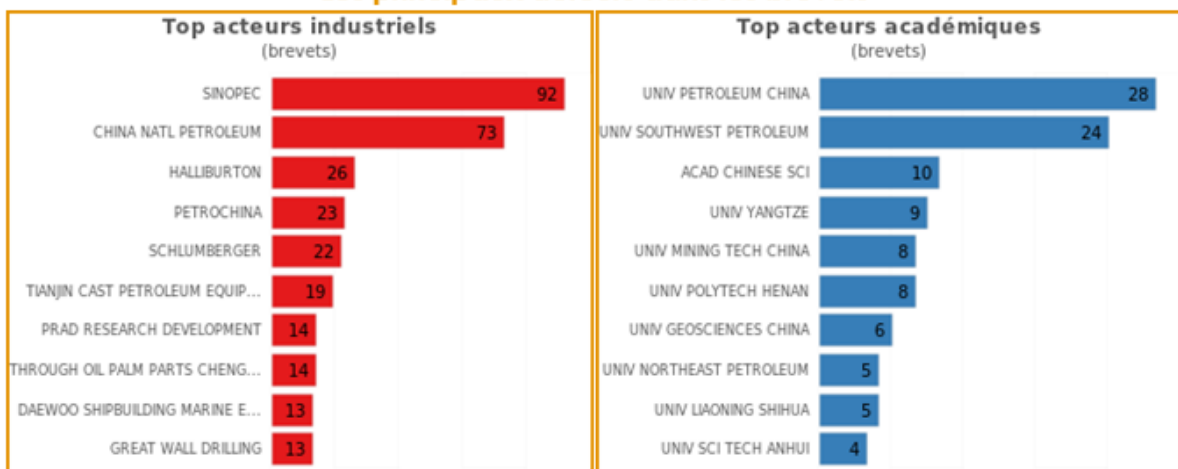
### Répartition géographique des brevets et des publications scientifiques



### Répartition des documents et principaux acteurs



### Les principaux acteurs dans les brevets





## LES BREVETS

### Géo information - Geoscience big data

**07/01/2016** - [WO16001750](#) **SEISMIC DATA PROCESSING USING MATCHING FILTER BASED COST FUNCTION OPTIMIZATION** - CCG (FRANCE) - A method for processing seismic data from a subsurface using least squares migration (100) or wave equation migration velocity analysis (200) over a cost function comprising a function of a matching filter by iteratively updating the reflectivity model velocity model to yield an updated reflectivity model...

### Techniques d'exploration du sous-sol

**18/02/2016** - [US2016047935](#) **SYSTEMS AND METHODS FOR ESTIMATION OF HYDROCARBON VOLUMES IN UNCONVENTIONAL FORMATIONS** - PRAD RESEARCH DEVELOPMENT (UK); SCHLUMBERGER (NETHERLANDS) A method includes obtaining a first set of well-logging data, via an NMR system, of a formation, and obtaining a second set of well-logging data, via a second well-logging system, of the formation.

**28/01/2016** - [WO16012191](#) **METHOD OF ADAPTIVE FILTERING OF MULTIPLE SEISMIC REFLECTIONS** - IFP ENERGIES NOUVELLES (FRANCE) - A method of decomposition is applied in order to decompose seismic data into a set of N components along N directions to eliminate the coherent noise arising from multiple seismic reflections. -

**28/01/2016** - [WO16012826](#) **SYSTEMS AND METHODS FOR ATTENUATING NOISE USING INTERFEROMETRIC ESTIMATION** - CCG (FRANCE) - Systems and methods are disclosed for attenuating noise during seismic acquisition. The method includes compiling a seismic data set from data received by a plurality of receivers.

**14/01/2016** - [WO16007808](#) **HORIZON CLEAN-UP** - LOGINED (NETHERLANDS); PRAD RESEARCH DEVELOPMENT (UK); SCHLUMBERGER (USA) - A method, apparatus, and program product clean seismic horizon interpretation data to better represent the geological form of the data, generally through the use of a combination of one or more computer-implemented algorithms indicative of data quality to assess the likely geological validity of the data.

### Forage et équipements de puits

**18/02/2016** - [US2016046853](#) **NAPHTHOL-BASED EPOXY RESIN ADDITIVES FOR USE IN WELL CEMENTING** - HALLIBURTON (USA) - Disclosed are methods and compositions for cementing in a subterranean formation. A method comprises introducing a resin composition into a wellbore. The resin composition may comprise a resin, a naphthol-based epoxy resin additive, and a hardening agent.

**18/02/2016** - [WO16023068](#) **MONITORING OF DRILLING PARAMETERS OF DRILLING OPERATIONS** - CTR RES DEEP EXPLORATION TECH COOPERATIVE (AUSTRALIA) - A device (40) for instrumenting a sub, such as a floating sub (10), or an instrumented sub/floating sub is disclosed e.g. for use in connecting drill tubes to drive device for a drilling operation. The sub is for use at the surface and not downhole. The device or instrumented sub has one or more sensors provided to measure at least one drilling parameter. Real or near real time measurement can be obtained.

**11/02/2016** - [US2016040526](#) **SYSTEM AND METHOD FOR COMMUNICATING COMPLEX DOWNHOLE INFORMATION** - NATL OILWELL VARCO (USA) - A system and method for communicating downhole information through a wellbore to a surface location includes a drill string with a downhole tool, a pump for flowing drilling mud through the drill string and wellbore, a valve for flow restriction of the drilling mud, a sensing module for measuring downhole conditions in first and second orientations of the downhole tool, an actuator between two static positions...

**11/02/2016** - [WO16022406](#) **METHODS FOR INHIBITING METAL CORROSION** - UNIV OHIO (USA) - A method of inhibiting corrosion of ferrous metals in oil and gas well drilling and production systems is provided. The method includes adding to the system an effective quantity of a volatile corrosion inhibiting (VCI) composition comprising a volatile thiol compound, such as 1-decanethiol, 1-dodecanthiol and 1- mercaptoundecanoic acid, where the VCI composition inhibits or minimizes corrosion.

### Techniques de production

**25/02/2016** - [US2016053597](#) **HYDRAULIC FRACTURING WHILE DRILLING AND/OR TRIPPING** - PRAD RESEARCH DEVELOPMENT (UK); SCHLUMBERGER (NETHERLANDS); SMITH INTERNATIONAL (USA) - A method for hydraulically



fracturing a subterranean formation may include rotating a drill string to drill the wellbore and hydraulically fracturing the subterranean formation at a plurality of axially spaced locations along the wellbore while tripping the drill string out of the wellbore.

**25/02/2016 - [WO16028464](#) STEAM FOAM METHODS FOR STEAM-ASSISTED GRAVITY DRAINAGE** - STEPAN (USA) - Methods for making efficient use of steam in a steam-assisted gravity drainage (SAGD) process for recovering heavy oils from tar sands and similar petroleum deposits are disclosed. The methods utilize a surfactant to generate steam foam in ways that maximize efficient use of steam.

**18/02/2016 - [US2016047218](#) METHOD OF FLASH-COOLING PRODUCED WATER AND HEATING STEAM GENERATOR FEEDWATER** - VEOLIA WATER TECH (FRANCE) - An oil recovery process where produced water is cooled through a flash vaporization process and the resulting vapor is utilized to heat steam generator feedwater.

**28/01/2016 - [US2016024374](#) FERROFLUIDS ABSORBED ON GRAPHENE/GRAPHENE OXIDE FOR EOR** - BAKER HUGHES (USA) - Magnetic materials, such as ferrofluids, are known to produce large amounts of heat per unit volume. Other magnetic materials include iron, iron oxide, iron carbide, iron nitride, cobalt-nickel alloy, iron-platinum alloy, cobalt-platinum alloy, iron-molybdenum alloy, iron-palladium alloy, cobalt ferrite, and combinations thereof.

**28/01/2016 - [WO16012764](#) A COMPRESSED AIR ENERGY STORAGE AND RECOVERY SYSTEM** - CONEY MICHAEL W SCHULTE VOLKER WAZNI KARIM; DEMETAIR SYSTEMS (CHINA) - A compressed air energy storage & recovery system involves at least two stages of compression & expansion and at least two stages of heat removal & restoration using heat exchangers and two different thermal fluids are used at different temperatures for heat transfer & storage.

**07/01/2016 - [US2016002044](#) HIGHLY DENSE NANO-CARBON FOAM WITH CONTROLLED POROSITY SYNTHESIZED FROM HOLLOW CARBON NANOPARTICLES** - UNIV SINGAPORE (SINGAPORE) - Hot pressing hollow carbon nanoparticles results in a nano-carbon foam that can be used for energy storage, carbon dioxide capture or water desalination.

### Techniques de monitoring

**11/02/2016 - [WO16020654](#) MONITORING OF RESERVOIRS USING A FIBRE OPTIC DISTRIBUTED ACOUSTIC SENSOR** - OPTASENSE (UK) - This application relates to the monitoring of reservoirs (201) within earth formations (202), for example hydrocarbon reservoirs or reservoirs for carbon sequestration, and especially to wide area seismic monitoring of such reservoirs using fibre optic distributed acoustic sensing (DAS) sensor. The DAS sensor has a sensing optical fibre (104) and an interrogator unit (106) for interrogating the sensing optical fibre to provide a plurality of...

**28/01/2016 - [WO16013936](#) FIBRE OPTIC CHEMICAL SENSOR** - TNO (NETHERLANDS) - An optical fibre chemical sensing device (1) comprising (i) a housing (5) comprising a porous wall (9), (ii) an optical fibre chemical sensor enclosed by the housing (5), which sensor comprises an optical fibre (3) comprising a responsive optical fibre portion (7) covered by a responsive coating (8) that responds to an interaction with an analyte, and (iii) a selective permeable substance (6) covering the optical fibre chemical sensor.

**06/01/2016 - [CN105223611](#) MICRO-SEISMIC MONITORING OF RESERVOIR FRACTURING 3D POINT SET OF LEADING EDGE, AREA AND VOLUME CALCULATION METHOD BASED ON** - SINOPEC (CHINA) - The present invention provides a method of determining the leading edge of the reservoir fracturing SRV, area SRA and fracturing the reservoir volume SRV reservoir fracturing method is calculated based on micro seismic monitoring for 3D point set.

### HSE-Environnement

**20/01/2016 - [CN204984333](#) COILED TUBING BLOWOUT PREVENTER** - UNIV PETROLEUM CHINA (CHINA) - When The utility model relates to a coiled tubing for the oil, with pressure from the lower pressure drilling with coiled tubing and, when used in coiled tubing workover blowout preventer. It uses the elastic deformation of the rubber seal is achieved wellbore annulus, meet coiled tubing under pressure from the drilling and drilling, workover requirements. Stud of the device will be connected to the upper body and lower body together, secure...

**06/01/2016 - [CN204939170](#) A SULFUR-CONTAINING GAS PRODUCED WATER TREATMENT SYSTEM** - SINOPEC (CHINA) - The utility model discloses a sour gas field produced water treatment system, including natural gas stripper, hydrogen sulfide stripping device integration, air desulfurization tower, the pre-evaporator, ammonia stripping device, multi-effect evaporator, electrolytic catalytic oxidation unit and the mold, the natural gas pipeline is connected to the column by the hydrogen sulfide stripping device, the integrated hydrogen sulfide stripping...



**11/02/2016 - [WO16022954](#) SYSTEMS AND METHODS FOR OFFSHORE DESALINATION AND/OR OIL RECOVERY** - PORIFERA (USA) - Separation systems are described that may include forward osmosis (FO) membranes for offshore desalination and sulfate removal. The system may use submerged FO elements (e.g. operating underwater in the ocean).

**30/10/2015 - [NZ621069](#) GAS LEAK PREVENTION DEVICE** - SANFREUND (JAPAN) - A gas leak prevention device comprises a fibre reinforced plastic (FRP) layer (21a-c) surrounding a pipe (20) that is used for gas. The FRP layer covers the outer periphery of the pipe to prevent a gas leak from occurring. Wire (22) is provided between the FRP layer and the pipe to space the FRP layer from the pipe.

## LES PUBLICATIONS SCIENTIFIQUES

### Géo information - Géoscience big data

[Machine learning in geosciences and remote sensing](#) - 2016 - **Geoscience Frontiers** - SECTION AEROSOL RADIATION (USA); UNIV MICHIGAN STATE (USA); UNIV TEXAS DALLAS (USA) - Machine learning (ML) is a subdivision of artificial intelligence based on the biological learning process. ML covers main domains such as data mining, difficult-to-program applications, and software applications.

[Full field reservoir modeling of shale assets using advanced data-driven analytics](#) - 2016 - **Geoscience Frontiers** - TEAM ASSET DEVELOPMENT (USA); UNIV WEST VIRGINIA (USA) - When applied to the prolific and hydrocarbon rich resource plays, our understanding of the complexities of the flow mechanism (sorption process and flow behavior in complex fracture systems - induced or natural) leaves much to be desired.

[A Probabilistic Approach for InSAR Time-Series Postprocessing](#) - 2016 - **IEEE Transactions on Geoscience and Remote Sensing** - UNIV DELFT TECH (NETHERLANDS) - Monitoring the kinematic behavior of enormous amounts of points and objects anywhere on Earth is now feasible on a weekly basis using radar interferometry from Earth-orbiting satellites.

[A time series analysis of oil production, rig count and crude oil price: Evidence from six U.S. oil producing regions](#) - 2016 - **Energy** - UNIV GEORGIA COLL STATE (USA); UNIV PIRAEUS (GREECE); UNIV TEXAS TECH (USA) - With oil company valuations tied in part to oil well drilling to replace reserves at a rate that exceeds production, understanding the dynamic relationship between the development of oil rigs and oil production is important. This study focuses on the Bakken, Eagle Ford, Haynesville, Marcellus, Niobrara, and Permian regions.

### Techniques d'exploration du sous-sol

[History matching and rate forecasting in unconventional oil reservoirs with an approximate analytical solution to the double-porosity model](#) - 2016 - **SPE Reservoir Evaluation and Engineering** - CHEVRON ENERGY TECH HOUSTON (USA); HESS (USA); UNIV KING ABDULLAH SCIENCE TECH SAUDI ARABIA (SAUDI ARABIA); UNIV TEXAS AUSTIN (USA) - Production data from most fractured horizontal wells in gas and liquid-rich unconventional reservoirs plot as straight lines with a one-half slope on a log-log plot of rate vs. time.

[Rock physics templates for integrated analysis of shales considering their mineralogy, organic matter and pore fluids](#) - 2016 - **Journal of Petroleum Science and Engineering** - INST MEXICANO PETROLEO (MEXICO) - Mudstones are characterized by considering their mineralogy, organic matter and pore fluids simultaneously by means of effective properties calculated using the self-consistent method.

[Ngatamariki Geothermal Field, New Zealand: Geology, geophysics, chemistry and conceptual model](#) - 2016 - **Geothermics** - GNS SCIENCE (NEW ZEALAND); MIGHTY RIVER POWER (NEW ZEALAND) - Ngatamariki Geothermal Field is the most recently developed field (2013) in the Taupo Volcanic Zone (TVZ) New Zealand for electricity generation. This paper summarises the geological, geophysical and chemistry findings of the last 30 years, and states the current knowledge and understanding of the field.

[Novel experimental/numerical approach to evaluate the permeability of cement-caprock systems](#) - 2016 - **International Journal of Greenhouse Gas Control** - GEOLOGICAL SURVEY DENMARK GREENLAND (DENMARK); SINTEF





(NORWAY) - This study presents a novel laboratory-scale experimental/numerical approach that contributes to our understanding of micro-annular flow paths in cement-caprock interfaces.

### Forage et équipements de puits

[A practical method of predicting calcium carbonate scale formation in well completions](#) - 2016 - **SPE Production and Operations** - CASSIDY CORROSION CONTROL (USA); CTR PETROBRAS RESEARCH (BRAZIL); WELLTEC (NORWAY) et al. Scale formation in downhole tubular-flow passages can cause partial to complete plugging that will affect production or injection rates adversely. To mitigate these problems, a method to predict the potential rate of scale formation under realistic conditions has been developed.

[An integrated approach to cement evaluation](#) - 2016 - **Oilfield Review** - DENVER (USA) - Cement sheath evaluation is enhanced when engineers consider cement evaluation logs in the context of events that took place during drilling and subsequent cement slurry placement. Such an integrated approach helps engineers confirm the presence of zonal isolation or determine why isolation has not been achieved.

[Integrated Oil-Field Management: From Well Placement and Planning to Production Scheduling](#) - 2016 - **Industrial and Engineering Chemistry Research** - UNIV ISLAMIC AZAD (IRAN); UNIV NATL SINGAPORE (SINGAPORE) - Integrated management involves holistic decisions on the order, placement, timing, capacities, and allocations of new well drillings and surface facilities such as manifolds, surface centers, and their interconnections, along with...

[CFD simulation of viscosity modifier effect on cutting transport by oil based drilling fluid in wellbore](#) - 2016 - **Journal of Natural Gas Science and Engineering** - UNIV SCI TECH IRAN (IRAN) - In this study particle transportation has been predicted in a wellbore for an oil based drilling fluid containing viscosity modifier using CFD simulation.

### Techniques de production

[Numerical study on variable thermophysical properties of heat transfer fluid affecting EGS heat extraction](#) - 2016 - **International Journal of Heat and Mass Transfer** - ACAD CHINESE SCI (CHINA) - Thermophysical properties of heat transfer fluid may experience significant changes during heat extraction process in EGS.

[Experimental research on hydraulic fracture propagation through mixed layers of shale, tight sand and coal seam](#) - 2016 - **Meitan Xuebao/Journal of the China Coal Society** - CHINA UNITED COALBED METHANE (CHINA); UNIV PETROLEUM CHINA (CHINA) - When multi-layers strata with shale gas, tight gas and coal bed gas are developed together, differential stress between interlayer, lithology difference, interfacial property and other factors have great impacts on hydraulic fracture geometry.

[Modeling non-Darcy flows in realistic pore-scale proppant geometries](#) - 2016 - **Computers and Geotechnics** - INST OIL GAS (POLAND); UNIV STATE OREGON (USA); UNIV WARSAW (POLAND) - In this paper we propose a computational approach combining microimaging data from X-ray computed microtomography, the simulations of flow at pore-scale, and an upscaling process to evaluate the effective permeability of proppant packs.

[Viscosity and stability of ultra-high internal phase CO<sub>2</sub>-in-water foams stabilized with surfactants and nanoparticles with or without polyelectrolytes](#) - 2016 - **Journal of Colloid and Interface Science** - UNIV CALGARY (CANADA); UNIV TEXAS AUSTIN (USA) - To date, relatively few examples of ultra-high internal phase supercritical CO<sub>2</sub>-in-water foams (or macroemulsions) have been observed, despite interest in applications including waterless hydraulic fracturing...

[Wettability alteration of oil-wet carbonate by silica nanofluid](#) - 2016 - **Journal of Colloid and Interface Science** - UNIV CURTIN (AUSTRALIA) - Changing oil-wet surfaces toward higher water wettability is of key importance in oil recovery. This includes petroleum recovery from fractured limestone reservoirs, which are typically mixed or oil-wet, resulting in poor productivity as conventional waterflooding techniques are inefficient.

[Effect of bedding planes, their orientation and clay depositions on effective re-injection of produced brine into clay rich deep sandstone formations: Implications for deep earth energy extraction](#) - 2016 - **Applied Energy** - UNIV MONASH (AUSTRALIA); UNIV MONASH VIC (AUSTRALIA) - All deep earth energy production methods are associated with huge wastewater (brine) production. Disposal of this brine has become a major challenge in the energy...



[Initiation and propagation of fracture shearing during hydraulic stimulation in enhanced geothermal system](#) - 2016 - **Geothermics** - UNIV NATL SEOUL (SOUTH KOREA) - This paper develops a generic model to estimate the location of shearing onset, the required pressure & the overall shearing growth direction during hydraulic stimulation in EGS.

## Techniques de monitoring

[Fiber laser sensors for micro seismic monitoring](#) - 2016 - **Measurement: Journal of the International Measurement Confederation** - ACAD CHINESE SCI (CHINA); CTR SECOND MONITORING (CHINA); INST GEOPHYSICS (CHINA) - Micro seismic monitoring technologies based on fiber laser sensors were introduced. Owing to the characteristics of narrow line width, low noise, fiber laser sensing can achieve high sensitivity and low system noise through some methods, such as enhance-sensitivity packaging, interferometric demodulation technology. With the advantages of small in size, resistant to high temperature and pressure, and easy to be wavelength division multiplexing,...

[Design and application of fiber Bragg grating \(FBG\) geophone for higher sensitivity and wider frequency range](#) - 2016 - **Measurement: Journal of the International Measurement Confederation** - ACAD SHANDONG SCIENCE (CHINA); FUSHAN SOUTH ROAD (CHINA); SHANDONG MICRO SENSOR PHOTONICS (CHINA) - The fiber Bragg grating geophone sensor with higher sensitivity and wider frequency range is reported.

[Geophysical monitoring of subsurface contamination in two-phase porous media](#) - 2016 - **Journal of Applied Geophysics** - BOULDER (USA); UNIV COLORADO (USA) - We have explored a new technology based on using low-frequency strain attenuation data to monitor the infiltration of contaminants into two-fluid phase porous materials.

[Microseismic monitoring of hydraulic-fracturing programs in the Cooper Basin, Australia](#) - 2016 - **Leading Edge** - SANTOS (AUSTRALIA) - In 2014, the Santos-operated Cooper Basin Joint Venture hydraulically fracture-stimulated 465 zones from tight-gas-sand and unconventional reservoirs. Microseismic monitoring technology was introduced to reduce the technical risk associated with frack programs through higher confidence in calibrated...

[Magnetotelluric monitoring of coal-seam gas and shale-gas resource development in Australia](#) - 2016 - **Leading Edge** - UNIV ADELAIDE (AUSTRALIA) - The magnetotelluric (MT) method is an alternative approach to monitoring hydraulic stimulations and depressurization. In contrast to microseismic, which delineates the locations of rock fractures, MT is sensitive directly to the presence of fluid as measured by the earth's bulk electrical resistivity...

## HSE-Environnement

[Oil and gas impacts on air quality in federal lands in the Bakken region: An overview of the Bakken Air Quality Study and first results](#) - 2016 - **Atmospheric Chemistry and Physics** - FORT COLLINS (USA); LAKEWOOD (USA); SERVICE NATL PARK (USA); UNIV STATE COLORADO (USA) - Concern about potential impacts of atmospheric emissions on federal lands prompted the National Park Service to sponsor the Bakken Air Quality Study over two winters in 2013-2014.

[CO2-mitigation options for the offshore oil and gas sector](#) - 2016 - **Applied Energy** - INST INTERNATIONAL RESEARCH STAVANGER (NORWAY); SCHOOL POLYTECH FEDERALE LAUSANNE (SWITZERLAND); UNIV TECHNICAL DENMARK (DENMARK) - The taxation of Co2 and methane emissions, in Norway, has encouraged the development of more energy-efficient and environmental-friendly solutions, of which three are assessed in this paper.

[Shale gas wastewater management under uncertainty](#) - 2016 - **Journal of Environmental Management** - LAB LOS ALAMOS NATL (USA); UNIV TEXAS AUSTIN (USA) - This work presents an optimization framework for evaluating different wastewater treatment/disposal options for water management during hydraulic fracturing (HF) operations, taking into account both cost-effectiveness and system uncertainty.

[Hydraulic fracturing chemicals reporting: Analysis of available data and recommendations for policymakers](#) - 2016 - **Energy Policy** - SCHOOL HARVARD LAW (USA); UNIV HARVARD (USA) - We used Linux and R version 3.2.0 to clean and analyze 96,449 forms submitted to the FracFocus registry submitted March 9, 2011 and April 13, 2015 for accuracy, completeness, and timeliness.

[Methane Emissions from Conventional and Unconventional Natural Gas Production Sites in the Marcellus Shale Basin](#) - 2016 - **Environmental Science and Technology** - UNIV CARNEGIE MELLON (USA) - In this study, we measured facility-level CH4 emissions rates from the NG production sector in the Marcellus region, and compared CH4 emissions between unconventional well pad sites and smaller and older "conventional" sites.