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## REPORTS AND PUBLICATIONS by David Banks.

### Lectures and Teaching

\* = lecture published in course/conference proceedings

\*\* = abstract published in conference proceedings

# = speaker(s).

#### 1990

**Banks, D. 1990.** A case study of screen failure and borehole rehabilitation in the Lower Greensand aquifer of southern England. **International conference on "Monitoring, maintainance and rehabilitation of water wells"**, 6-8/9/90, Cranfield, England.

#### 1991

\* **Banks, D. 1991.** Nasjonal registrering av spesialavfall i deponier og forurenset grunn [*National registration of hazardous waste in landfills and contaminated ground - in Norwegian*], **NIF (Norwegian Engineers' Organisation)-course "Miljøgeologi i praksis" ("Environmental geology in practice")**, 8.1.91, Norwegian Technical University, Trondheim.

**Banks, D. 1991.** Bioødeleggelse av brønner [*Biofouling of wells - in Norwegian*] **Trondheim hydrogeology seminar**, 22.4.91. NGU, Trondheim.

**Banks, D. 1991.** Bøhmisk hydrogeologi - en rapport fra den tsjekkiske republikk [*Bohemian hydrogeology - a report from the Czech republic - in Norwegian*], **National Hydrogeology Seminar**, 29.10.91. Grand Hotel Olav, Trondheim.

**Banks, D. 1991.** Grunnvannsressurser i fast fjell [*Groundwater resources in bedrock - in Norwegian*], **Norwegian Drillers' Association Annual Meeting**, NGU, Trondheim, 1991.

#### 1992

\*\* **Banks, D. 1992.** Permeability of fracture zones in a Precambrian granite. **20th Nordic Geological Winter Meeting**, Reykjavik, Iceland, Jan. 1992.

\* **Banks, D. 1992.** Groundwater pollution, an atypical European perspective. **IBC conference on Groundwater Pollution**, Café Royal, London, Feb. 1992. Invited lecture.

**Misund, A.# & Banks, D.# 1992.** Norwegian national mapping of groundwater resources and groundwater pollution threats. **International Symposium on Hydrogeological Mapping and Groundwater Monitoring in the Baltic States**. April 23-25, Palanga, Lithuania.

**Banks, D. 1992.** Englands største grunnvannsverk - 140.000 m<sup>3</sup>/d [*England's largest groundwater-works - 140,000 m<sup>3</sup>/d - in Norwegian*], **Trondheim hydrogeology seminar**, April 1992, NGU, Trondheim.

**Banks, D. 1992.** Grunnvannsressurser i fast fjell [*Groundwater resources in bedrock - in Norwegian*], **Municipalities of Nord-Trøndelag Groundwater Seminar**, Snåsa Hotel, Snåsa, Spring 1992.

\* **Misund, A.#, Banks, D.#, Storrø, G. & Sæther, O.M. 1992.** Groundwater contamination at Trandum and Sessvollmoen military facilities, Southeastern Norway. **Conference on "The Military and the Environment"**, Aug. 1992, Dombås, Norway.

**Banks, D.# & Odling, N.# 1992.** Modelling og visualisering av grunnvannsstrømning og forurensningstransport fra en avfallsfylling, Trandum, vha. MODFLOW [*Modelling and visualisation of groundwater flow and contaminant transport from Trandum landfill using MODFLOW - in Norwegian*]. **Seminar on hydrogeological modelling**, Inst. for Earth Sciences, NLH/JORDFORSK, 26/11/92, Ås, Norway.

**Banks, D.# & Odling, N. 1992.** Grunnvannsstrømning og forurensningstransport på Trandum, modelleringsaspekter [*Groundwater flow and contaminant transport at Trandum, modelling aspects - in Norwegian*]. **Scientific meeting for the "Environment underground" (Miljø i Grunnen) main project**, 3/12/92, Ås Hotell, Ås, Norway.

#### 1993

**Banks, D. 1993.** Den norske deponeringsfilosofien for lav- og middelsaktivt radioaktivt avfall -geologiske aspekter [*The Norwegian disposal philosophy for low- and medium-level radioactive waste, geological aspects - in Norwegian*]. **Public meeting**, Aurskog-Høland municipality, Jan. 1993.

\* **Banks, D.# & Misund, A.# 1993.** Kriterier og krav for deponering i løsmasser [*Criteria for landfilling in Quaternary sediments - in Norwegian*]. **NIF (Norwegian Engineers' Organisation)-course "Lagring og deponering av spesialavfall og produksjonsavfall"** ("Storage and landfilling of hazardous and industrial waste"), Jan. 1993, Norwegian Technical University, Trondheim. Invited lecture.

**Banks, D. 1993.** Bruk av isotoper i grunnvannssammenheng [*Use of isotopes in groundwater studies*]. **Short course "Use of isotopes in geology"**, organised by NGU. Technostallen, Trondheim, 21st April 1993.

**Banks, D. 1993.** Den norske deponeringsfilosofien for lav- og middelsaktivt radioaktivt avfall [*The Norwegian disposal philosophy for low- and medium-level radioactive waste - in Norwegian*]. **Trondheim seminar in hydrogeology and environmental geochemistry**, NGU, Trondheim, April 1993.

\* **Banks, D.#, Rohr-Torp, E. & Skarphagen, H. 1993.** Groundwater chemistry in a Precambrian island aquifer, Hvaler, Southeastern Norway. **24th Congress of International Assoc. Hydrogeologists**, June/July 1993, Ås, Norway.

\* **Banks, D.#, Rohr-Torp, E. & Skarphagen, H. 1993.** Groundwater resources in hard rock; experiences from the Hvaler study, Southeastern Norway. **24th Congress of International Assoc. Hydrogeologists**, June/July 1993, Ås, Norway.

\* **Banks, S.B.# & Banks, D. 1993.** Groundwater microbiology in Norwegian hard-rock aquifers. **24th Congress of International Assoc. Hydrogeologists**, June/July 1993, Ås, Norway.

\* **Ellingsen, K.# & Banks, D. 1993.** An introduction to groundwater in Norway - promotion and reconnaissance mapping. **24th Congress of International Assoc. Hydrogeologists**, June/July 1993, Ås, Norway.

\*\* **Banks, D. 1993.** Reconnaissance mapping of groundwater resources and contamination sources in Norway. **Ecological Hydrogeology of the Baltic area**, St. Petersburg, June 21-25, 1993.

**Banks, D. 1993.** Grunnvann [*Groundwater - in Norwegian*]. **National course in geology for teachers at teacher training colleges. 9th-13th August 1993**, NGU, Trondheim.

\*\* **Banks, D.# & Banks S.B. 1993.** Occurrence and upconcentration of heavy metals in bacterial biofilms in Norwegian hard rock aquifers. **Symposium on Subsurface Microbiology**, IBC, Bath, U.K., September 1993.

**Banks, D.# & Røyset, O. 1993.** Naturlige konsentrasjoner av sporelementer og radionuklider i grunnvann fra fast fjell [*Natural concentrations of trace elements and radionuclides in groundwater from hard rocks - in Norwegian*]. **3rd National Seminar in Hydrogeology and Environmental Geochemistry**, Lilletorget, Trondheim, 26. Oct. 1993.

#### 1994

**Banks, D.#, Davies, C., Davies, W. and Waters, A. 1994.** The Chalk of Southern England as a karstic aquifer. **Geological Society of London, Hydrogeology Group Meeting "Recent Research into Chalk Hydrogeology"**, Burlington House, London. July 1994.

**Banks, D. 1994.** The abandonment of Killingdal sulphide mine, Norway. A saga of radioactive waste disposal and acid mine drainage. **5th Congress of the International Minewater Association**, Nottingham, UK, 19-23 Sept. 1994.

#### 1995

**Banks, D. 1995.** Fool's Gold and Earth Blood - Acid Mine Drainage for Beginners. **Coalfields Communities Campaign Conference "Mine Drainage - A Poison Legacy"**, Royal Westminster Hotel, London, 21/2/95. Invited Lecture.

**Banks, D.#, Storrø, G. & Misund, A. 1995.** Investigation and remediation of fuel oil spills at Trandum and Sessvollmoen military bases, Øvre Romerike, Norway. **Geol. Soc. Hydrogeol. Group Meeting "Groundwater Remediation"**, University of Sheffield, 18th July 1995.

**Banks, D. 1995.** Mineral and bottled waters - a British perspective. **Forum on "Present and Expected Use of Natural Therapeutic Resources"**, Institute of Physical Medicine, Balneo-Climatology and Medical Rehabilitation, University of Bucharest, Romania, 7/9/95.

\*\* **Banks, D. 1995.** Groundwater protection in Great Britain. **Internat. Congress on Fundamental and Applied Problems of Environmental Protection**, Tomsk, Russia, 12-16/9/95.

\*\* **Banks, D. 1995.** The environmental impact of mine closure in the South Yorkshire and North Derbyshire coalfield, U.K. **Internat. Congress on Fundamental and Applied Problems of Environmental Protection**, Tomsk, Russia, 12-16/9/95.

#### 1996

**Banks, D. 1996.** Hydrochemical variation in groundwaters of the Millstone Grit and Coal Measures aquifers of South Yorkshire and North Derbyshire, UK. **Geol. Soc. Hydrogeol. Group Meeting "Groundwater Chemistry"**, Burlington House, London, 29th February 1996.

**Banks, D.#, Reimann, C., Skarphagen, H. & Watkins, D. 1996.** The comparative hydrochemistry of two granitic island aquifers: the Isles of Scilly, U.K. and the Hvaler Islands, Norway. **Geol. Soc. Hydrogeol. Group Meeting "Groundwater Chemistry"**, Burlington House, London, 29th February 1996.

\* **Banwart, S.A.#, Younger, P.L.#, Banks, D.#, Thornton, S.# & Jarvis, A.# 1996.** Mine waste and mine water pollution. **Short Course, University of Bradford / University of Newcastle**, Bradford University 25-27th March 1996.

\*\* **Banks, D.#, Burke, S.P. & Gray, C.G. 1996.** The hydrochemistry of coal mine drainage and other ochre waters in North Derbyshire and South Yorkshire, UK. **Geological Society Conference "Applied Geology"**, Warwick, 16th April 1996.

**Banks, D. 1996.** Acid tar pits: Geohazard or Site of Special Geological Interest ? (Contaminant migration from disposal of acid tar wastes in fractured Coal Measures strata, South Derbyshire.) . **Geological Society, Yorkshire Regional Group**, Sheffield University, 24th April 1996.

#### 1997

\***Banks, D.# & Nash, H. 1997.** The rise, fall and potential renaissance of the English spa town. **27th Annual Congress of the International Association of Hydrogeologists**, "Groundwater in the Urban Environment", Nottingham, UK, 21-27 September.

**Banks, D. 1997.** Radon i grunnvann. Korrelasjon med geografi, geologi og hydrokjemi [*Radon in groundwater: correlation with geography, geology and hydrochemistry*]. **Norsk Vannforening**, "Radon i Drikkevann: Forekomst og helsemessig betydning" [*Radon in drinking water: Occurrence and significance for health*]. Oslo, 17th November.

\*\***Banks, D. 1997.** Grunnvannskjemi - hver vannkilde et unikt fingeravtrykk [*Groundwater chemistry - every source has a unique fingerprint*]. **7th Seminar on Hydrogeology and Environmental Geochemistry**. NGU, Trondheim, 4th November. (Abstract printed in NGU rapport 97.150).

\***Banks, D.#, Baulins, L., Lacies, A., Sichovs, G. & Misund, A. 1997.** How to map hydrocarbon contamination of groundwater without analysing for organics. **NATO Advanced Resreach Workshop "Environmental Contamination and Remediation Practices at Former and Present Military Bases"**, ref. ENVIR.ARW970365, 12-17th Oktober, Vilnius, Lithuania.

#### 1998

**Banks, D. 1998.** An introduction to hydrogeochemistry. **Lecture to 1st year students**. Department of Dynamic Geology, Tomsk State University. March 1998.

\***Banks, D.#, Makarenko, N.A., Bukatin, I.V. & Berezovsky, A.Y. 1998.** Hidrogeokhimicheskie ossobennosti podzemnikh vod Shirinskovo raiona (Respublika Khakassia) [*Hydrogeochemical characteristics of groundwaters of the Shira region, Republic of Khakassia - in Russian*]. **Conference "Aktualynie voprosi geologii i geografii Sibiri"** [*Current issues of geology and geography of Siberia*], 1-4th April 1998, Tomsk State University, Russia.

\***Banks, D. 1998.** The hydrogeochemistry of granitic groundwaters - illustrated by a comparison from Khakassia (Shira region), Norway (Oslo region) and the United Kingdom (Scilly Isles). **2. Mezhdunarodnaya nauchnaya konferentsiya studentov i aspirantov i molodikh uchenikh im. akademika M.A. Usova, ' Problemi Geologii i Osvoeniya Nedr' [2nd International 'Academician M.A.Usov' Conference of Students, Aspirants and Young Scientists 'Problems of Geology and the Exploitation of the Earth's Interior']**. Tomsk Polytechnic University, 6-11 April 1998. Proceedings published in two hardback volumes (200 and 176 pp.) by Tomsk Izd-vo NTL (Nauchno-Tekhnicheskoi Literaturi), Tomsk 1998

#### 1999

\*\***Banks, D. 1999.** Hvordan å bruke og misbruke Darcy's lov [*How to use and abuse Darcy's Law - in Norwegian*]. **8th Seminar on Hydrogeology and Environmental Geochemistry**. NGU, Trondheim, 10th February, invited keynote lecture. (Abstract printed in NGU rapport 99.019).

\* **Younger, P.L.#, Banwart, S.A.#, Banks, D.#, Jarvis, A.#, Nuttall, C.# & Adams, R.# 1999.** Mine waste and mine water pollution. **Short Course, University of Newcastle / University of Sheffield / Nuwater Consultancy Services**. Mining Institute, Newcastle-upon-Tyne, 22-24th March 1999.

**Frengstad, B.# & Banks, D.# 1999.** Methods of presentation of chemical data from groundwater in Norwegian crystalline bedrock aquifers. **Conference "Sostoyanie i problemi monitoringa geologicheskoi sredi, geoekologicheskikh i gidrogeologicheskikh issledovaniy na territorii Sibiri i Urala [The state and problems of monitoring of the geosphere, geocological and hydrogeological researches on the territory of Siberia and the Urals]**. Sanatorium "Automobilist", Tomsk, Russia, 1st-4th June 1999.

\* **Banks, D. & Frengstad, B. 1999.** Diagnosis of incrustation and corrosion problems in groundwater wells using in-situ techniques. **International conference "Ecological, humanitarian and sporting aspects of underwater activity"**, Tomsk State University, Russia, 10th-11th September 1999 (written lecture only submitted).

**Banks, D.# & Frengstad, B. 1999.** The distribution of natural toxins in Norwegian crystalline bedrock groundwaters. **Conference "Current Research in Groundwater"**, Geological Society Hydrogeological Group, Burlington House, London, 6th July 1999.

\***Frengstad, B.#, Banks, D., Midtgård, Aa.K. & Siewers, U. 1999.** Distribution of selected trace elements (As, Be, Bi, Cd, Cr, Hg, Ni, Pb, Th, Tl, U, W) in 476 Norwegian crystalline bedrock groundwaters. **XXXI Congress of the International Association of Hydrogeologists**. Bratislava, Slovakia. 6th -10th September 1999.

\***Banks, S.B.# & Banks, D. 1999.** Abandoned mines drainage: impact assessment and mitigation of discharges from coal mines in the UK. **2nd British Geotechnical Society Geoenvironmental Engineering Conference**, 13th-15th September 1999, Institution of Civil Engineers, London.

**Banks, D. 1999.** Hidroquímica de las aguas de minas [Minewater hydrochemistry]. **Dames & Moore public lecture series**, Technical University of Oruro, Bolivia, 29th September 1999.

**Banks, D. 1999.** An introduction to environmental risk assessment. **Dames & Moore public lecture series**, Technical University of Oruro, Bolivia, 1st December 1999.

#### 2000

**\*\*Fregstad, B.#, Banks, D. & Siewers, U. 2000.** Element concentrations and pH relationships in drinking water from crystalline bedrock aquifers in Norway. **24th Nordic Geological Winter Meeting**, 6-9 January 2000, Trondheim, Norway.

**Banks, D.# & Holden, W.# 2000.** General presentation of Subproject 7 (Remediation of the San José mine - Hydrogeology). **Environmental, Industrial and Mining project (PMAIM), Public Workshop, Subprojects 6 & 7, Remediation of the San José Mine**, 20-21 January 2000, Oruro, Bolivia. Organised by Dames & Moore / COMIBOL.

**\*\*Fregstad, B. # & Banks, D. 2000.** PHREEQC-modelling of groundwater evolution in Egersund anorthosites. Are high pH, high Na and low Ca concentrations the result of silicate weathering or cation exchange? **9th Seminar on Hydrogeology and Environmental Geochemistry**, 9-10 February 2000, Trondheim, Norway.

**\*Banks, D.# 2000.** Mine water issues, with emphasis on coal mines - an introduction. **Short course "Environmental Geochemistry of ore deposits and mining activities"**, SARB Consulting, Göttingen, Germany, July 2000.

**\*Banks, D. #, Fregstad, B., Makarenko, N.A., Parnachev, V.P., Vishnevetskii, I.I. & Bulatov, A.A. 2000.** Ekogeokhimičeskije oboznenosti podzemnikh vod tsentral'noi chasti respubliki Khakassia [*Ecogeochemical aspects of groundwaters of the central part of the Republic of Khakassia*]. **Conference FPV 2000 (Fundamentalnie problemi vodi i vodnikh resursov na rubezhe 3. tisyacheletiya [Fundamental issues of water and water resources at the beginning of the 3rd Millennium])**, 3rd-7th September 2000, Tomsk, Russia.

**Banks, D. # 2000.** The hydrogeochemistry of Khakassia. **Lecture to students of Environmental Science, State University of Abakan**, Khakassia, Russian Federation, 6th September 2000.

**\*\*Haldorsen, S., Heim, M., Dale, B., Banks, D., Sletten, R., Swensen, B. & Salvigsen, O. 2000.** Arctic groundwater systems and their dependence on climatic change: examples from Svalbard (poster). **XVth International Congress of INQUA**, Durban, South Africa.

#### 2001

**\*,\*\*Banks, D.#, Holden, W., Aguilar, E., Mendez, C., Koller, D., Andia, Z., Rodriguez, J., Sæther, O.M., Torrico, A., Veneros, R. & Flores, J. 2001.** Risk assessment source characterisation of the San José mine, Oruro, Bolivia. **"Mine Water Hydrogeology and Geochemistry"**, **Joint Meeting of the Geological Society (Hydrogeology Group) and the Applied Mineralogy Society**, British Geological Survey, Keyworth, UK, 15th February 2001 (poster and oral presentation).

**\*Fregstad, B.#, Skrede, Aa.K., Krog, J.R., Strand, T., Lind, B. & Banks, D. 2001.** Radon in potable groundwater: examples from Norway. **International symposium "Natural Ionizing Radiation and Health"**, The Norwegian Academy of Science and Letters, Oslo, 5th - 6th June 2001.

**\*Banks, D.# 2001.** Mine water issues, with emphasis on coal mines - an introduction. **Short course "Environmental Geochemistry of ore deposits and mining activities"**, SARB Consulting, Kjeøy Course Centre, Lofoten, Norway, 17-19th June 2001.

**\*Fregstad, B.# & Banks, D. 2001.** The hydrochemistry of crystalline bedrock groundwater in Norway. **2nd workshop of the IAH Fennoscandian working group on hardrock hydrogeology**, NVE, Oslo, 14th - 16th August 2001.

**\*Banks, D.#, Haldorsen, S., Sletten, R.J., Heim, M., Swensen, B. & Dale, B. (2001).** The world's northernmost thermal springs: Bockfjorden, Svalbard. Geological setting and hydrogeochemistry. **International Association of Hydrogeologists' (IAH) XXXIst Annual Congress**, Munich, 10-14 Sept. 2001.

#### 2002

**\*Banks, D.#, Skarphagen, H., Wiltshire, R. & Jessop, C. (2002).** Mine water as a resource: space heating and cooling via use of heat pumps. **Conference "Mine water treatment: a decade of progress"**, Mining Institute, Newcastle, 12th Nov. 2002.

#### 2003

**\*Banks, D.# (2003).** The role of hydrogeology in rebuilding Afghanistan. (David Burdon Memorial Lecture); **International Association of Hydrogeologists Irish Chapter, Annual Conference "Groundwater and its Stakeholders"**, April 29th-30th, Tullamore, Ireland.

**\*Banks, D.# (2003).** Geochemical processes controlling minewater pollution. **2nd IMAGE-TRAIN Advanced Study Course**, 23rd-27th June 2003, Pécs, Hungary.

**\*Fregstad, B.# & Banks, D. (2003).** Groundwater chemistry related to depth of shallow crystalline bedrock boreholes in Norway. **International Association of Hydrogeologists' Conference "Groundwater in Fractured Rocks"**, 15th-19th September 2003, Prague, Czech Republic.

**Banks, D.# (2003).** Non-parametric statistics as a tool for the hydraulic and hydrogeochemical characterization of hard rock aquifers. **Geological Society, Hydrogeology Group Meeting, "Groundwater in Scotland – Moving Up a Gear"**, Stirling, Scotland, 12th November 2003.

#### 2004

**Banks, D. (2004).** An introduction to the hydrogeology of hard rock aquifers. Short course at for the Environment Agency, SW Region. Organised by Holymoore Consultancy in association with the EA. 8th – 12th March 2004, EA Offices, Exeter UK

#### 2005

**Banks, D. (2005).** An introduction to the hydrogeology of hard rock aquifers. Short course at for the Environment Agency. Organised by Holymoore Consultancy in association with the EA. 2nd – 4th March 2005, Lion Hotel, Shrewsbury, UK

**Banks, D. (2005).** An introduction to ground source heating and cooling. Short course at Dunston Innovation Centre, Chesterfield, Derbyshire. Organised by Holymoore Consultancy in association with GeoWarmth and JDIH. 21<sup>st</sup> October 2005.

**Banks, D. (2005).** Mine Water Sampling. **Coal Authority Training Workshop**, Mansfield, Nottinghamshire, 31<sup>st</sup> October 2005.

**Banks, D. (2005).** Mine Water Sampling. **Coal Authority Training Workshop**, Mines Rescue Station, Houghton-le-Spring, Co. Durham, 7<sup>th</sup> November 2005.

#### 2006

**Banks, D. (2006).** Mine Water Chemistry and Treatment. **Coal Authority Training Workshop**, Mansfield, Nottinghamshire, 26<sup>th</sup> January 2006.

**Banks, D. (2006).** An introduction to ground source heating and cooling. Short course at Lord Mayor Treloar College, Alton, Hants. Organised by Holymoore Consultancy in association with GeoWarmth and JDIH. 10<sup>th</sup> March 2006.

**Banks, D. (2006).** An introduction to ground source heating and cooling. Short course at for the Environment Agency. Organised by Holymoore Consultancy in association with JDIH. 4<sup>th</sup> April 2006, EA York Office.

**Banks, D. (2006).** An introduction to ground source heating and cooling. Short course at the Eco-Centre, Hebburn, Tyneside. Organised by Holymoore Consultancy in association with GeoWarmth and JDIH. 20<sup>th</sup> October 2006.

**Banks, D. (2006).** Ground Loops: Types and Suitability. **Meeting of the UK Ground Source Heat Pump Association, "Ground Source Heat Pumps: Dispelling the Myths"**, Flitwick, Bedfordshire, 15<sup>th</sup> November 2006.

**Banks, D. (2006).** Corso Breve di Termogeologia. Short course at the Biblioteca Nazionale Braidense, Milan, Italy. Organised by ESI (Italia) srl in association with Holymoore Consultancy. 29<sup>th</sup> November 2006.

#### 2007

**\*Banks, D.** Thermogeological assessment of open loop well doublet schemes - an analytical approach. **27th Annual Conference of the Irish Group of the IAH, 24<sup>th</sup>-25<sup>th</sup> April 2007, Tullamore, County Offaly, Ireland, International Association of Hydrogeologists, Irish Group.**

**Banks, D. (2007).** An introduction to ground source heating and cooling. Short course at Dunston Innovation Centre, Chesterfield. Organised by Holymoore Consultancy in association with GeoWarmth and JDIH. 11<sup>th</sup> May 2007.

**Banks, D. (2007).** The principles and practice of passive treatment of mine water. **Seminar on "Microbial Biogeochemistry"** (and field trip to Kuzbass), 20<sup>th</sup> August - 1<sup>st</sup> September 2007, Tomsk State University, Russia.

**\*Banks, D.#, Gzyl, G., Frolik A. & Rogoż, M. (2007).** Modelling and monitoring of mine water rebound in an abandoned coal mine complex: Siersza mine, Upper Silesian Coal Basin, Poland. **"Minewater pollution and remediation 2007"**, at Newcastle University 24<sup>th</sup> October 2007, organised by Newcastle University & Newzeeye.

**Banks, D. (2007).** An introduction to ground source heating and cooling. Short course at Dunston Innovation Centre, Chesterfield. Organised by Holymoore Consultancy in association with GeoWarmth Heat Pumps Ltd. and Carbon Zero Consulting. 2<sup>nd</sup> November 2007.

**\*\*Banks, D. (2007).** Subsurface heat flow: An introduction to thermogeology and the exploitation of ground source heat. **Meeting of the Hydrogeological Group of the Geological Society "Hydrogeology and Heat Engineering"**, Burlington House, London, 3<sup>rd</sup> December 2007.

**\*\*Gandy, C.J.#, Clarke, L.#, Banks, D. & Younger, P.L. (2007).** Predictive modelling of groundwater abstraction and artificial recharge of cooling water. **Meeting of the Hydrogeological Group of the Geological Society "Hydrogeology and Heat Engineering"**, Burlington House, London, 3<sup>rd</sup> December 2007.

#### 2008

**Banks, D. & Mitchell, R. (2008).** Borehole construction. Taught course for the Environment Agency, in association with Water Management Consultants and the University of the West of England. Bourneville, Birmingham, 8-9<sup>th</sup> January 2008.

**Banks, D. (2008).** Introduksjon Geo-energi – Varme og kjøling fra grunnen. Organised for the Geological Survey of Norway and International Association of Hydrogeologists (Norwegian Chapter). Knut S. Heier Conference Centre, Geological Survey of Norway, Trondheim, 10<sup>th</sup> March 2008.

**\*\*Banks, D. (2008).** Termogeologi – et nytt (og gammelt) fag; Framtiden for hydrogeologer? Keynote lecture: **17. Nasjonale Seminar om Hydrogeologi og Miljøgeokjemi.** Knut S. Heier Conference Centre, Geological Survey of Norway, Trondheim, 11<sup>th</sup> March 2008.

**Banks, D. (2008).** An introduction to ground source heating and cooling. Short course for the Environment Agency, organised by Holymoore Consultancy in association with Carbon Zero Consulting. 27<sup>th</sup> March 2008. Kingfisher House, Peterborough.

**Banks, D. (2008).** An introduction to ground source heating and cooling. Short course for Bosch Thermotechnology, organised by Holymoore Consultancy in association with Carbon Zero Consulting. 14<sup>th</sup> July 2008. Worcester.

**Banks, D. & Mitchell, R. (2008).** Borehole construction. Taught course for the Environment Agency, in association with Water Management Consultants and the University of the West of England. University of Warwick at Coventry, 21<sup>st</sup>-22<sup>nd</sup> July 2008.

**Banks, D. (2008).** An introduction to ground source heating and cooling. Short course for AWN Consulting by Holymoore Consultancy. 29<sup>th</sup> August 2008. Dublin, Ireland.

**Banks, D., Fraga Pumar, A. & Watson, I. (2008).** Existing open-loop minewater-sourced heat pump schemes in Scotland: factors for success and failure. Minewater '08 conference, 1<sup>st</sup>-2<sup>nd</sup> October 2008, Aachen (Germany)-Heerlen (Holland), organised by IBC Conferences Ltd. and the EU-funded Minewater Project.

**Banks, D. (2008).** Use of closed loops, ground water and mine water for ground source heating and cooling – selected case studies. Workshop on utilization of ground source heat, Technical University of Civil Engineering, Bucharest, Romania, 4/11/08.

**Banks, D. (2008).** Test pumping data, data usage and data chaos. JDIH seminar on Test Pumping. Castle Donington, 26/11/08.

## 2009

**Banks, D. (2009).** An introduction to ground source heating and cooling. Short course for the Environment Agency, Midlands Region, by Holymoore Consultancy. 24<sup>th</sup> February 2009, Birmingham, UK.

**Banks, D. (2009).** The thermogeological accumulator: ground source heating and cooling in the UK. Conference "*The heat beneath your feet: geothermal energy in the UK*". Royal Academy of Engineering, London, 8<sup>th</sup> April 2009 (invited lecture).

**\*\*Banks, D. (2009).** The Three Heads of the Well (Aestifer, Aquifer and Foundation). UK Groundwater Forum Conference "*Groundwater: A 2020 Vision – Challenges for the Future*". Natural History Museum, London, 14<sup>th</sup> May 2009.

**Banks, D. (2009).** Ground Source Heating / Cooling Systems: From conceptualization, through testing to sustainable design. Géotechnique Symposium in Print (SIP 2009) "*The Thermal Behaviour of the Ground*" at the Institution of Civil Engineers, London, 18<sup>th</sup> May 2009 (invited keynote lecture).

**\*Banks, D., Withers, J. & Freeborn, R. (2009).** An overview of the results of in-situ thermal response testing in the UK. **Proceedings Effstock 2009** - The 11<sup>th</sup> International Conference on Thermal Energy Storage for Efficiency and Sustainability, Stockholm, Sweden, June 14 - 17 2009.

**\*Todd, F. & Banks, D. (2009).** Modelling of a thermal plume in the Sherwood Sandstone: a case study in North Yorkshire, UK. **Proceedings Effstock 2009** - The 11<sup>th</sup> International Conference on Thermal Energy Storage for Efficiency and Sustainability, Stockholm, Sweden, June 14 - 17 2009.

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## 2011

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**\*\*Dodds, J.#, Banks, D., Clarke, L. (2011).** The use of wet restored mineral workings for energy recovery. Institute of Quarrying, Annual Conference 2011, 11<sup>th</sup> October 2011, Kenilworth, Warwickshire, UK.

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## 2012

**Banks, D.# (2012).** Minewater as an environmental heat source or sink: "Geothermal" heating and cooling. Seminar "Managing Risks and Exploiting Development and Resource Opportunities from Mines and Minewater", organised by Newzeve Ltd. at the British Geological Survey, Keyworth, Nottingham, 29<sup>th</sup> May 2012.

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**Banks, D.# (2012).** The heat beneath our feet: ground source heat pumps. British Science Festival (joint presentation with the British Geological Survey), Aberdeen, 6<sup>th</sup> September 2012.

**\*\*Fregstad, B.S.# & Banks, D. (2012).** Radon in groundwater from bedrock boreholes in Norway (revisited). Conference on 'Health & Hydrogeology: Understanding the Impact of Groundwater on People'. The Geological Society, London, 7<sup>th</sup> November 2012

**\*\*Banks, D.# (2012).** An introduction to thermogeology. Very low enthalpy ground source heating, cooling and thermal storage. 39<sup>th</sup> Course of the International School of Geophysics on "Understanding Geological Systems for Geothermal Energy"; Erice, Sicily, 25<sup>th</sup> September - 1<sup>st</sup> October, 2012.

**Banks, D.# (2012).** Needs and capacity assessment / Emergency water supply / Water quality and treatment. Norwegian Church Aid course on "Emergency water and sanitation training in use of Global Cluster WASH kits. WASH needs assessment and water quality assessment"; Wondo Genet, Ethiopia; 5<sup>th</sup>-8<sup>th</sup> December, 2012

**Banks, D.# (2012).** Thermogeological energy: Heat source? Or thermal accumulator in distributed energy networks of 21<sup>st</sup> century cities? Arduino Lecture, University of Padua, Italy, 13<sup>th</sup> December 2012. [**Abstract:** *The soils, rocks and groundwaters in the shallow subsurface have long been recognised as a potential source of space heating, via the use of the ground source heat pump to extract heat from the ground. The science of the occurrence and exploitation of shallow, low-enthalpy ground-source heat has been termed thermogeology and its fundamental concepts will be covered in this lecture. Increasingly, the value of the ground as a source of space-cooling, dehumidification and air-conditioning is also being emphasised. The most forward-thinking European nations recognise that the problem of "heat poverty" is somewhat illusory: most urban communities possess plenty of heat – indeed they contain many large commercial and industrial complexes who find it difficult to dispose of waste heat quickly enough in the summer. The problem that many cities face is that of "plenty of heat, but at the wrong time, and in the wrong place". This lecture will argue that the huge volumetric heat capacity of the ground and groundwater allows significant quantities of surplus heat or "coolth" to be stored from seasons of plenty to seasons of deficit. Regions of surplus heat can also be linked to loci of heat deficit via district heating and cooling systems or, conceivably, by groundwater flow pathways. Rather than thinking of the ground as a straightforward "source" of environmentally friendly heat, we can now regard the ground as a huge heat storage unit: a thermogeological accumulator that can be coupled into urban district heating and cooling networks.*]

## 2013

- Banks, D. (2013).** A Thermogeological Journey: 150 years on from Kelvin, 100 years on from Zoelly and 50 years from Sumner. *West Midlands Group of the Geological Society*; University of Wolverhampton, U.K., 14<sup>th</sup> May 2013.
- Banks, D. (2013).** Intermediate thermogeology: Ground loop design and simulation. *Short course for Mitsubishi Electric by Holymoor Consultancy*. 22<sup>nd</sup> May 2013. Hatfield, Hertfordshire, UK.
- Banks, D., Eqrar, N., Zarinkhail, S. and others (2013).** Planning and Implementation of Provincial Hydrogeological Surveys. *Short training course delivered 14th to 18th September 2013 at Ministry of Rural Rehabilitation and Development*, Darulaman, Kabul, Afghanistan.
- Banks, D. (2013).** An Introduction to International Hydrogeological Mapping. *Talk to Afghan Engineers' Association*, at Afghan Civil Society Building, Kabul, 17th September 2013.
- Banks, D. (2013).** Kelvin's dream: a journey in thermogeology. *Internal seminar, School of Engineering, University of Glasgow*, 27th September 2013.
- Banks, D. (2013).** Thermal energy from mine workings ("...making the red one green"). *GSHPA Technical Seminar*, Arup, London, 5th Dec 2013.

#### 2014

- Banks, D. & Hafskjold, B. (2014).** Water Testing Workshop. *Short course for IOCC (Lebanon) and GOPA (Syria)*, 27<sup>th</sup>-28<sup>th</sup> January 2014. Hotel Padova, Beirut, Lebanon.
- Banks, D. (2014).** Mines, Mine Water and Thermal Energy. *Short course for SUEK (Siberian Coal Energy Company) and Prospector by Holymoor Consultancy*. 24<sup>th</sup> April 2014. Dunston Innovation Centre, Chesterfield, UK.
- Banks, D. (2014).** Interpretation of Hydrochemical Data. *Short training course delivered 2<sup>nd</sup>-4<sup>th</sup> June 2014 at Ministry of Rural Rehabilitation and Development*, Darulaman, Kabul, Afghanistan.
- Banks, D., Eqrar, N., Zarinkhail, S. and others (2014).** Planning and Implementation of Provincial Hydrogeological Surveys. *Short training course delivered 7<sup>th</sup>-9<sup>th</sup> June 2014 at Ministry of Rural Rehabilitation and Development*, Darulaman, Kabul, Afghanistan.
- Reimann, C.#, Birke, M., Demetriades, A., Banks, D. and the EGG Project Team (2014).** A continental-scale survey of the geochemistry of bottled water. Invited keynote lecture, *MinWat2014 conference (International Multidisciplinary Conference on Mineral Waters)*, Karlovy Vary, Czech Republic, 9<sup>th</sup> September 2014.
- Frank, Y.#, Lukina, A., Kadnikov, V., Banks, D., Bukhtiyarova, P., Ravin, N.V. & Karnachuk, O. (2014).** Sampling of a deep hydrocarbon exploration well in Western Siberia reveals deeply branched bacterial phylotypes. *Proc. 10th International Congress on Extremophiles - "Extremophiles 2014"*, St. Petersburg, Russia, 7<sup>th</sup>-11<sup>th</sup> September 2014, Paper O60.

#### 2015

- Banks, D.#, Taylor, K. & Watson, I. (2015).** Temperature as a low cost tracer to evaluate residence times in an anthropogenic aquifer. *Joint Geological Society, Hydrogeology Group and British Hydrological Society Meeting "Instrumenting groundwater - Novel technologies for groundwater research"*, Priory Rooms, Birmingham, 21st April 2015.
- Banks, D.# (2015).** Groundwater mapping and management in England. *Afghanistan National Groundwater Conference*, Marmarine Palace, Kabul, Afghanistan, 7<sup>th</sup>-8<sup>th</sup> June 2015. Available from [http://www.norplan.af/DocumentsHGS/Nat\\_conference/Presentation/D1\\_Banks/Banks%20NORPLAN%20conference%20Lecture%201%20June%202015\\_slim.pdf](http://www.norplan.af/DocumentsHGS/Nat_conference/Presentation/D1_Banks/Banks%20NORPLAN%20conference%20Lecture%201%20June%202015_slim.pdf)
- Banks, D.# (2015).** Groundwater mapping in Faryab, Afghanistan: Overview. *Afghanistan National Groundwater Conference*, Marmarine Palace, Kabul, Afghanistan, 7<sup>th</sup>-8<sup>th</sup> June 2015. Available from [http://www.norplan.af/DocumentsHGS/Nat\\_conference/Presentation/D2\\_Banks/Banks%20NORPLAN%20conference%20Lecture%202%20June%202015\\_slim.pdf](http://www.norplan.af/DocumentsHGS/Nat_conference/Presentation/D2_Banks/Banks%20NORPLAN%20conference%20Lecture%202%20June%202015_slim.pdf)
- Banks, D.\*\*#, Abrar, N., Anwary, A.J., Jamaluddin, S., Poya, E.A., Safi, M.A., Eqrar, M.N., Jawid, A., Karimi, M.H., Saffi, M.H. & Watts, M. (2015).** The evolution of salinity and groundwater chemistry in an irrigated semi-desert environment, Faryab, northern Afghanistan. Abstract ID 220. *AQUA 2015. 42<sup>nd</sup> Congress of the International Association of Hydrogeologists, "Hydrogeology - Back to the Future"*, Rome, Italy, 14<sup>th</sup> September 2015. <https://www.aqua2015.com/oral.php?codice=220>, <https://www.researchgate.net/publication/284029741> *The evolution of salinity and groundwater chemistry in an irrigated semi-desert environment Faryab northern Afghanistan*. Abstract published in *Rendiconti Online Della Societa' Geologica Italiana* 39 (April 2016), Supplement 1. doi: [10.3301/ROL.2016.63](https://doi.org/10.3301/ROL.2016.63), p. 291.
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**Banks, D.# (2015).** Ochre and Iron Chemistry. *Internal training presentation for Envireau Ltd.*, Draycott, Derbyshire, 16<sup>th</sup> October 2015.

**Banks, D.# (2015).** Water Quality, with emphasis on inorganic chemistry. Keynote lecture, *Envireau Borehole User Conference*, Radisson Blu Hotel, East Midlands Airport. 28<sup>th</sup> October 2015.

**Banks, D.# (2015).** From damage limitation to hydrogeological mapping - 15 years of groundwater in Afghanistan. *East Midlands regional group of the Geological Society*, Derby University, 9<sup>th</sup> November 2015.

#### 2016

**Banks, D.\*\*.# (2016).** [Making the red one green - renewable heat from abandoned flooded mines](#). *Proceedings 36th Annual Groundwater Conference, International Association of Hydrogeologists, Irish Group. "Sustaining Ireland's Water Future: The Role of Groundwater"*, 12th-13th April 2016, Tullamore, Co. Offaly, Ireland, Session VI, Pages 1-9.

**Gzyl, G.#, Banks, D., Younger, P.L., Głodniok, M., Burnside, N., Garzon, B. & Skalny, A.\* (2016).** Low Carbon After-Life – overview and first results of project LoCAL. *International Mine Water Association (IMWA) Conference 2016, "Mining Meets Water – Conflicts and Solutions"*, 11th-15th July 2016, Leipzig, Germany

**Banks, D.# (2016).** [Heat from the Scottish underground: From Cullen's alcoholic experiments to Glasgow's Irn Bru](#). *Central Scotland Regional Group, Geological Society, Strathclyde University, Glasgow, 22<sup>nd</sup> November 2016*.

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#### 2017

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