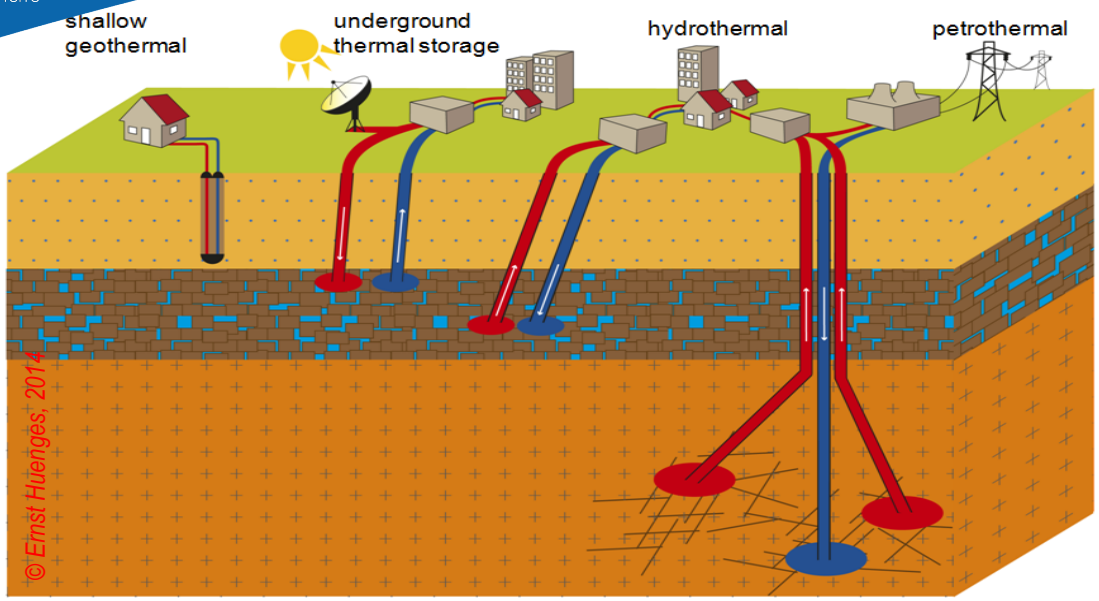
ISTerre
Institut des Sciences de la Terre

Grand Séminaire 2014



Geothermal energy systems: research perspective for domestic energy provision

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Geothermal energy has the capacity to contribute large amounts of base-load energy and to guarantee a safe and decentralized energy supply independent of imports while requiring only small surface areas and being poor on CO2-emissions and practically inexhaustible. So-called ''conventional'' geothermal plants exploiting hot hydrothermal reservoirs have long been a fully commercial contributor to the energy provision in favourable tectonic, often volcanic settings such as Iceland or Tuscany/Italy. The concept of Enhanced Geothermal Systems (EGS), however, is a much younger approach to use the thermal energy stored in Earth's crust in non-volcanic environments and thus offers an enormous untapped potential. The EGS concept—often linked to faulted areas—includes artificial improvement of the hydraulic performance of a reservoir with the goal to use it for an economical provision of heat or electric energy.

The presentation is focused on research demand for the environmental and economic sustainable utilization of geothermal reservoirs for base load supply of heat and electricity by Enhanced Geothermal Systems; additional emphasis is placed on the promotion of the underground storage of thermal energy. Solutions for minimizing the mining risk and for addressing challenges related to the successful development and to the safe operation of geothermal systems are proposed. This includes the development of new technology approaches and concepts for scientific monitoring of operational and environmental processes related to geothermal systems. In addition to thermal energy extraction from the subsurface, shallow and deep geothermal reservoirs can also serve as underground thermal energy storage systems. The large potential for medium and high temperature underground thermal energy storage systems remains to be further investigated and developed.

27 février 2014 à 11h

Salle de conférences d'ISTerre

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