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“MétéEau des nappes”, a tool able to show impacts of climate change on groundwater resource at local scale

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International conference Climate change & WATER 2018

February 5-7
Tours, France



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Deadline: July 15, 2017

Sent to: alexia.soussen@univ-tours.fr

Positioning of the proposal (several selections are possible):

OBJECTS	1•Water as a resource	2•Water in natural environments	3•Water in agriculture, aquaculture and agroforestry	4•Water in town and industry
THEMES				
1•The signals and indices at local scale	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2•Understanding the processes and forecasting	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3•Adaptations to climate change	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4•Managing, governing and strategies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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“MétéEau des nappes”, a tool able to show impacts of climate change on groundwater resource at local scale

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Keywords (5 max.):

6 case studies, modelisation, groundwater level forecasting, almost real-time data flows, interoperability

Type of communication (only one choice possible):

Oral Communication

Poster communication (A0, portrait)



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Abstract (500 words maximum):

In a climate change context, the availability of real time and forecast piezometric data is essential information for decision makers. Indeed, associated with threshold values (groundwater levels corresponding to different alert discharges values) those data can indicate if a crisis situation is expected, either drought or flooding episodes.

To meet societal expectations, BRGM (French geological survey) currently works on improving its national piezometric data network. Raw data from sensors are exposed in interoperable formats and services in accordance with international open standards for sensorWeb interoperability and European rules (INSPIRE directive guidance on the use of Observations & Measurements and OGC SWE - Sensor Web Enablement Framework).

The objective of the “MétéEau des Nappes” project is to deploy an interoperable communication tool able to cross data from different networks (meteorology, river flow, piezometric) in order to characterize in almost real-time groundwater quantitative state. A prototype of this tool was deployed on 6 case studies in 5 selected French regions with different hydrogeological characteristics and various issues (drought, flooding, or climate change).

Preliminary steps were to define case studies (watersheds) to select the representative piezometers and the corresponding measuring stations and, eventually to calibrate models that provide piezometric level forecasts. At the present stage, the tool shows maps giving the location of measuring stations and charts drawing the real time evolution of data compared to thresholds and model predictions. It also provides the model predictions as a Sensor Observation Service in addition to the raw data flows.

BRGM also contributes to the achievement of the national hydrological situation report (monthly evolution of water resource) on behalf of the French Ministry of Environment. Then the final step of the project is to integrate into the tool a map showing specified indicators of the groundwater state (evolution of water resources: rising, stable, decreasing) and trends (with Standard Piezometric Level Index).

Perspectives of the project are the implementation of data assimilation and automatic forecasting processes into the models.

Among the French stakeholders interested in the tool, we can include: Water agencies, decentralized services of ministries (DREAL, DDT), Regions and Departments, Association of Municipalities, Industrial water producers...