



1. Title

Special session on "Environmental Risk Management of Geologic Carbon Storage and An Introduction to the K-COSEM Research Center of Korea"

2. Type

Special Session

3. Organizer(s) & Convener

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4. Rationale

As the carbon capture and storage (CCS) is considered as an effective technology to significantly mitigate CO₂ emission to the atmosphere, many countries are conducting diverse-scale CCS projects to be developed toward safe and cost-effective, commercial CCS projects. However, unexpected leakage of geologically stored CO₂ may result in ecological and health risks. Thus, better schemes of environmental risk management should be carefully developed. In South Korea, the strategic research for the environmental risk management of geologic carbon storage has been launched with the inauguration of the K-COSEM Research Center at Korea University. The K-COSEM Research Center welcomes the international partnership for a few joint projects to expand the research under way on all aspects of risk management of geologic carbon storage.

5. Objectives

The aim of this special session is to discuss the importance and methods of environmental risk management of geologic carbon storage and to introduce the K-COSEM Research Center to bring international collaborations. The key messages of the session shall be:

- Ecological and health risks of the leakage of geologically stored CO₂
- Efficient monitoring of the leakage of CO₂ through soil and groundwater
- Integrated modeling of the risk of CO₂ leakage
- Introduction to the K-COSEM Research Center





6. Description

In the special session, we will discuss the following topics:

- Inauguration of K-COSEM (Korea CO₂ Storage Environmental Management) Research Center for geologic carbon storage in Korea: Our mission
- Effects of the CO₂ disturbance on soil ecosystems
- Current status and challenges of the measurement of soil CO₂ efflux in ecological studies
- Soil gas movement and VOC concentration change in unsaturated zone with fluctuating groundwater table: implication for CO₂ storage
- Origin and hydrochemistry of CO₂-rich groundwater: Implications for long-term environmental effects and monitoring of geologic CO₂ leakage
- Impact of near-surface heterogeneities on CO₂ leakage and the implication to the risk assessment

We also hope to discuss potential international collaboration on environmental risk management of geologic carbon storage.

