



# CCS-M

- a regional  
capacity  
building  
program on  
CCS

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**Coordinating Committee for Geoscience  
Programmes in East and Southeast Asia (CCOP)**

# CCOP CO<sub>2</sub> Storage Mapping Program (CCS-M)

**Goal:** To enable government organizations in the CCOP member countries to provide a high level overview of the potential for large-scale CO<sub>2</sub> storage.



# Participating Countries (**lead Agency**)

- ◆ Countries hosting **CCS-M** case studies: Indonesia (**LEMIGAS**), Malaysia (**PETRONAS**) and China (**SINOPEC**)
- ◆ Participants: Cambodia (**GDP-MIME**), Japan (**GSJ**), Korea (**KIGAM**), Myanmar (**MOGE**), Philippines (**DOE**), Thailand (**DMF**), Papua New Guinea (**DPE**), Thailand (**DMF**), Vietnam (**PETROVIETNAM**)
- ◆ Observer organization: Taiwan CCUS Association



# CCS-M Outcomes

**Form a consensus on the methodology**

**Enhanced capacity of member countries**

**Development of the Atlas of CO<sub>2</sub> Storage in the CCOP region**

**Facilitate the sharing of information – GIS & metadata system**

**Further collaboration – CCS & EOR potential, compatible capacity estimates, etc.**

**Guidelines for National CO<sub>2</sub> Storage Mapping**



# CCS-M Implementation

2013

- **Facilitation Phase (USD0.5 M from Global CCS Institute)**

- Training Courses & Seminars
- Development of Guidelines



2014 -  
2016

- **Case Study Phase (+ NOK5.0 M)**

- 3 Case Studies
- Storage mapping



2017

- **CCS Atlas Development**

- Integration of Storage Maps



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# CCS-M Guideline

- ◆ Status of CCS (current) – geological storage in CCOP member countries
- ◆ Methodology for CO<sub>2</sub> storage site characterization
  - Selection criteria
  - Screening process
  - Ranking of basin
- ◆ Methodology for estimation of storage capacity

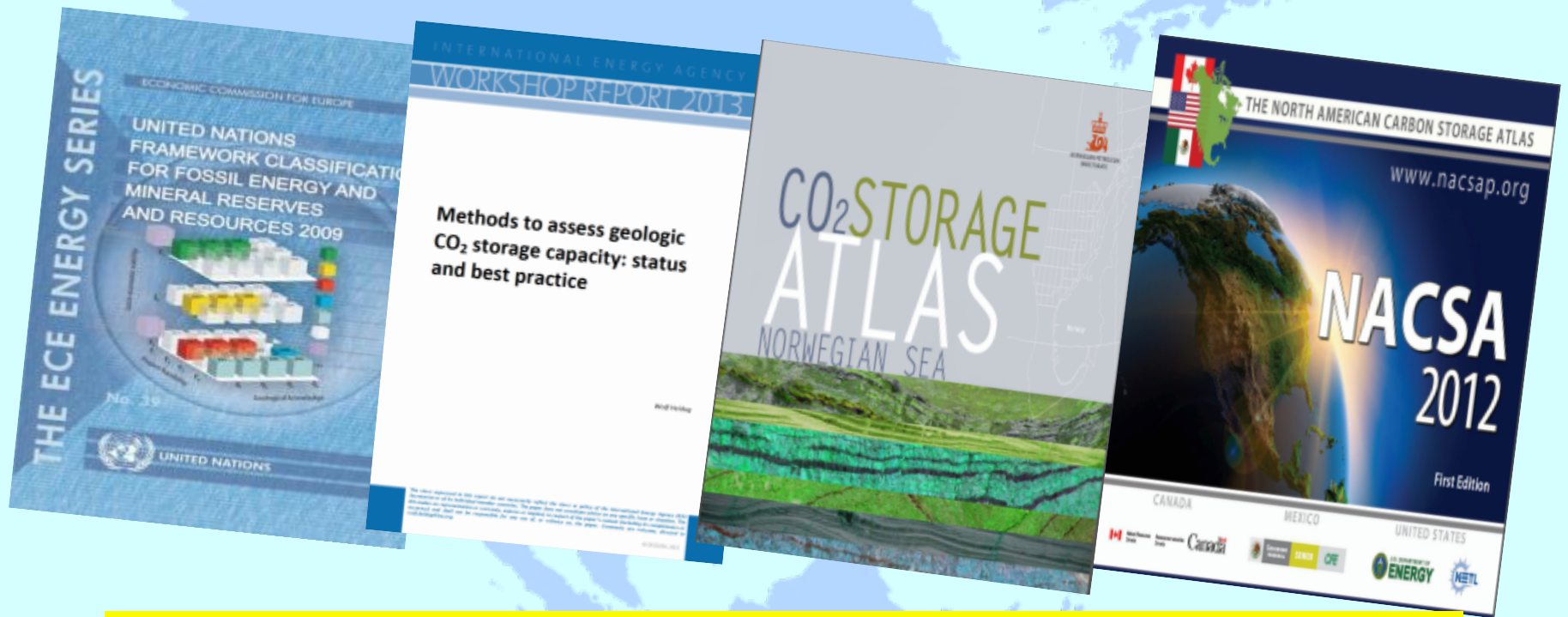
## CCOP CO<sub>2</sub> Storage Mapping Program (CCS-M)

CCOP Technical Secretariat - June 25, 2014

CCOP Guideline on the Methodologies for Selecting Geological Carbon Dioxide (CO<sub>2</sub>) Storage and Estimation of Storage Capacities



# Alignment to International standards and practices



CCOP also actively participates in the UNFC expert group as Bureau & Task Force (for injection projects) members



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# http://ccop.or.th/ccsm/



**CCS-M**

CCOP CO<sub>2</sub> Storage  
Mapping Program

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Last Modified on March 29, 2016

SEARCH

April 2016

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COORDINATING COMMITTEE FOR GEOSCIENCE  
PROGRAMMES IN EAST AND SOUTHEAST ASIA  
(CCOP)



CCS-M National coordinators at the CCOP Technical Secretariat in Bangkok

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### Welcome to the CCS-M homepage

The CCOP CO<sub>2</sub> Storage Mapping Program or **CCS-M** is a 4-year capacity building Program on CCS to benefit the Member Countries of CCOP. Here, you will find the latest information about the **CCS-M**, the 3 CCS mapping Case Studies, workshops under each Case Study, training



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# THANK YOU!

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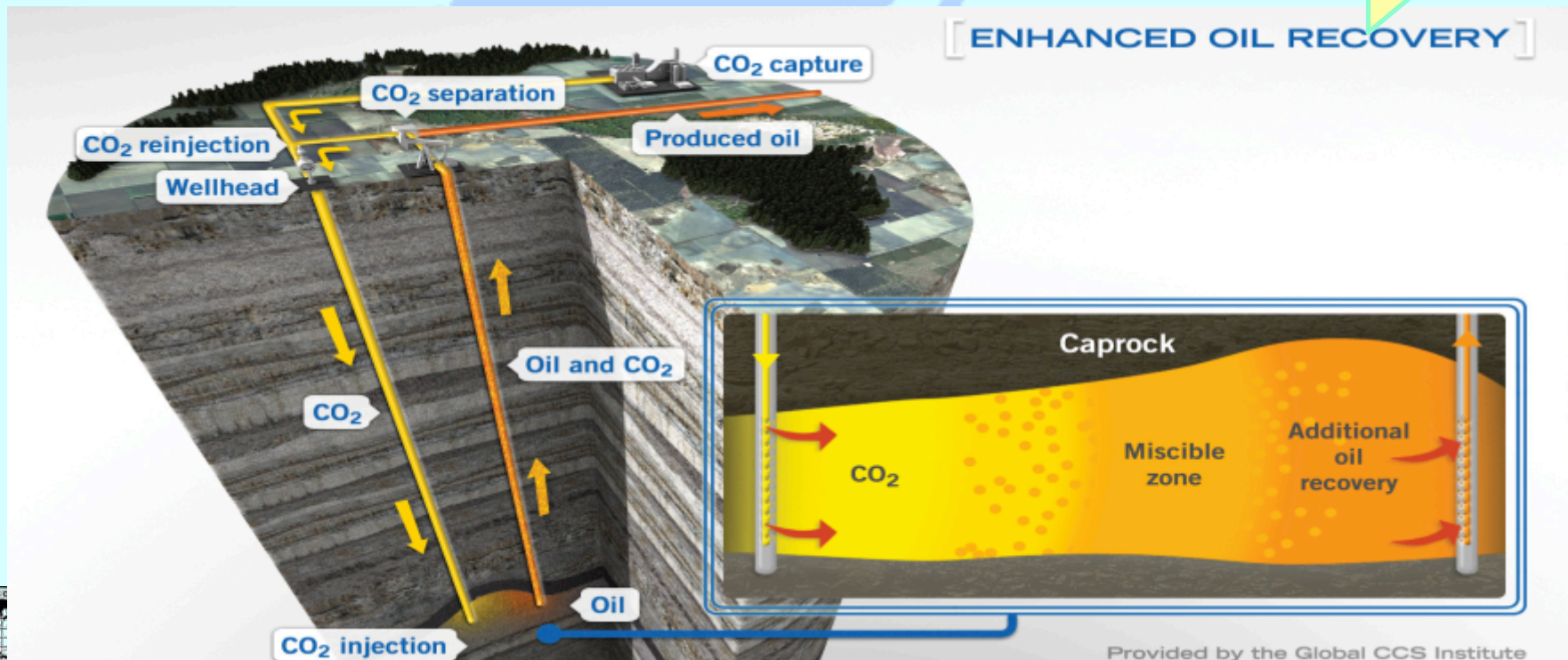
- ❖ *Goals & Expected Outcomes*
- ❖ *Work plan, Alignments and Summary*



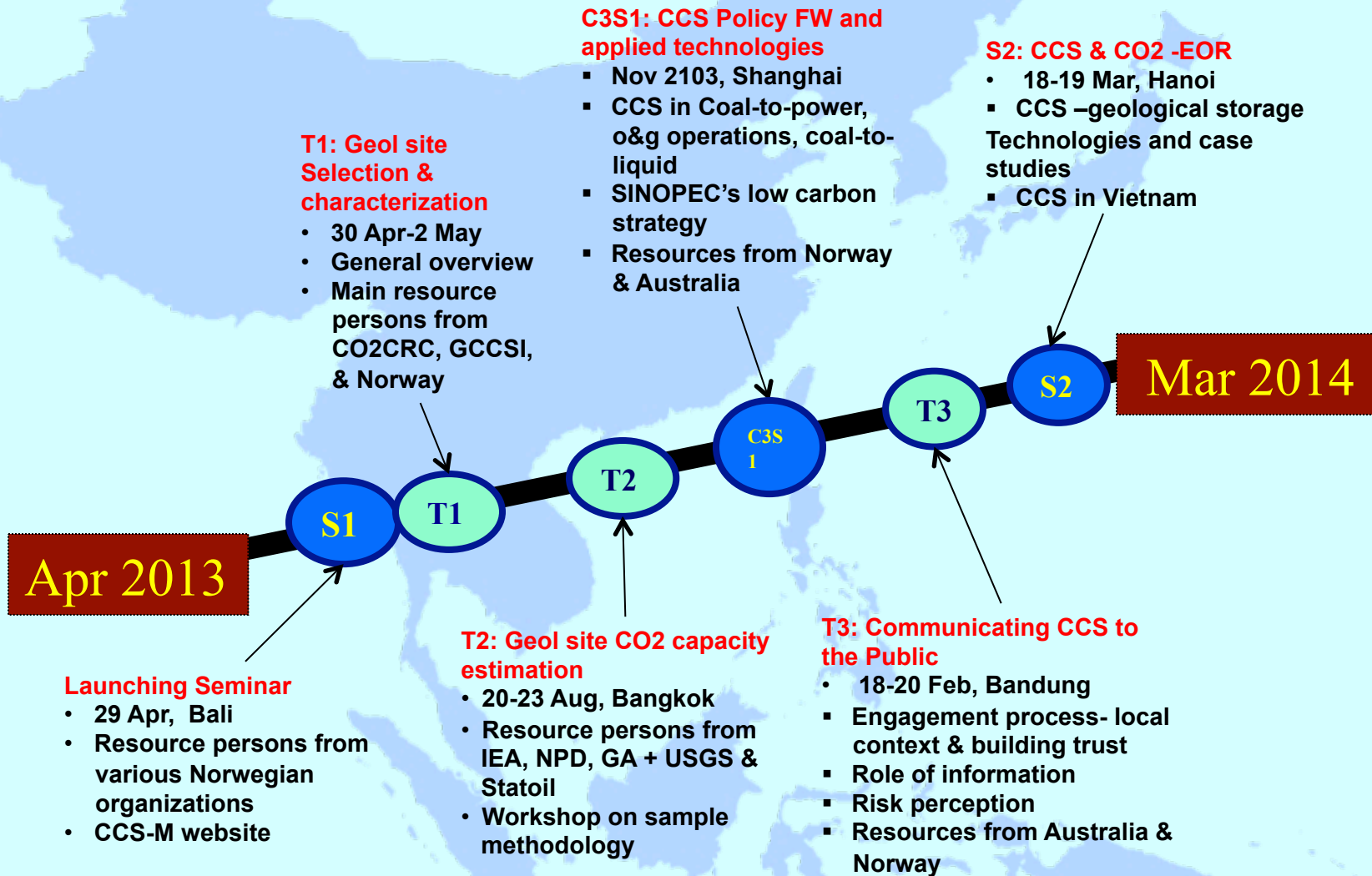
# Scope

1) Safe storage of CO<sub>2</sub>

2) Possible use of CO<sub>2</sub> for increased recovery



# CCS-M activities completed in Year 1



# CCS-M activities for Year 2

## T4: National assessment of storage sites & EOR

- 27-30 May, Penang
- Hands-on workshop - a deeper understanding on the methodologies
- Resource persons from Norway, Australia & MC

Apr 2014

**Publication – Guideline on Methodology**

- Including status of CCS in the MCs

- 5 Sep 2014 CCOP-Norway Annual meeting
- CCS-M Oversight Comm meetings

- ## T5: Web-based GIS applications
- 5-8 Aug, Korea
  - Leveraging on GIS application projects in CCOP
  - Resource persons from Korea & Japan

CS

Mar 2015

- ## Case Study Implementation
- “Learning by Doing”
  - C1 - Indonesia
  - C2 - Malaysia
  - C3 - China

- ## Application of UNFC 2009 to classification and reporting of energy resources /reserves
- Including CO<sub>2</sub> injection projects



# CCS-M Guideline

- ◆ The Guideline was published in June 2014 after series of technical training courses/workshops to understand the various Guidelines, the parameters, workflow, data used and best practices. An updated version is planned in 2016.
- ◆ The Guideline will be tested by using case studies that are hosted by selected member countries. A host country will provide the data and expertise, and organize geological field work to outcrops (or analogues). Field lectures are also organized.
- ◆ All member countries are invited to participate in the case studies. This is an important reference tool for member countries for their own geological storage assessment.



# CCS-M Indonesia Case Study (C1)

- ◆ A case study on South Sumatra basin
- ◆ Latest activity: **C1W2-Workshop on Public Engagement Strategies, Surabaya, 4-6 Nov 2015**
  - Lessons learned from various CCS- storage projects
  - Visit to CCS Gundhi Pilot Project



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# CCS-M Malaysia Case Study (C2)

- ◆ A case study on the Sarawak basin (clastic reservoir)
- ◆ Latest activity conducted: **C2W1**- Workshop on storage site selection and estimation of storage potential, Kuala Lumpur, 2-4 June 2015





# CCS-M China Case Study (C3)

- ◆ A case study on **CO<sub>2</sub> for EOR technologies**
- ◆ Latest activity: **Study Tour in Norway- CO<sub>2</sub> Storage and CO<sub>2</sub> for EOR Technologies (Stavanger, Oslo and Trondheim), 5-10 May 2015**



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# CCS-M Activities Planned for 1<sup>st</sup> Half 2016 *(up to July 2016)*

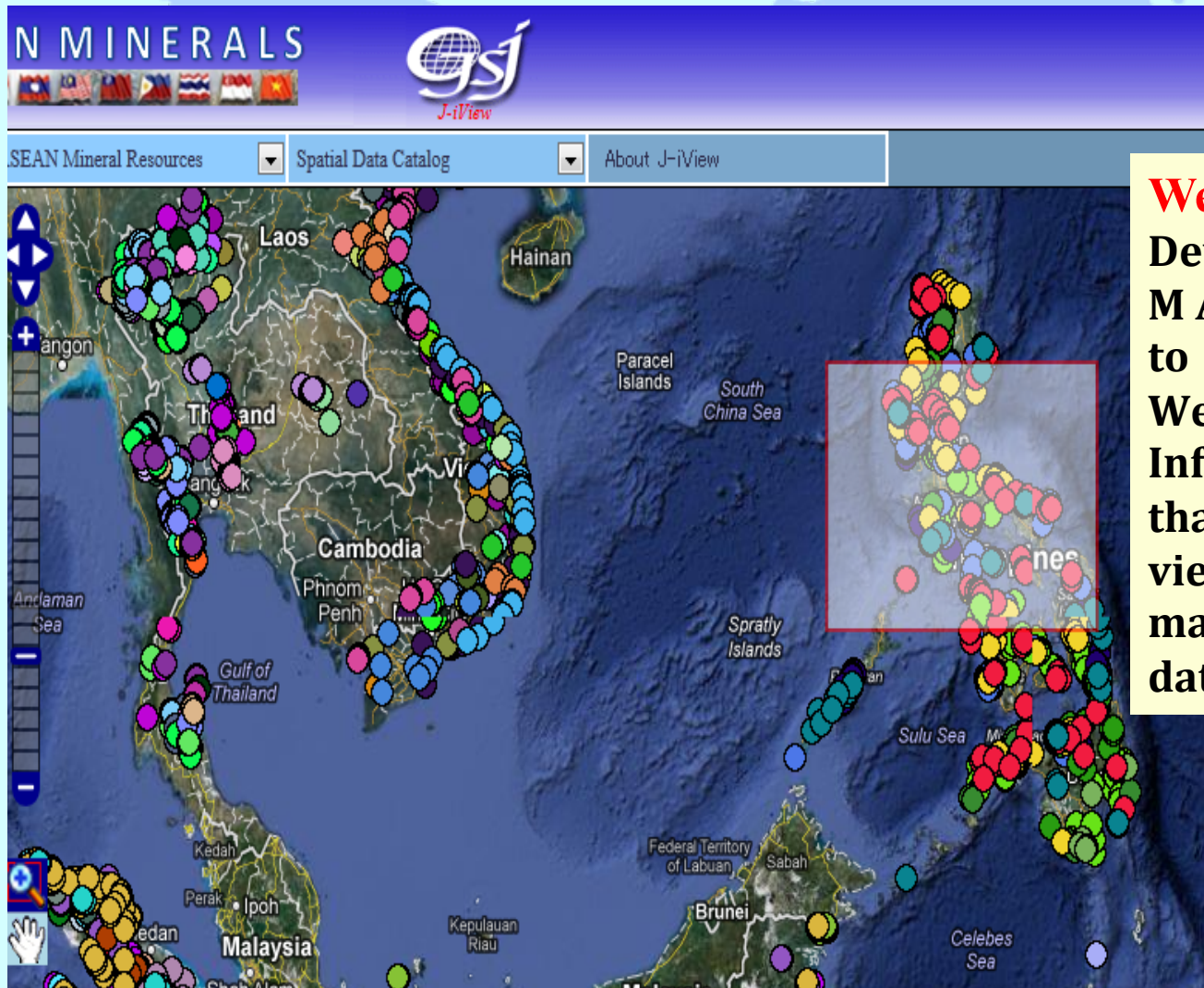
CODE	TITLE	VENUE/DATE
M2	National Coordinators Meeting	Bangkok/ 15-16 Feb
T6	Training Course on Sequence Stratigraphy	Phnom Penh/ 25-29 April (*)
S6	Seminar/Workshop on Geological Storage and CO <sub>2</sub> -EOR	Hanoi / 7-9 June
C3W2	China Case Study Workshop/ Expert Visit 2	China / 28-30 June (*)
C2W2	Malaysia Case Study Workshop/ Expert Visit 2	KL / 12-14 July(*)



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\* For confirmation

# ASOMM WebGIS



## WebGIS

Development of CCS-M Atlas will be similar to this mineral WebGIS. An Information System that allows users to view, edit and manipulate spatial data over the WEB.



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# CCS-M workshops and fieldworks

- Provides opportunities for collaboration among member countries and with partner organizations from cooperating countries
- The **CCOP Atlas of CO<sub>2</sub> Storage** and **Guideline** for selection of geological storage sites and capacity estimation will be based on international standards and best practices.



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