OPEN DATA & OPEN KNOWLEDGE Workshop
Xingfa Gu
The Initiator and Co-chair of Asia-Oceania Group on Earth Observations (AOGEO)
Professor, Aerospace Information Research Institute, Chinese Academy of Sciences (AIRCAS)

- An expert of GEO Decade (2016-2025) development plan. He is a Member of GEO Programme Board.
- Co-Chair of CODATA Task Group of Preservation of and Open Access to S&T Data in Developing Countries (PASTD) (2008-2014), Deputy Secretary General of Asian Remote Sensing Association (AARS) (since 2009).
- Vice Chair of Executive Committee of Global Alliance for Open Access to and Application of Scientific Data in Developing Countries (e-SDDC), Global Alliance for ICT and Development, the United Nations (UN GAID) (2007-2010).
- A Member of the National Committee of the Chinese People’s Political Consultative Conference (CPPCC), Academician of the International Academy of Astronautics (IAA).
- An Academician of the International Academy for Europe and Asia (IAEA), a Member of the Society of Photo-Optical Instrumentation Engineers (SPIE), and Principle Investigator of Applications Systems of Chinese High-Resolution Earth Observation Systems (CHEOS).
AOGEO Accelerates Open Data & Open Knowledge in Asia-Oceania region

Open Data and Open Knowledge Workshop: 15-16 June, 2023
Geneva, Switzerland

AOGEO
Xingfa Gu
Understanding of EO Knowledge

Open Data
Data Access and Governance, FAIR&CARE

Data Provider

Application Infrastructure

Observation

Action

Knowledge

Data
Information
Kilobytes

Petabytes

Open Science
Science-Centric, Causal explanations
LifeCycle of EO Knowledge Object

EO data and its related reference (paper, tools, showcase, example, video etc)

unstructuring the entity to be basic elements

normalizing the element to be standardized knowledge record, and linking them in the graphi network.

using standard knowledge concept to record the successful application and its workflow, making it to be machine readable.

improving the knowledge graphic and knowledge package

reusing the application by machine interaction

Knowledge Entity

Knowledge Feedback

Knowledge Element

Knowledge Instance

Knowledge Network

Knowledge Package
LifeCycle of EO Knowledge Curation

Digital Library

to record the knowledge object, element, normalized record and knowledge packages, to make them findable and accessible

Knowledge Graph System

to link the knowledge element as a network, to recognize and generate the new knowledge from the relationship of element of knowledge

Knowledge Reuse Engineer

to instantiate knowledge package of experience to solve the real problem by none professional users
RoadMap to EO Knowledge Management

Stage 1
- Starting from GEO GWP and Regional GEO Activities

Stage 2
- Include GEO collaborative communities

Stage 3
- Extending to related domains
Outlook of AOGEO

- **AOGEO takes great responsibility** in coordinating different stakeholders and activities that focus on regional needs and promoting GEO engagement priorities in Asia-Oceania region.

- **AOGEO has developed into a regional GEO** with:
  - 22 member countries
  - 12 participation organizations

<table>
<thead>
<tr>
<th>Members</th>
<th>Member List</th>
</tr>
</thead>
<tbody>
<tr>
<td>Member Countries</td>
<td>Australia, Bahrain, Bangladesh, Cambodia, China, India, Indonesia, Iran, Israel, Japan, Republic of Korea, Laos, Malaysia, Mongolia, Nepal, New Zealand, Sultanate of Oman, Pakistan, Thailand, Tonga, United Arab Emirates, Vietnam</td>
</tr>
<tr>
<td>Participation Organizations</td>
<td>APSCO, CEOS, GRSS, ICIMOD, ICSU, ISDE, ISPRS, POGO, UNEP, UNESCAP, UNESCO, WMO</td>
</tr>
</tbody>
</table>
### BACKGROUND

- Biodiversity and Ecosystem Sustainability
- Disaster Resilience
- Energy and Mineral Resource Management
- Food Security and Sustainable Agriculture
- Public Health Surveillance
- Infrastructure and Transport Management
- Sustainable Urban Development
- Water Resources Management

### AOGEO Contributing to GEO Missions

#### Internal Missions in AOGEO

**Integrated Priority Studies**
- Integrated Priority Studies 1: Mekong River Basin
- Integrated Priority Studies 2: Pacific Islands
- Integrated Priority Studies 3: Himalayan Mountains

**Applications and services**

<table>
<thead>
<tr>
<th>TG 1</th>
<th>TG 2</th>
<th>TG 3</th>
<th>TG 4</th>
<th>TG 5</th>
<th>TG 6</th>
<th>TG 7</th>
<th>TG 8</th>
<th>TG 9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initiative</td>
<td>Asian Water Cycle</td>
<td>Observation Network</td>
<td>Initiative</td>
<td>Carbon and GHG</td>
<td>Islands</td>
<td>Security</td>
<td>Drought monitoring and evaluation</td>
<td>Protection</td>
</tr>
</tbody>
</table>

**Foundational tasks**

- TG 10. Data Sharing
- TG 11. Data Hubs and Cubes
- TG 12. Users Engagement and Communication
Open Knowledge for AOGEO

• GEO has the ability to pool resources to develop specific solutions to major global challenges (Flagship GWPs ...)
• Regional EOs lack sufficient resources to provide specific solutions for the large number of fragmented needs
• Reusing the knowledge is an economic approach.

- Discovery of Reusable EO Knowledge
- Testing Reusability of EO Knowledge
- Rapidly Transfer Knowledge to New Application Scenarios

• Manage and share EO data & knowledge for non-professionals users
• Create a common environment for the re-use of scientific output, ultimately reduce the costs and barriers to application.
Outcomes

- Highlighted the latest earth observation data sharing techniques, cloud computing, online processing techniques for big satellite data.
- The development of representative practical toolboxes and their case applications were shared.
- Future development and related applications require further solid and practical collaborations across AOGEO member countries.
CONTACT DETAILS

EMAIL ADDRESS

aogeo_china@aircas.ac.cn

PHONE NUMBER

+86 010-64806263