

▪ **Group 1: Earth observation user requirements and needs in Europe**

Moderator: Herbert Haubold

Facilitator: Thomas Lüllwitz

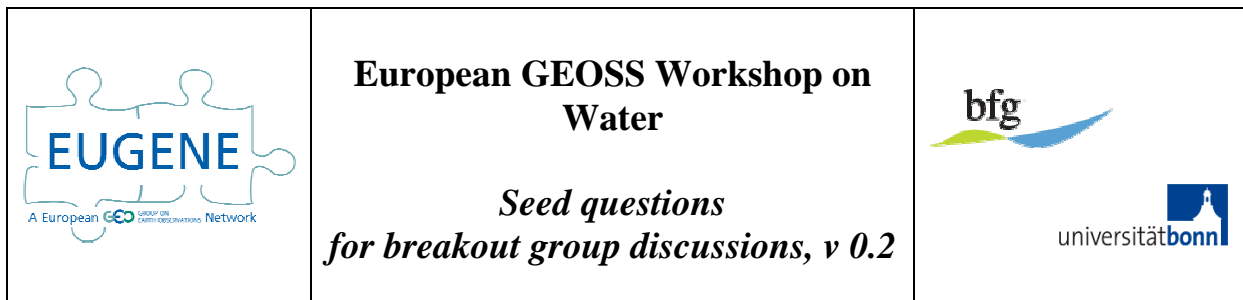
- User requirements for Earth observation data have been analysed in the framework of different European initiatives and by various European organisations. Are you aware of any consolidated European user requirement documents related to the topics under the GEO Water SBA? How could a European user position be elaborated and brought forward to GEO?
- How can users of Earth observation data in the Water SBA be categorised? What are the major differences between users in Europe and users on global level?
- Are there noticeable overlaps of user groups of different European Earth observation activities? Are abundant overlaps being addressed by appropriate coordination mechanisms? If not, how could GEO help?
- What are the major challenges in terms of data sharing, which hamper user-oriented development/delivery of Earth observation data and products?
- Do you feel the need to establish coordinated quality assessment mechanisms for individual European Earth observation initiatives?
- Which major Earth observation user requirements emerge from the European policy framework in the water area?

▪ **Group 2: Capabilities and gaps of Earth observation systems in Europe (satellite observations)**

Moderator: Jörn Hoffmann

Facilitator: Michael Nyenhuis

- What are the major strengths / gaps of European satellite systems for hydrologic applications compared to non-European systems?
- Which major gaps in remote sensing for hydrology (in Europe and globally) can be especially addressed by European satellite systems? Which gaps can only be addressed by global cooperation (under GEO)?
- Which relevant Earth observation data (*in-situ* and satellite) held by organisations outside Europe could/should be made accessible through GEOSS? What are the anticipated benefits for Europe (and the GEO Water SBA as such)?
- *In-situ* data is important for validation of remote sensing data whereas satellite data is needed to supplement *in-situ* networks to close spatial/temporal observation gaps – which application areas in hydrology could benefit from integrated products utilising various data sources?
- Please discuss the need for automated data exchange with data systems vis-à-vis direct (interactive) data retrieval/delivery. Which functionality is anticipated from the GEOSS Common Infrastructure (GCI)?
- Do you think that calibration/validation (cal/val) activities in European Earth observation initiatives (esp. GMES) are sufficient? What are the major unmet *in-situ* requirements for cal/val activities?

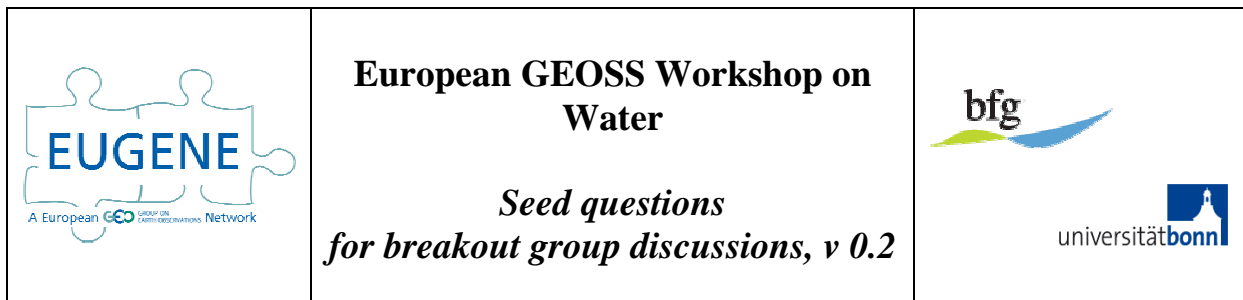


▪ **Group 3: Capabilities and gaps of Earth observation systems in Europe (*in-situ* observations)**

Moderator: Sophie Vermooten

Facilitator: Ralf Busskamp

- What are the major strengths / gaps of European hydrologic networks compared to non-European networks?
- Which solutions have been developed under European leadership that have closed major gaps/shortcomings in hydrologic *in-situ* observations? Are these solutions transferable to other regions? Which major gaps can only be addressed by global cooperation (under GEO)?
- Which relevant Earth observation data (*in-situ* and satellite) held by organisations outside Europe could/should be made accessible through GEOSS? What are the anticipated benefits for Europe (and the GEO Water SBA as such)?
- *In-situ* data is important for validation of remote sensing data whereas satellite data is needed to supplement *in-situ* networks to close spatial/temporal observation gaps – which application areas in hydrology could benefit from integrated products utilising various data sources?
- Please discuss the need for automated data exchange with data systems vis-à-vis direct (interactive) data retrieval/delivery. Which functionality is anticipated from the GEOSS Common Infrastructure (GCI)?
- Many *in-situ* networks are operated by NHS to meet national demands of hydrologic observations. What justifies European and global level coordination of *in-situ* networks and how could GEO facilitate coordination processes in the light of other European and global initiatives (e.g. GMES, GCOS/GTOS)?



▪ **Group 4: Pan-European Earth observation initiatives – coordination, governance and cooperation in the light of GEO**

Moderator: Jean-Christophe Calvet

Facilitator: Thomas Lüllwitz / Björn Baschek




- Which major Earth observation activities for hydrologic applications can be identified in Europe? Which major European online Earth observation data portals and databases that address hydrologic applications are you aware of?
- Which major Earth observation requirements emerging from the European policy framework in the water area are addressed by the individual European Earth observation activities? Which global level requirements are known – and addressed?
- What are the current challenges related to the coordination of major European Earth observation activities such as GMES, INSPIRE and WISE? Which are major challenges related to coordination/exchange with GEO? Which role does GEOSS play for European implementation processes?
- Please list major global scale Earth observation components, which are provided by Europe. How can GEO / GEOSS be used to facilitate expansion of GMES services to the global scale?
- Do you feel sufficiently informed about the ‘Earth observation landscape in Europe’? What could be improved in terms of labelling of initiatives?
- What are the major challenges/opportunities in terms of coordination of *in-situ* observations and networks in the framework of European Earth observation initiatives (esp. GMES)? Please consider both pan-European and national/sub-national implications.

▪ **Group 5: International / global cooperation opportunities**

Moderator: Douglas Cripe

Facilitator: Michael Nyenhuis

- Which global level Earth observation initiatives are you directly involved in and in which role?
- How can/does GEO support coordination processes in the application field you are involved in? Which are the strengths and challenges of GEO in terms of coordination?
- Which major Earth observation gaps (in the water area) can only be addressed by GEO / GEOSS, involving global, regional and national level organisations and governments?
- Which overlaps exist between European and global level Earth observation initiatives? Which European and global level activities need to be better coordinated, e.g. to avoid double work and to close Earth observation gaps?
- Which global level organisations exhibit European (and other regional) branches/associations? Could the GEO Water Cycle Community of Practice (WCCoP) be an appropriate forum for European Earth observation initiatives to maximise benefit from the GEO Water SBA?

	<p style="text-align: center;">European GEOSS Workshop on Water</p> <p style="text-align: center;"><i>Seed questions for breakout group discussions, v 0.2</i></p>	 
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- The GEO WCCoP is an important operative nucleus of the GEO Water SBA. Which (direct / indirect) links do already exist between Europe and the WCCoP and how could effective cooperation / exchange be realised?

- **Group 6: Spatial data infrastructures (SDIs), data sharing and reporting obligations**
Moderator: Ralf Busskamp
Co-Facilitator: Thomas Lüllwitz / Björn Baschek
 - Which are the major challenges to coordinate data flows from Europe to global level organisations (and vice versa) and how could GEO help?
 - Which voluntary and obligatory reporting data flows to the global level are currently maintained by European organisations?
 - Which voluntary and obligatory reporting data flows could benefit from increased use of the GEOSS Common Infrastructure (GCI)?
 - Which requirements need to be met, if the GCI is operationally used alongside existing/planned European spatial data infrastructures?
 - Which major challenges in terms of coordination, governance and data architecture need to be overcome to realise interoperability between European SDIs and the GCI?
 - Data sharing in hydrology is hampered by various reasons such as security concerns, national data policies or poor data quality. What are the major challenges for sharing hydrological data from a technological, SDI related point of view and how are these addressed?