Thematic Areas 1 &2
Status Update

TA1: PolSAR & multi-frequency applications

Ake Rosenqvist (JAXA) & Magdalena Fitrzyk (ESA)
(formerly Klaus Scipal (ESA))

TA1 deals with science requirements relating to polarimetric and multi-frequency SAR applications, with the main measurements being polarimetric or multi-frequency **backscatter intensity** and/or **polarimetric phase**. InSAR is often cited as useful but is not the main driver.

TA2: InSAR applications

Cathleen Jones (JPL) & Björn Rommen (ESA)

TA2 covers the traditional interferometric SAR (InSAR) driven applications including solid earth science (including crustal deformation and volcanoes), glaciers/ice caps and geo-hazards, where **interferometric phase** is the main measurement.

TA3: Program & Mission coordination

Gerald Bawden (NASA) & Malcolm Davidson (ESA)

Notes and Recommendations from the last workshop

TA1 - PolSAR & multi-frequency applications

The potential of Full-Pol and Multifrequency data is still under-explored.

Continuity (sensor characteristics) and homogeneity (in global coverage) are critically important for operational applications.

Foster Operational Applications

- Encourage free and openly accessible products (preferably standardised ARD products).
- For dynamic processes (agriculture, sea ice, …) acquire temporally coincident multifrequency data.

Foster Research and Development

- Conduct coordinated tower and airborne campaigns collecting multi-frequency and multi- polarisation data.
- Define core sites where Agencies AND Commercial providers systematically collect SAR data and make them openly available.
- Support the development of Open Source toolboxes for advanced SAR processing (for ops & training)
- Develop a coordinated data catalog.

Recommendations from the last workshop

TA2 - InSAR applications

Now/Near-term needs

- Open data policy for archives of all agencies (encourage New Space to participate)
- Standardized / unified interface for tasking and data discovery / download
- New Space data access: Commercial data buys by the funding agencies for PI projects
- Reestablish Polar Space Task Group for an International Polar Decade

2030+ Timeframe recommendations

- Harmonized coordination of satellites sensors to give interferometric capability between different agencies' SARs
- High resolution, daily-to-subdaily interferometric observations
- Harmony-like companions for more missions

TA1/2 Activities since #2 ICGS-SAR Workshop

- A review of observation requirements for current, near-future, and next generation SAR systems & coordination activities
- Development of a more extensive and detailed White Paper on gaps & coordination activities
  - Input from leading scientists from 10 scientific disciplines covering land, cryosphere, and ocean applications where SAR data play a key role
  - Intended for peer-reviewed publication
  - Built on the recommendations from 2022 ICGS-SAR Workshop plus on IGARSS 2021 TA1/2 paper
  - Linking in results from the 2022 TA1/2 User Survey

"White Paper" on observation requirements for current, near-future and next-generation SAR missions

Points for consideration for each science discipline

1. **State of the art & Gap analysis** of limitations encountered using today's SAR missions
2. **Suggestions for current and near future SAR missions and coordination activities** (2025+) that address some of the shortcomings
3. Discuss the "Holy Grail" for this application. **Suggestions for brave mission solutions in the next decade** (2030s) that could resolve key uncertainties.

TA Breakout Session topics
Tomorrow (Thu Nov 7) @ 11:30-13:00 (TA1) & 14:00-15:30 (TA2)

TA1: PolSAR & multi-freq applications

- Forest & Biomass
- Wetlands
- Agriculture & Crop monitoring
- Soil Moisture
- Sea Ice

TA2: InSAR applications

- Ice Sheets & Glaciers
- Solid Earth Science
- Hazards
- Permafrost
- Ocean Applications