

POLAR SPACE TASK GROUP - SAR COORDINATION WORKING GROUP

Three Year Implementation Plan

24 March 2016

1 Background

One of the major successes of the International Polar Year (IPY) in 2007-2008 was the unprecedented amount of high-resolution synthetic aperture radar (SAR) satellite imagery collected over the polar regions and the high quality data products that have since been generated. This outstanding accomplishment relied on a well-coordinated effort on the part of several space agencies, satellite operators and the science community.

Building on the successful International Polar Year Space Task Group (IPY-STG) SAR Coordination Working Group, and in order to fulfill the need for inter-Agency mission acquisition planning and to carry out implementation actions at agency level, the Polar Space Task Group (PSTG) has re-enacted the SAR Coordination Working Group with the aim to provide coordination across space agencies with SAR missions, to facilitate acquisition and distribution of fundamental SAR satellite datasets, and to contribute to or support development of specific derived products in support of cryospheric scientific research and applications. The SAR Coordination Working Group (SAR CWG) is a subsidiary group to PSTG and coordinates its activities and membership with the PSTG.

2 Mandate

The SAR CWG has the following mandates:

1. Identification and prioritization of multi-frequency SAR acquisitions of polar regions on the basis of the needs coming from scientific and related applications communities.
2. Maintain constant dialogue with these communities.
3. Maintain constant dialogue with private sector data provider partners through the involvement of the space agency members.
4. Sharing of information on the current status of the SAR missions and the activities on polar regions.
5. Ensure that data are being made available to qualified end-users.

3 Objectives

This Three-year Implementation Plan is a rolling three year plan covering the period 2015 - 2018, intended to guide the activities of the SAR CWG. This plan is consistent with the PSTG SAR CWG

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Terms of Reference (November 2014), the PSTG Terms of Reference V4, and the PSTG Strategic Plan 2015-2018. The main objectives of this plan are the following:

- To attract a federated group of scientists who will articulate and endorse science requirements related to SAR data;
- To create a critical mass of space agencies who will ensure a collective response to the requirements, with high frequency revisits and multiple spectral bands;
- To increase awareness of this initiative and grow the community of interested scientists and data providers.

4 Importance of Communications

Since a large part of the SAR CWG's activities relate to communications, communications are integral to the Three Year Implementation Plan.

The target audiences and key stakeholders include:

- international space agency management and CEOS
- international space organizations including WMO, ICSU, etc.
- advisor community – scientific, applications
- data providers – space agencies and commercial satellite data providers
- scientific end users, both those using SAR data and those not yet using it.

The objectives of these communications are to:

- inform the community about the range of data sets that have been produced to date, and plans for future acquisitions;
- provide a resource for current and new researchers to discover and access relevant data on cryosphere related subjects;
- show CEOS and supporting space agencies the power of a coordinated approach to scientific data acquisition;
- provide linkages between published scientific works and the data collected under this initiative.

The main message requirements of the SAR CWG are to:

- inform on the nature of the CWG's activities
- solicit input regarding scientific and applications related data requirements
- ensure common understanding of requirements and planning of data acquisition efforts
- inform on the status of data acquisition plans
- inform on issues and procedures affecting data access.

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Delivery methods that can be used include:

- Presentations: working group members include references and materials on the SAR CWG at conferences, technical meetings, and internal briefings
- Website: regular collection and placement of CWG updates, e.g. Newsroom, various SAR data acquisitions, and scientific results stories
- Publications:
 - Brochures – four identified science themes
 - Data compendia, including fact sheets, and data access links
- Data repository ideas and options (resources permitting):
 - Federated data warehousing
 - Metadata portal
 - Centralized data warehouse – new or existing (such as Polar Data Catalog, NSIDC SOAC, others?)
- Technical committee member personal networks.

The purpose, audience, method, resources, timeframe and content responsibility of the proposed communications plan are shown in Appendix A in Table 2.

5 Activities

5.1 Science Requirements

Members of the science community have identified and documented data requirements relating to scientific SAR observations of the cryosphere for the following themes:

- Permafrost
- Wet Snow
- Floating Ice
- Ice Sheets.

The science requirements for each theme are summarized in the PSTG Strategic Plan 2015-2018.

The dialogue with representatives of the science community will continue to ensure clarity of understanding, responsiveness of both scientists and data providers in the dialogue, and regular updates of the requirements documents as necessary.

5.2 Coordinated Planning and Data Acquisitions

The data suppliers (both public space agencies and commercial data providers) will work together to ensure, to the extent feasible, that coverages at L-band, C-band and X-band all respond to the scientific requirements in a way that takes advantage of the strengths of each mission and shares the load. The coordinated approach will be created by building consensus, through communication with the SAR CWG membership. The coordinated acquisition plan will be created and agreed; then the data suppliers will follow the plan to make the acquisitions. The coordinated plan and resulting acquisitions will be reviewed annually.

5.3 Data Access

SAR CWG members will strive to ensure that the data collected is made openly available to scientists. The goal of this approach is for each scientist to be able to access a portfolio of data sets rather than a single data set. Possible mechanisms for data access and dissemination include:

- Thematic Announcements of Opportunities (AOs)
- Open portals
- Open data policies for science activities.

If agreed at the SAR CWG meeting, the members may use coordinated thematic AO(s) to implement the agreed-upon coordinated acquisition plans. If this approach is pursued, a common preamble will be agreed by the members for use in each AO. This is intended to ensure consistency of the message and to minimize the workload of each member. The terms of reference of the Coordinated AO(s) will be consistent to the extent feasible, so that data access is maximized and barriers to use are minimized. Each space agency will use its own AO mechanism(s) to solicit scientific proposals and award data to successful Principal Investigators.

Efforts made by SAR CWG members to improve data access for scientists will be acknowledged and showcased, as an example to others.

5.4 Outreach

The members will work together to promote the work of the SAR CWG, its accomplishments and the successful collection and utilization of data sets, so that more scientists are aware of this growing source of data, and so that management from the data suppliers and CEOS are aware of the increasing value of coordinated SAR data collection for cryospheric science. The outreach can take the forms of conferences, publications, brochures, web site, and others. Effective internal communication between the SAR CWG members is an important part of this task too.

An important subset of the Outreach task is the Data Compendium; it is so important that it merits special mention here. The members will work together to create and maintain updated a digital, flexible compendium of the SAR data sets that have been collected of the cryosphere

over the last 20+ years. This compendium will be viewable at high level or at detailed level. It will be web-compatible, and will be capable of being published as a brochure or a pdf document. It will describe the science requirements in each of the four themes, the previously acquired data sets, and planned future data sets. As planned data sets are acquired, they will be easily migrated to the 'previously acquired' portion of the compendium, and newly planned future acquisitions will be added.

6 Resources

The WMO will provide the secretariat functions of the PSTG SAR CWG. The Chair of the PSTG SAR CWG will provide resources to plan, coordinate, and produce and update the outreach materials.

7 Schedule of Deliverables

The planned activities and the deliverables scheduled each year are shown in Table 1.

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Table 1 Activities and Schedule of Deliverables

Activity	Deliverables - 2016	Deliverables - 2017	Deliverables - 2018
Collect scientific requirements, and have them clarified and endorsed by the scientists.	Clarifications, if any, of the requirements documents tabled in 2014	Updated scientific requirements documents delivered	Clarifications, if any, of the requirements documents tabled in 2017
Respond to the requirements, through consensus, to the extent feasible within members’ resources, and sharing the load.	Coordinated Acquisition Plan 2016	Coordinated Acquisition Plan 2017	Coordinated Acquisition Plan 2018
Acquire data	Data acquired in response to 2015 Coordinated Acquisition Plan	Data acquired in response to 2016 Coordinated Acquisition Plan	Data acquired in response to 2017 Coordinated Acquisition Plan
Ensure open data access for science activities through the use of mechanisms including: <ul style="list-style-type: none"> • Thematic Announcements of Opportunities (AOs) • Open portals • Open data policies for science activities. 	Data access improved via one of the mechanisms listed	Second data access improvement	Third data access improvement

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Activity	Deliverables - 2016	Deliverables - 2017	Deliverables - 2018
Work together on outreach to inform the broader target communities about requirements, opportunities, successes, and data sets.	Digital brochure (2016) issued and disseminated	Digital brochure (2017) issued and disseminated	Digital brochure (2018) issued and disseminated
As a particular example of outreach, produce a digital, flexible compendium of scientific requirements, acquired archive data sets, and planned future acquisitions.	Data compendium (2016) issued and disseminated	Data compendium (2017) issued and disseminated	Data compendium (2018) issued and disseminated
Review, revise and approve this Three Year Implementation Plan on an annual basis.	Three Year Implementation Plan (2016 – 2019) issued and approved	Three Year Implementation Plan (2017 – 2020) issued and approved	Three Year Implementation Plan (2018 – 2021) issued and approved

Appendix A – Communications Plan

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Table 2 Communications Plan

Purpose	Audience	Method	Resources	Timeframe	Content Responsibility
Inform on the nature of CWG activities	Space agency management	Presentation	Internal meetings	As required	CWG members
	Internal working group members	Reporting	Technical meetings	Annual	CWG members
	CEOS	Reporting	SIT Meeting, CEOS plenary	Annual	CWG members
	International space organizations – WMO, ICSU, etc.	Presentation	Technical meetings, conferences, brochures	Technical meetings, conferences – delivered on an opportunity basis Brochures – released annually	CWG members
	Public	Regular updates on data acquisition, applications	CWG website, social media, brochures	CWG website launch – Q4 2015 Social media – TBD Brochures – as above	CWG members, PSTG Chair

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Purpose	Audience	Method	Resources	Timeframe	Content Responsibility
Solicit input regarding scientific and applications related data requirements	Science advisory community	Regular updates on data acquisitions	Compendia, CWG website	Compendia – annually CWG website (hosted by WMO) – as required	CWG members
Ensure common understanding of requirements	Internal working group members, data providers, science advisory committee	Science requirements specification	Requirements document	Annual updates	CWG members
Inform on the status of acquisition planning and status	Internal working group members, Science advisory community	Technical report	CWG meetings	Annual	CWG members
	Space agency management	Presentation	Internal meetings	As required	CWG members
	CEOS	Presentation	SIT Meeting, CEOS plenary	Annual	CWG members
	Science end users	Presentation Case studies	Conferences, science meetings, CWG website, social media,	Conferences – on an opportunity basis	CWG members, science advisory community, data

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Purpose	Audience	Method	Resources	Timeframe	Content Responsibility
			brochures	CWG website – TBD Social media – TBD Brochures – annual	providers
Inform on issues and procedures affecting data access	Space agency management	Technical report	Internal meetings	As required	CWG members
	Internal working group members	Technical report	CWG meetings	Annual	CWG members
	Science advisory community	Technical updates	CWG meetings, science meetings	Annual	CWG members
	Data providers	Technical updates	Science meetings, conferences	Annual	CWG members
	Science end users	Calls for proposals	Conferences, CWG website, social media	TBD	CWG members