Technical documentation

SIOS Key Performance Indicators Specification

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Versions

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1	2019-01-15	Approved by GA	Heikki Lihavainen
0.4	22.12.2018	Revised to be approved by GA	Heikki Lihavainen
0.3	2018-10-09	Revised following discussions with working groups	Inger Jennings
0.2	2017-05-29	Revised version following discussions with KC	Inger Jennings
0.1	2017-05-18	Revised version following discussions during preparation of the ESFR proposal.	Øystein Godøy
0.0	2017-04-20	Initial draft based on a version prepared for the Norwegian Scientific Data Network project.	Øystein Godøy Torill Hamre

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1. Introduction

1.1 Background

Environmental and climate changes are currently observed at a global scale and in particular in the Arctic. In order to give better estimates of future changes, the Arctic has to be monitored and analysed by a multi-disciplinary observation system which is suited to validate and gradually improve Earth System Models. The best chance to achieve significant results within a relatively short time frame is found in regions with a large natural climate gradient, and where processes sensitive to the expected changes are particularly important.

Svalbard and the surrounding ocean areas fulfil all these criteria: Svalbard is located in a region with a very large climate gradient, being alternately influenced by cold central Arctic or mild marine climate conditions at time scales of weeks to years. It is also located in the region with the strongest inflow and outflow processes between the Arctic and lower-latitude oceans. In addition, Svalbard is the region in the world that is best placed to facilitate study and quantify one of the remaining unknowns in the climate puzzle: the extra-terrestrial and especially solar influence on climate.

The vision for the Svalbard Integrated Arctic Earth Observing System (SIOS) is to be a regional observational system for long-term acquisition and proliferation of fundamental knowledge on global environmental change (GEC) within an Earth System Science (ESS) perspective in and around Svalbard. SIOS will systematically develop and implement methods for how observational networks are to be construed and thus become a leader regarding observational systems in the Arctic and Polar regions. The SIOS Data Management System (SDMS) Data Portal is the entry point to SIOS datasets. It offers a web interface that contains information about datasets (metadata). These metadata are harvested on a regular basis from data centres contributing to SIOS. These data centres manage the data on behalf of the owners/providers of the data.

A major innovative element of SIOS is the Knowledge Centre (KC), which facilitates interaction between observation, modelling and process research, strategic processes, a service point to user communities and a platform for data handling and utilisation [3].

The first version of this document is based on a similar document developed for the SIOS project funded by the Research Council of Norway.

1.2 Scope

The purpose of this document is to identify a number Key Performance Indicators that can be used as metrics for evaluation of the operation. This evaluation shall cover both the progress of SIOS and user uptake of its core services.

1.3 Audience

This document is developed for both an internal and external audience. The internal audience is the development team and the external audience is the Research Council of Norway, the contributing data centres and the data providers.

1.4 Applicable documents

[1] Svalbard Integrated Arctic Earth Observing System – Preparatory Phase (SIOS-PP). Accessed 2017-04-18

[1] Memorandum of Understanding for the Operational Phase. Accessed 2017-04-18

[2] SIOS Statutes for the Operational Phase. Accessed 2017-04-18

2. Key Performance Indicators definition

Key Performance Indicators (KPI) help define and measure progress towards achieving the goals and objectives of the system under development. KPIs are a tool supporting this process. In this context, KPIs should measure the uptake and relevance of the system developed in the user community as well as the timeliness and quality of the services provided to the user community.

Key characteristics of the KPIs considered in this context are:

- relevant and consistent in relation to overall objectives and goals
- representative
- realistic
- specific
- measurable
- trend related (i.e. consistent over time)

In order to support this KPIs are divided into two main categories according to the system performance they are measuring:

- user relevance, uptake and impact
- quality of services

When properly developed these KPIs are reported on a monthly basis and graphical representations of time series are made available on the SIOS web page. No information related to a specific data centre, data provider or data consumer is made publicly available.

3. Key Performance Indicators for SIOS

3.1 Background

The main objective of the selected KPIs is for the SIOS-KC to have a live tool to follow up the goals and strategies agreed upon by the General Assembly of the consortium. It is of vital importance that the KPIs can be shared with stakeholders, and supply them with useful information needed to assess whether the consortium is on track to achieve its goals. Some of the KPIs are designed to follow the progress on a frequent basis while others are suited for an annual review.

The KPIs have been selected with the strategic goals and objectives of the consortium in mind. The KPIs must evolve along with the consortium and will, therefore, be subject to change.

3.2 User relevance, uptake and impact

3.2.1. Usage of the web portal

Objective	To measure the visibility and relevance of information on the web portal.
Measured through	Number of unique visitors, their location and the number of sessions.
Target	TBC
Reporting frequency	Quarterly

3.2.2. *Number of data repositories linked to the data portal*

Objective	Measure the success of implementation of SIOS Data Management System.
Measured through	Information is extracted from the metadata harvesting system through which contributing data centres are linked to the SDMS.
Target	All core data are linked to data portal.
Reporting frequency	Annual

3.2.3. *Number of applications to RI access call*

Objective	To determine whether SIOS call for access to RI is attractive for researchers.
Measured through	Counting the number of applications.
Target	Total funds applied for is twice the total funds available.
Reporting	Annual

frequency	

3.2.4. Number of proposals for external funding

Objective	To measure the SIOS cooperation and commitment
Measured through	Counting the number of project proposal SIOS is involved.
Target	TBC
Reporting frequency	Annual

3.2.5. *Number of contributors to the State of Environmental Science in Svalbard (SESS)Report*

Objective	To measure the commitment to the science optimisation efforts of SIOS
Measured through	Counting the numbers of scientists contributing to the annual SESS Report.
Target	TBC (20% annual increase)
Reporting frequency	Annual

3.2.6. Number of recommendations in SESS report implemented

Objective	To measure the relevance and realization of optimisation efforts
Measured through	Counting the ratio of the number of implementations in relation to the number of recommendations in SESS report prioritised by SOAG, based on 3 year average
Target	TBC
Reporting frequency	Annual

3.2.7. *Number of peer reviewed publications using SIOS data / facilities*

Objective	To measure the relevance of SIOS to the wider scientific community
Measured through	Counting publications. This requires all users of SIOS infrastructure to report publications to SIOS. A more reliable method for tracking publications must be developed.
Target	10% annual increase
Reporting frequency	Annual

3.2.8. *Number of institutions that acknowledge use of SIOS data or facilities in peer reviewed publications*

Objective	To measure the success of international cooperation and relevance of the data
Measured through	Tracking publications and counting them. This requires all users of SIOS infrastructure to report publications to SIOS. A more reliable method for tracking publications must be developed.
Target	TBC
Reporting frequency	Annual

3.2.9. *Number of member institutions in SIOS in relation to number of institutions active in Svalbard producing SIOS relevant core data*

Objective	To measure whether it is attractive to be a SIOS member
Measured through	The ratio of institutions active in Svalbard producing SIOS relevant research data to number of members in SIOS. This requires cooperation with Svalbard Science Forum for provision of aggregated information about the number of active institutions.
Target	The ratio remains steady or increases each year
Reporting frequency	Annual

3.2.10. *Amount of total budget as a proportion of host contribution*

Objective	To measure the evolution of partner involvement to SIOS
Measured through	The annual budget
Target	1:1 ratio between funding from RCN and partner and other funding funding by 2022
Reporting frequency	Annual

3.2.11. *Engagement of members in working groups*

Objective	To measure the engagement of representatives of SIOS member institutions in working groups
Measured through	The number of meetings attended by nominated representatives and the number of responses to polls to find a suitable time for a meeting

Target	70% attendance at meetings per person, 90% response rate to polls
Reporting frequency	Annually

3.2.12. *Usage of social media*

Objective	To measure the visibility and relevance of information of SIOS in social media
Measured through	Number of (active) followers, impressions, number of shares and likes
Target	TBC
Category	User relevance, uptake and impact Quality of services
Reporting frequency	Quarterly

3.2.13. *Success of events*

Objective	To measure the relevance of themes and communication used at events
Measured through	Counting the number of attendees of events organised by SIOS-KC, rating through sli.do (where applicable)
Target	
Category	User relevance, uptake and impact Quality of services
Reporting frequency	Annually

3.2.14. *Newsletter performance*

Objective	To measure the relevance of SIOS newsletters
Measured through	Percentage of recipients that have opened the newsletter, list growth rate and unsubscribe rate
Target	50 % open the newsletter Growth rate > unsubscribe rate
Category	User relevance, uptake and impact Quality of services
Reporting frequency	Annually

3.2.15. *Number of media appearances*

Objective	To measure the visibility of SIOS
Measured through	Media surveillance (SIOS occurrence in media is currently monitored through UNIS media surveillance)
Target	TBC
Category	User relevance, uptake and impact Quality of services
Reporting frequency	Annually

3.2.16. *Number of participants per training course or workshops*

Objective	To measure the attractiveness and relevance of training courses and workshops
Measured through	Ratio of number of signed up participants to available places
Target	>0.9
Category	User relevance, uptake and impact Quality of services
Reporting frequency	Annually

3.2.17. User satisfaction for training courses

Objective	To measure the quality of the courses delivered by SIOS
Measured through	Compulsory feedback form at the end of each course
Target	90% rating of 7/10 or above
Reporting frequency	Annually

3.3. Quality of services

3.3.1. *Availability of core data*

Objective	To measure the availability of data sets defined as “SIOS core data” by SOAG
Measured through	Core data sets will be determined by SOAG and flagged on the data portal. The number of flags can then be counted annually.
Target	100%
Reporting frequency	Annual

3.3.2. *Level of user satisfaction of Access Programme*

Objective	To measure the quality of the service provided by SIOS to users of the Access Programme
Measured through	There is a compulsory feedback form for all successful applicants to the programme.
Target	90% rating of 7/10 or above
Reporting frequency	Annually

3.3.3. *Completion rate of annual work programme*

Objective	To measure the performance of SIOS-KC
Measured through	Review of the work plan at the end of each year. This requires careful consideration of the work programme and deliverables to ensure it can be completed in the year specified.
Target	More than 90% of deliverables completed
Reporting frequency	Annual

3.3.4. *Availability of end points*

Objective	To measure the availability of SDMS
Measured through	Several times a day the availability and proper operation of end points for discovery metadata (OAI-PMH[1]) and data[2] (OGC WMS, OPeNDAP, and direct download of full file through HTTP) is checked and registered. • Availability is defined as responding to requests.

1 All current contributors serve discovery metadata using OAI-PMH.
2 As provided in the discovery metadata harvested from the contributing data centres.

	• Proper operation is defined as providing expected information. This information is reported on a monthly basis. The availability is reported as a percentage measure.
Target	95% availability in office hours (08:00-17:00 CET).
Reporting frequency	Quarterly

3.3.5. *Temporal frequency of dead links*

Objective	To measure the quality of the web portal
Measured through	All available metadata and editorial material is checked on a daily basis for broken links (internally or externally). The numbers of valid and broken links are aggregated on a monthly basis.
Target	TBC
Reporting frequency	Quarterly

3.3.6. *Availability of central data access point*

Objective	To measure the quality of the data search facility
Measured through	The availability of the central access point of the service is reported in a similar manner as for **Error! Bookmark not defined.**.
Target	
Reporting frequency	Quarterly