



World Meteorological Organization

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Satellite Data Dissemination Strategy

Contribution to realization of IGDDS

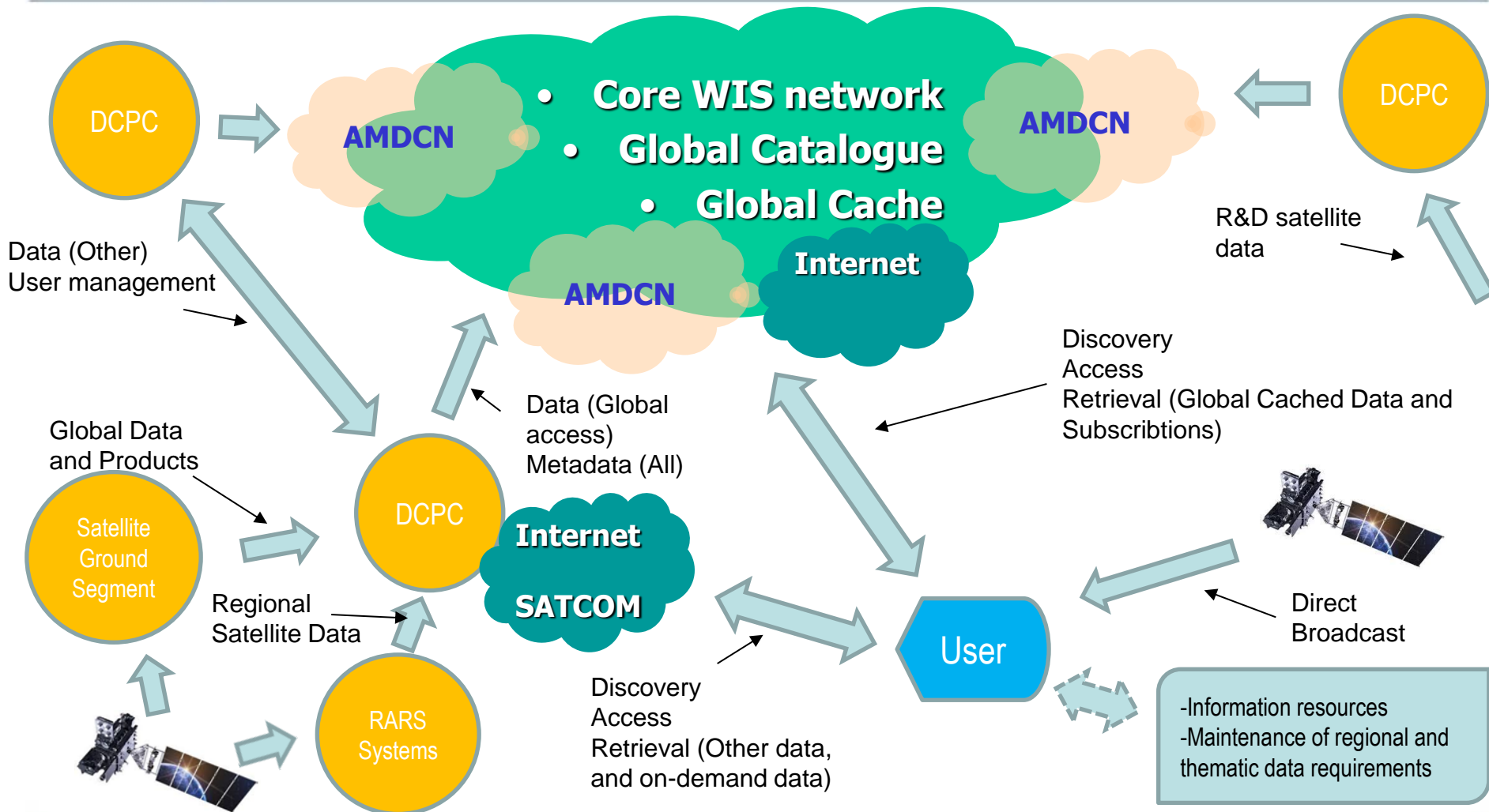
IPET-SUP-1, agenda item 5.1

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Vision

- **Vision:** Timely and reliable access through the WIS to all satellite data and products needed to meet the operational needs of all WMO members.
- This vision will be realized through the realisation of:
 - Effective user-provider dialogue on regional and global basis to address evolving needs of all users, including the less developed countries
 - Regional re-broadcast services from telecommunications satellites available using state-of-the-art dissemination technology wherever cost-efficient
 - Global exchange of all satellite data and products, including agreements on Data Access and User Management to enable re-dissemination
 - Locally acquired data from LEO satellites processed and routinely available on a regional basis
 - Globally coordinated Direct Broadcast services from GEO and LEO
 - Routine access to all required data and products from R&D satellites
 - All providers of satellite data dissemination infrastructure fulfilling the role of WIS DCPC, providing data discovery, data access and data retrieval (DAR) for all their satellite data and products
 - Globally applied standards for discovery metadata defined for satellite data and products
 - All operationally used satellite data and products discoverable in the WIS catalogue
 - On-demand access to satellite data and products, compliant with WIS rules.

Vision: Satellite Data Access in WIS





Satellite Data Dissemination Strategy

- As follow-up to discussions at ET-SUP-8, and with a view (i) to improve satellite data access and exchange (globally and regionally), and (ii) to inform a future update of the IGDDS in WMO WIS regulatory material, a medium-term Satellite Data Dissemination Strategy has been formulated. For each of the strategic targets, the status is presented and strategic actions and indicators are proposed.
- The actions proposed are under discussion with several partners and stakeholders, in particular with WIS management
- The objective is to establish a rolling 5-year action plan for the realization of IGDDS, to be reviewed on a regular basis with IPET-SUP, with WIS management and appropriate WIS ETs and with CGMS
- For formal reasons, an identification different from IGDDS is needed for this strategic plan. In this presentation reference is made to Satellite Data Dissemination Strategy (SDDS), but another shorthand could/should be considered.



SDDS activities, status and proposed actions

Activity	Status	Actions and Indicators
<p>1. REGIONAL DATA REQUIREMENTS (Regional and thematic dialogues maintaining data requirements)</p> <p>Lead: WMO IPET-SUP, supported financially by WMO/DRA, and in-kind by GISCs</p>	<ul style="list-style-type: none"> -Continuous regional user dialogues are existing in all RAs -In most RAs, data requirements have been established. -Most operators are have not formally responded to requirements -<i>APSDEU-NAEDEX are addressing the global data requirements for NWP, but for other applications data requirements have not been formulated.</i> -JCOMMs new Task-Team for Satellite Data Requirements is expected to formulate Data Requirements for Ocean Applications 	<ul style="list-style-type: none"> -<i>SP, with guidance from WIS staff, to keep TT-DC and TT-GISC informed about progress and agreed requirements documents</i> <p>Indicator: Availability of agreed Data Requirements documents for each Regional Association, addressing needs of all WMO Programmes</p>



SDDS activities, status and proposed actions

Activity	Status	Actions and Indicators
<p>2. FULL INTEGRATION AND OPERATION OF DVB BROADCAST SERVICES (Re-broadcast DVB services available in all Regions and integrated in WIS)</p> <p>Lead by : CGMS and GEONETCast Implementation Group; with ET-CTS involvement.</p>	<p>-EUMETCast, CMACast and GEONETCast Americas and MITRA are well-established systems, with HimawariCast and RapidCast emerging in the Asia-Oceania region.</p> <p>-HimawariCast operational since 29 Jan 2015</p> <p>-To be noted that DVB is mature off-the-shelf technology, and does therefore not need to be addressed from a technology point of view</p>	<p>-ET-CTS to review the usage of DVB technology from a WMO point of view</p> <p>-Promote DVB-based technologies better to decision makers in NHMSs. A good opportunity would be a side event at the CBS TECO in 2016 (Caribbean)</p> <p>Indicators: Availability of WIS-integrated DVB service for each Region; degree of service compliance with Regional data requirements</p>



SDDS activities, status and proposed actions

Activity	Status	Actions and Indicators
<p>3. GLOBAL EXCHANGE OF ESSENTIAL DATA ON THE WIS (Globally required satellite data provided to the WIS core network);</p> <p>Lead: CBS ET-WISC TT-GISC</p> <p>Supported by: CGMS, WMO IPET-SUP</p>	<p>-The ongoing operational WIS implementation has not explicitly addressed satellite data, and only the CMA is currently providing catalogue visibility of satellite data. Note that once registered in any GISC, the metadata is available at all GISCs. Also GISCs do not provide metadata, it comes from the DCPC or NC which in CMA's case is the Satellite Centre.</p> <p>- Need to clarify terminology: whether "global data" means no limitations on use imposed by provider, or data that must be cached by GISCs (the latter may be large volumes)</p>	<p>-Satellite operators to register products in the WIS and ensure that essential data become available operationally in WIS</p> <p>-TT-GISC and the future Inter-Commission WIS task team to address issue of efficient data distribution</p> <p>-The technical monitoring of WIS data (e.g., bulletins, files) is being covered by WIS, but programmatic monitoring of satellite data availability is not. This issue should be addressed.</p> <p>-Check approach to monitor surface-based remote sensing data pursued by WMO ET-SBO</p> <p>Indicator: Availability of satellite data in WIS global cache.</p>



SDDS activities, status and proposed actions

Activity	Status	Actions and Indicators
<p data-bbox="40 408 653 606">4. REGIONAL EXCHANGE OF ADDITIONAL DATA (Exchange of additional satellite data and products between Regions);</p> <p data-bbox="40 721 241 756">Lead: CGMS</p>	<p data-bbox="662 408 1271 549">-Exchange of satellite data is in place between most regions, through bilateral arrangements between satellite operators.</p> <p data-bbox="662 592 1271 878">-Data access mechanisms for “other” data can be registered in the WIS, but as there is currently no global WIS authentication scheme, the actual data exchanges will continue to be done outside the WIS network</p> <p data-bbox="662 921 1271 1006">-Refer to IPET-SUP discussion on “essential data”</p>	<p data-bbox="1280 408 1889 549">-Encourage bilateral agreements between CGMS members for exchange of additional data</p> <p data-bbox="1280 592 1889 778">Indicator: Matrix of Availability of Data Exchange mechanisms for other satellite data and products between Regions</p>



SDDS activities, status and proposed actions

Activity	Status	Actions and Indicators
<p data-bbox="61 444 587 582">5. STANDARDIZED DATA FORMATS (Use of appropriate, standardized formats);</p> <p data-bbox="61 701 645 939">Lead: WMO WIS (IPET-MDRD for Future Data Model and Discovery Metadata, IPET-DRMM for detailed representation of observations) and CGMS-WMO Task Force on Metadata Implementation</p>	<p data-bbox="672 444 1213 582">-For current generation of instruments used in NWP efficient coordinated data formats are in use.</p> <p data-bbox="672 622 1259 761">-For non-NWP instruments a diversity of product formats exist, hindering global and regional exchange of data</p>	<p data-bbox="1286 444 1846 632">-Define efficient formats for exchange of data from new generation of high-performance NWP instruments and LEO and GEO imagers</p> <p data-bbox="1286 672 1870 861">- IPET-MDRD to discuss adoption of well-documented non-WMO data formats used in satellite operations, such as netCDF/CF in GSICS</p> <p data-bbox="1286 901 1870 989">-IPET-SUP can provide input through user case scenarios</p> <p data-bbox="1286 1108 1877 1246">Indicator: Availability of globally agreed formats for Data Exchange for each instrument in GOS baseline.</p>



SDDS activities, status and proposed actions

Activity	Status	Actions and Indicators
<p data-bbox="59 429 523 668">6. GLOBAL RELAY OF DIRECT READOUT DATA (Global coverage of LEO Direct Readout Acquisition and Relay systems);</p> <p data-bbox="59 786 606 822">Lead: RARS IG (WMO SP and CGMS)</p>	<p data-bbox="664 429 1224 719">-The full adaptation of RARS to the high-performance instruments on NPP/JPSS, METOP and FY-3 is starting, but commitment from regional alliances is crucial due to the significant technical challenges.</p> <p data-bbox="664 762 1232 848">-Expansion of RARS to Africa has started with the support of the EU.</p> <p data-bbox="664 891 1224 1180">-In dimensioning the WIS networks, the capacity needed for the exchange of this data should be taken into account, since the new high-resolution instruments will result in increased data volumes, in particular for regional exchange</p>	<p data-bbox="1269 429 1831 565">-Continue the evolution of RARS, with focus on the new generation of instruments on METOP/NPP/JPSS/FY-3,</p> <p data-bbox="1269 608 1818 793">-Establish a WIS guide on RARS systems, addressing data management and network issues and a WIGOS guide on RARS products</p> <p data-bbox="1269 836 1850 1079">- Meeting on 11-13 March 2015 at WMO on (D)RARS coordination, to develop draft guide on standards and best practices for operations (WIS team invited to participate)</p> <p data-bbox="1269 1193 1804 1279">Indicator: Global coverage statistics for RARS (% area of Globe covered)</p>



SDDS activities, status and proposed actions

Activity	Status	Actions and Indicators
<p data-bbox="59 398 643 586">7. STANDARDIZED DIRECT BROADCAST (Globally coordinated Direct Broadcast from LEO and GEO);</p> <p data-bbox="59 705 247 739">Lead: CGMS</p>	<p data-bbox="664 398 1228 536">-CGMS DB standards revised for X-band transmissions from LEO satellites (NPP, JPSS, FY-3, METOP-SG).</p> <p data-bbox="664 579 1222 718">-New GEO DB services are however not fully coordinated, e.g. GOES-R GRB is not based on HRIT/LRIT standard.</p> <p data-bbox="664 761 1244 893">-Due to the high data rates and increased use of X-band, cost of user stations remains a concern for both LEO and GEO</p>	<p data-bbox="1269 398 1818 484">-Monitoring of the implementation of the new LEO DB standard.</p> <p data-bbox="1269 526 1808 665">-Encourage efforts for reliable, low-cost DB receiving stations for both LEO and GEO.</p> <p data-bbox="1269 708 1837 793">-Clarify need for global standardization of GEO Direct Broadcast.</p> <p data-bbox="1269 912 1823 1048">Indicator: Availability of user Stations specifications and preprocessing software per mission and instrument.</p>



SDDS activities, status and proposed actions

Activity	Status	Actions and Indicators
<p>8. ROUTINE ACCESS TO R&D DATA (Routine access to required data and products from R&D satellites);</p> <p>Lead: CGMS</p> <p>Supported by: CBS ET-WISC TT-GISC, WMO IPET-SUP</p>	<p>-Some agreements exist, ensuring access to R&D satellite data, e.g. from NASA, JAXA, SOA and ISRO.</p> <p>-However not all R&D missions are covered and the agreements do not ensure data access for the global WMO community.</p>	<p>-Dissemination operators to establish arrangements with R&D agencies ensuring availability to WMO members.</p> <p>-Global agreements between WMO and R&D agencies could be considered</p> <p>- To improve visibility and access to R&D and environmental satellite data, WMO through WIS to encourage Members to invite (where appropriate) such providers to become a DCPC</p> <p>- WMO SP to encourage non-meteorological satellite operators at CGMS to register in the WIS through a DCPC</p> <p>- Indicator: Availability of Data Access agreements per R&D mission, including data redistribution regulations.</p>



SDDS activities, status and proposed actions

Activity	Status	Actions and Indicators
<p>9. MAKING SATELLITE DATA AVAILABLE ON THE WIS (Dissemination providers acting as WIS DCPC, by providing coordinated data discovery, data access and data retrieval (DAR) for all satellite data);</p> <p>Lead: IPET-MDRD and CGMS Task Force on metadata implementation</p>	<p>-WIS implementation of DAR services has up to now concentrated on non-space data, and to support WIS→ CGMS has therefore established the CGMS-WMO Task Force on Metadata Implementation.</p>	<p>-CGMS Task Force on Metadata Implementation to work closely with IPET-MDRD.</p> <p>- TT-GISC (and future Inter-Commission WIS Task Team) to request GISCs to reach out to all satellite operators to register products based on global user requirements</p> <p>Registration of products in WIS catalogues critical; registration guidance to WIS available through GISCs</p> <p>Indicator: Availability of DAR services for each baseline GOS mission (L1 and L2 data).</p>



SDDS activities, status and proposed actions

Activity	Status	Actions and Indicators
<p>10. FINDING AND ACCESSING DATA ON THE WIS (On-demand access to satellite data and products through the WIS (cf Target 3));</p> <p>Lead: CBS ET-WISC TT-GISC</p> <p>Supported by: CGMS, WMO IPET-SUP</p>	<p>- Flexible on-demand access to specific data sets, including satellite data, is an important objective of the WIS. DCPCs have the possibility to provide deep data access URLs for the GISC catalogue, that would allow users connected to a GISC to access on demand data sets directly.</p> <p>- Dialogue is needed between WIS and the space community regarding the application of new technologies (cloud) to improve the on-demand access to satellite data.</p>	<p>-ET-DC to consider the implementation of on-demand data access links in the WIS catalogue</p> <p>-Investigate the application of new cloud technologies in the WIS context</p> <p>- The WMO Product Access Guide and basic data access webpages provide guidance for accessing data and products on demand</p> <p>-TT-GISC and future Inter-Commission WIS task team to address issue of efficient data distribution (including on demand and push services)</p> <p>Indicator: Availability of on-demand satellite data sets in WIS</p>



SDDS activities, status and proposed actions

Activity	Status	Actions and Indicators
<p data-bbox="92 401 625 594">11. INFORMATION AND COMMUNICATION WITH SATELLITE DATA USERS (Information and guidance to users).</p> <p data-bbox="92 708 542 743">Lead: WMO IPET-SUP, ET-SAT</p> <p data-bbox="92 786 645 872">Supported by: Inter-Commission WIS Task Team and WIS staff</p>	<p data-bbox="691 401 1263 644">-Information on the access to satellite data is provided in a heterogeneous fashion, and WMO information resources (SATURN, Product Access Guide, OSCAR) will bridge this gap</p>	<p data-bbox="1298 401 1850 486">-Continue the development of the WMO portals</p> <p data-bbox="1298 529 1862 722">-Satellite operators to support the development and improve their channels of communication with the users regarding data access</p> <p data-bbox="1298 765 1850 851">- Communicate the strategy at CBS and TECO and in Regional Associations</p> <p data-bbox="1298 893 1823 979">- Register WMO online resources with GISC Toulouse</p> <p data-bbox="1298 1022 1870 1108">Indicator: Usage stats and user feedback for WMO information resources</p>

Thank you for your attention

