Department of Commerce • National Oceanic & Atmospheric Administration • National Weather Service

NATIONAL WEATHER SERVICE INSTRUCTION 10-1721

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Operations and Services

Dissemination 10-17

INTERNATIONAL SERVICES AND COMMUNICATION SYSTEMS (ISCS) MANAGEMENT

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SUMMARY OF REVISIONS: This instruction supersedes NWSI 10-1721, *"International Services and Communication Systems (ISCS) Management*," dated January 5, 2015. Changes were made to reflect the NWS Headquarters reorganization effective April 1, 2015.

Other changes:

1. Correct the numbering of the indentures;
2. Add an additional responsibility to DIS to, "Ensure all substantial changes to environmental information services provided by NWS through ISCS are implemented in accordance with NWSPD 1-10 Managing the Provision of Environmental Information "; and
3. Add IS-21 satellite coverage map, Word Meteorological Organization (WMO) Region map, and web link appendices.

___/signed/_____2/28/2018
Kevin C. Cooley Date
Acting Director Office of Dissemination

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1. Document Purpose

This instruction describes how the National Oceanic and Atmospheric Administration (NOAA) National Weather Service (NWS) integrates, operates, and maintains the International Services and Communication Systems (ISCS).

2. System Purpose

The ISCS telecommunication services support the exchange of meteorological data products between National Meteorological Centers (NMCs) in WMO Regional Association IV (RA-IV) [North America, Central America and the Caribbean] (See Appendix B, WMO Regions). Collectively, these telecommunication services comprise the RA-IV Regional Meteorological Telecommunications Network (RMTN).

The NWS is identified as the RA-IV Regional Telecommunications Hub (RTH) [aka RTH-Washington] in publication WMO-No 386, *Manual on the Global Telecommunication System* (GTS). RTH-Washington maintains not only the RMTN communication services to the RA-IV NMCs for the regional exchange of data products, but also the communication services to the GTS/Main Telecommunication Network (MTN), which provides communication to and from all six WMO RTHs worldwide. Access to the GTS/MTN enables RTH-Washington to disseminate products on a global scale, and to receive global products from other RTHs for dissemination to RA-IV NMCs - using the regional ISCS GNC-A satellite broadcast and GIFS services.

2.1 System Description

The NWS employs a total of four communication systems at the NWS Central Operations (NCO) which are collectively identified as ISCS, and used for the exchange of climate, weather and water products. The NWS FTPS Ingest File Server and EDIS support other projects and priorities beyond the scope of ISCS. Only the system functions and services employed in support of ISCS are addressed herein.

a. Two communication services are used to disseminate products from the NCO:
    1. NWS Global Telecommunication System (GTS) Internet File Service (GIFS),
    2. NOAA Environmental Satellite, Data, and Information Service (NESDIS) GEONETCast-Americas (GNC-A) satellite broadcast service,
b. Two communication services are used to receive products at the NCO:
    1. NWS File Transfer Protocol Secure (FTPS) Ingest File Server
    2. NWS Email Data Input System (EDIS).
c. Each of the four (4) services is operated independent of the others.
d. GIFS, FTPS, and EDIS are public Internet based services, permitting transport of products to and from any location with public Internet access.
e. Direct access to the GNC-A broadcast is limited to only those locations within the IntelSat 21 satellite broadcast footprint (see Appendix A).
f. Each of these services is comprised of three (3) basic elements:
    1. Data Provider (section 2.2),
    2. Data Delivery Service (section 2.3), and
    3. Remote Computer Processing System (section 2.4).

2.2 First ISCS Component: Data Providers

The Data Providers are those interested in providing data to a remote location.

2.2.1 RTH-Washington. RTH-Washington is a data provider to WMO RA-IV member states for both inter-regional and global products. The explicit lists of products disseminated by the GIFS and the GNC-A satellite broadcast service are published on the

ISCS web page and listed by WMO header. The content of these product lists is controlled under a formal change management process. Instructions for downloading products over the Internet and the structure of products on the file server and satellite broadcast are presented in a User Guide also published on the ISCS web page. Data product file types are described in the User Guide. (see Appendix C for links to further information and documentation)

2.2.2 WMO RA-IV Member States. The WMO RA-IV member states are data providers to RTH Washington. These members provide their respective local observations, forecasts and warnings for both regional and global distribution in compliance with WMO Manual No. 386. The successful submission of products requires the user to register with the NWS for access to EDIS and FTPS Ingest Server services. The user must also coordinate the identity of all new products and the respective dissemination targets with NWS Data Management in order for the products to be accepted and distributed as intended.

2.3 Second ISCS Component: Data Delivery Service

The Data Delivery Service is the method by which the Data Providers' meteorological products are either transported or presented to the Remote Computer Processing System.

2.3.1 RTH-Washington. RTH-Washington distributes the collected data to the GIFS and the GNC-A satellite broadcast service. The GIFS servers are maintained and operated by NCEP Central Operations (NCO), and reside at the RTH-Washington communication centers, providing a public-facing Internet interface for remote user access to the data. Data distributed using the GNC-A satellite broadcast service is disseminated from the NCO-operated network switch, sending the data to the GNC-A uplink hub using file transfer protocol secure (FTPS) over public Internet. At the GNC-A hub, the data is then uplinked to the GNC-A satellite, and broadcast in DVB format over C-band, back to earth for reception by users. GIFS and the GNC-A satellite broadcast service disseminate virtually identical information over two separate media, providing users a choice of service, and enabling users to enhance service availability by utilizing both services in parallel. (see Appendix C for links to further information and documentation).

2.3.2 WMO RA-IV Member States. The WMO RA-IV member states create and disseminate their data products to RTH-Washington on local personal computers and workstations, following the NWS protocols established for the FTPS Ingest File Server and the EDIS. The use of these services requires the Data Provider to have public Internet service and properly employ their NWS-generated user account access credentials for each of the respective services. Either service may be operationally employed by users. Users are encouraged to maintain an account for both services to provide an operational backup in the event the primary service fails. (see Appendix C for links to further information and documentation)

2.4 Third ISCS Component: Remote Computer Processing System

The Remote Computer Processing System receives data from the Data Delivery Service for local processing.

2.4.1 RTH-Washington. RTH-Washington NWS FTPS Ingest File Server and EDIS mail server(s) receive files pushed or sent by the WMO RA-IV member states. Both systems verify the presence of proper communications security protocol and credentials before receiving the data. Files may then be checked for compliance with WMO Bulletin formatting and content before being promoted for local storage and external routing/dissemination.

2.4.2 WMO RA-IV Member States. WMO RA-IV member states remote computer processing systems consist of workstations or personal computers at the respective WMO RMTN offices which pull data from the GIFS and receive data from their local GNC-A satellite ground station equipment.

The remote computer processing system must be connected to the Internet to access the NWS GIFS server. A web browser Graphical User Interface (GUI) or command line interface over Hypertext Transfer Protocol Secure (HTTPS) is available to remotely pull files from GIFS.

One or more computers connected to the local GNC-A satellite ground station equipment may be used to receive and store data products. When the ground station is properly configured and connected to a computer, the NWS sub-channels will present themselves for data reception and products will be sent to and stored on the computer. (see Appendix C for links to further information and documentation)

3. Organizational Responsibilities

This section describes the NWS organizational responsibilities.

3.1 Headquarters, National Weather Service (WSH)

a. The Assistant Administrator (OAA) for Weather Services has responsibility for the overall management of the NWS.

b. The OAA coordinates NOAA programs directly related to weather warnings and forecasting to ensure the compatibility and effectiveness of weather services.

c. The OAA provides climate, water, and weather warnings, forecasts and data products to government, industry, and the general public.

d. The OAA serves as the NOAA focal point, with appropriate support of the offices of other NOAA Assistant Administrators for participation in international climatological, hydrologic, and meteorological activities; including in part, the international exchange of data services, products, and forecasts.

e. The OAA collaborates with the WMO, the International Civil Aviation Organization (ICAO), and other bodies designated by the Office of the Under Secretary.

f. The OAA develops strategies for long-term significant changes to NWS

organizations and operations.

g. The OAA conducts budgetary accounting, reporting, formulation, and analysis.

h. The OAA serves as a focal point for information technology policy.

i. The AA performs corporate risk management and internal auditing of programs and budgets.

j. The OAA ensures a coordinated NOAA program of weather-related activities across NOAA line offices.

3.1.1 Office of Dissemination (DIS)

1. The Office of Dissemination (DIS) performs portfolio management for all NWS Dissemination Services.

a. DIS is responsible for portfolio management of the operation and maintenance of NWS IT systems, infrastructure and services throughout the Nation including; planning, development, acquiring, monitoring, maintenance, system upgrades, consolidation, termination and expansion whether directly or through NWS field offices and contract support.

b. DIS is responsible for integration and planning of new dissemination requirement-driven technologies for performance enhancement and cost effectiveness.

c. DIS is responsible for managing and oversight of operations of select dissemination systems.

d. DIS is responsible for dissemination of NWS weather, water, and climate data and information to the public to support sector-relevant economic productivity and to help communities, businesses, and governments understand and adapt to weather- and climate-related risks.

e. DIS is responsible for promoting increased accessibility, interoperability, and stewardship of NOAA data, and for leading, delivering, and coordinating NWS' contribution to NOAA, DOC, and Administration data dissemination initiatives.

f. DIS maintains performance measures for portfolio management challenges with dissemination programs through interaction with regional/filed/headquarters units.

g. DIS ensures that policy procedures and backup systems through program planning are in place to sustain dissemination systems operational capability.

h. DIS is the focal point within the Dissemination budget portfolio for portfolio and budget planning, milestone integration and provision of internal controls.

i. DIS provides staff assistance to the AA for Weather Services concerning ISCS program operations and configuration control

2. The Dissemination Systems Team (DST) within the Office of Dissemination is responsible for the following;

a. Provide ISCS Program Management; including program, policy and financial management; system requirements; performance monitoring and reporting; and associated operational, engineering and communications responsibilities as required.

b. Provide engineering and technical support for ISCS.

c. Responsible for ISCS/RMTN data management; including establishing and maintaining the data product baselines and change management processes, and exercising authority to approve or deny product change requests.

d. Maintain the ISCS GIFS directories and files in compliance with the approved baseline of products.

e. Provide technical and system management liaison with ISCS stakeholders; including WSH, equipment manufacturers, other Government agencies, and user communities (both foreign and domestic).

f. Establish and maintain access policies for all users in accordance with Department of Commerce, NOAA, NWS and WMO guidelines.

g. Provide outreach to Government and private organizations (both foreign and domestic); including individual companies and the public regarding ISCS participation in WMO RA-IV.

h. Generate ISCS Request for Changes (RCs) on modifications to product baselines. Disposition of RCs are posted to the ISCS web page to notify end users and workstation vendors of changes.

3.1.2 Office of Central Processing (OCP)

a. The Office of Central Processing (OCP) is responsible for program and budget planning for, but not limited to, the Weather and Climate Operational Supercomputing System (WCOSS), the Advanced Weather Interactive Processing System (AWIPS), hydrology information technology initiatives, and the information technology (IT) infrastructure supporting national centers and field operations and allocating resources to select the best mix of executable programs, projects, and activities.

b. OCP is the focal point within the Central Processing budget portfolio for portfolio budget planning, milestone integration, and provision of internal controls.

c. OCP is responsible for maintaining an optimum processing systems configuration and an enterprise architecture for processing systems to meet current and future NWS missions requirements, including the strategy for maximizing effectiveness

while minimizing operating costs and coordination with the DIS.

d. OCP plans and budgets for the end-to-end development, operation, maintenance, and eventual removal of the above systems and tracks progress against those plans.

e. OCP takes a "systems of systems" approach to establishing a national and regional IT infrastructure from observing system data flow to product generation.

f. OCP provides a holistic, on-going assessment and analysis of the processing system and provides specific recommendations for changes to the configuration of NWS processing systems and overall capabilities to maximize the benefit to NWS and its many constituents.

g. Supports Data Management of GIFS data feed and switching directories in accordance with the approved baseline of products.

h. Provides Tier 1 support for trouble calls and SSL/VPN monitoring.

i. Open a trouble ticket and hand off trouble, investigation, and problem resolution to DST for problems such as access, registration, and/or username and password problems, and data product problems.

j. Provide support in managing username and password maintenance to the ISCS servers.

k. Ensures IT security compliance for the ISCS servers.

l. Operates and maintains the SSL/VPN services, user accounts, technical support, and IT security; manage server connectivity to both internal and external resources; and manage equipment configuration.

1. Provide troubleshooting support as Tier 2 support for the ISCS servers.

3.1.3 Analyze, Forecast, and Support Office (AFSO)

a. The Analyze, Forecast and Support Office (AFSO) is responsible for financial management and oversight of the Analyze, Forecast, and Support (AFS) portfolio.

b. AFSO encompasses the field forecast and warning mission, the facilities that support the mission and programmatic leadership in the provision of life saving decision and support services.

c. AFSO is responsible for collecting and validating requirements and policies associated with the programmatic management of the 11 identified National Service Programs.

d. AFSO provides support to partnering Federal agencies where hydro meteorological data or expertise could improve the service to the American People.

e. AFSO develops, validates and prioritizes national requirements and allocates

resources to select the best mix of executable programs, projects, and activities.

f. AFSO provides NWS service improvements through portfolio planning and evaluation by working collaboratively with other NWS offices that support service delivery to ensure that programs, projects, and activities are aligned and deliver needed service improvements.

g. AFSO coordinates and collaborates with field units to gather, develop, manage and validate national requirements.

h. AFSO identifies specific service area needs for ongoing scientific and technical advancements.

i. AFSO identifies service delivery requirements for effective new technologies to facilitate improvements in products and services.

j. AFSO coordinates on both programmatic and budgetary topics to all elements within the Office of the Chief Operations Officer and with all other NWS portfolios.

k. AFSO is the focal point within the AFS budget portfolio for portfolio and budget planning, milestone integration and provision of internal controls.

l. AFSO coordinates with other NOAA line offices and federal agencies to provide integrated environmental forecast services and to promote cross service program themes such as the climate-weather linkage.

m. AFSO ensures spatial and temporal consistency of WFO and National Center products and services to ensure provision of common operating picture for partners and the public.

n. AFSO collects and priorities foundational environmental data/information requirements and service needs for communities, businesses, and governments to better understand and adapt to weather- and climate- related risks.

o. AFSO provides requirements-based analysis of current and near-term forecast needs and coordinates with NWS offices to deliver technologies to improve field operations and to support the transfer of innovations into operations.

p. AFSO provides guidance on the provision of weather, water, and climate decision support services for National Service programs and support programs and ensures service programs are striving towards the Weather Ready Nation strategic outcome.

q. AFSO develops and maintains policy directives and instructions for services provided by field entities.

r. AFSO works with DISS to collect observations and deliver products to users.

s. AFSO creates internal and external partnerships to collect and validate service and mission needs, including those of the ISCS.

3.1.4 International Affairs Office (IA)

a. The International Affairs Office (IA) promotes the interests of the U.S. meteorological and hydrologic communities abroad in order to improve the level of science, technology, operations, and services worldwide and within the NWS.

b. IA participates actively in the WMO and supports the U.S. Permanent Representative to the WMO.

c. IA is the focal point in the U.S. for national meteorological and hydrologic services of other countries, and it manages relevant bi-lateral and multi-lateral agreements.

d. IA represents the relevant interests of the NWS to other international offices and activities, especially those that advance short-term warning and forecast services.

e. IA is responsible for the coordination of system and data requirements with all WMO regions that acquire the ISCS GIFS data (RA-III, RA-IV, and RA-V) to ensure successful exchange of meteorological and hydrologic information.

f. IA facilitates policy and matters of notification in coordination with the ISCS Program Office and the U.S. Permanent Representative to the WMO.

4. Area of Coverage

ISCS data is relevant to WMO Regions; specifically RA-III (South America), RA-IV (North America, Caribbean Islands, Central America, Columbia and Venezuela), and RA-V (Pacific Ocean). ISCS-GIFS, EDIS and NWS FTPS Ingest File Server are public Internet based systems. Any user with public Internet access can access the ISCS data on GIFS, and any EDIS and NWS FTPS Ingest File Server registered users can transmit data to RTH Washington. The GNC-A satellite ground station equipment is commercially available, enabling any user within the satellite footprint to access ISCS data on the GNC-A broadcast. The majority of ISCS service users are located in WMO RA-IV with the remaining users located in RA-III and RA-V.

5. Meteorological Data Products and Information

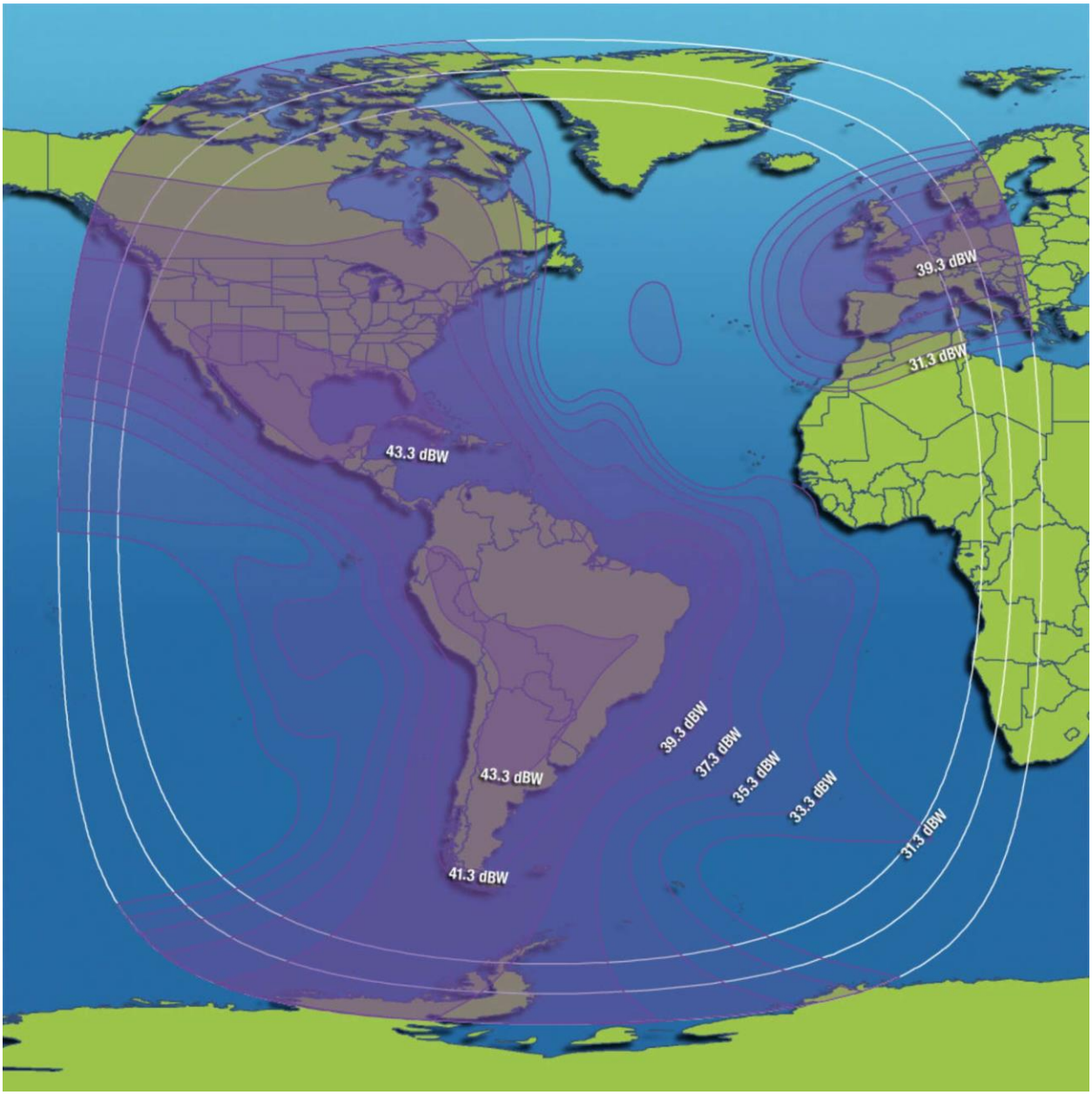
The ISCS data format conforms to WMO (GTS) and RTH-Washington guidelines. Information that is available to the supported regions is selected and prioritized by WMO RA-IV based on the weather needs of the people in the service area and in accordance with established WMO guidelines. In case of a conflict in requirements, priority is given to WMO RA-IV. Whenever a change is issued that affects one or more of the ISCS data streams, as ISCS Request for Change (RC) will be generated to document the change. ISCS change management is controlled by the NWS ISCS Program Office.

6. Policy on ISCS Access

Access to all ISCS services is free. Access to EDIS and NWS FTPS Ingest File Server require user registrations and an appropriately configured workstation or personal computer with Internet connectivity. GIFS is an open access service on the pubic Internet, allowing

both web browser and command line interface from remote users. The GNC-A satellite broadcast service provides open access to data on the NWS and other included sub channels, but requires the user to purchase, install, configure and operate a GNC-A satellite ground station within the IntelSat 21 C-band footprint. The NWS ISCS Program Office is available to assist WMO RA-IV member states in completing the registration process and accessing additional information on the respective services.

APPENDIX A – GNC-A SATELLITE EARTH COVERAGE

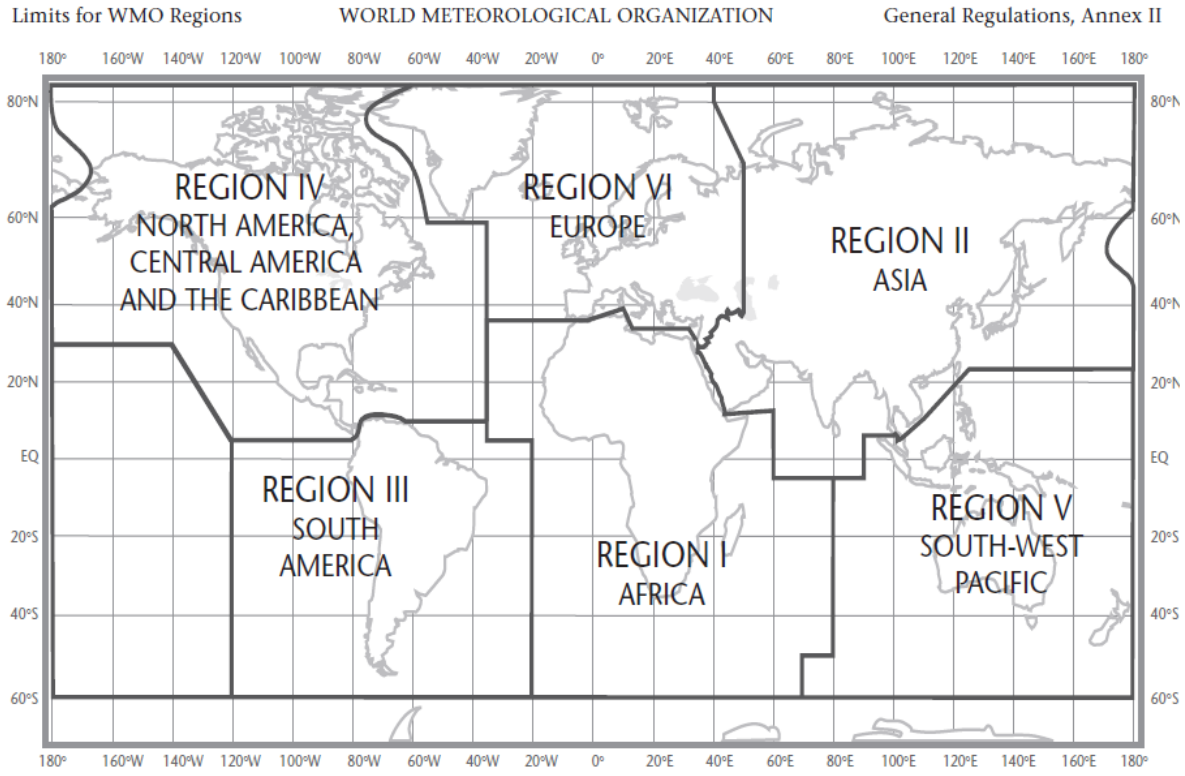


IntelSat 21 GNC-A C-band broadcast earth coverage and signal strength.

APPENDIX B - WMO REGIONS

World Meteorological Organization Regional Geographical Limits

(ref. World Meteorological Organization Publication WMO-No. 15,
Basic Documents No. 1, 2011 edition)



APPENDIX C – ISCS INFORMATION AND DOCUMENTATION LINKS

1. ISCS Home Page:
   http://www.nws.noaa.gov/iscs/index.html

2. ISCS Documents:
   http://www.nws.noaa.gov/iscs/documents.html

3. ISCS Product List (Baseline):
   http://www.nws.noaa.gov/iscs/baseline.html

4. GTS Internet File Service (GIFS):
   https://ra4-gifs.weather.gov/data/RMTN/

5. Email Data Input Service (EDIS) Registration and User Guide:
   http://www.nws.noaa.gov/iscs/index.html

6. File Transfer Protocol Secure (FTPS) Ingest Servers:
   http://www.nws.noaa.gov/iscs/ftps.html

7. NESDIS GNC-A Satellite Broadcast Information:
   http://www.geonetcastamericas.noaa.gov/index.html