



Proposed Expansion of GOES-R Data Collection System

NOAA-WP-11 presents a summary of the 2007 World Radiocommunication Conference (WRC-07) regarding frequency issues concerning metsats.

This document is to provide information to CGMS Members regarding proposed expansion of frequencies used by GOES DCPs that would affect future DCP use of 401-403 MHz by both geostationary and non-geostationary metsats.

Proposed Expansion of GOES-R Data Collection System

Introduction

The growth of data collection platforms (DCPs) to collect and transmit environmental data to GOES satellites continues to accelerate. Since 2003 the number of DCPs sending data to NOAA's GOES satellites has swelled from 9,000 to more than 28,000. Future estimates project a continued expansion with total requirements likely to exceed 100,000. In order to accommodate this expansion, much has been done or is being done to efficiently use the limited radio frequency spectrum available. However, the limits of efficiency dictate the additional spectrum must be used to meet the expected DCP growth.

Spectrum Availability and DCP Use

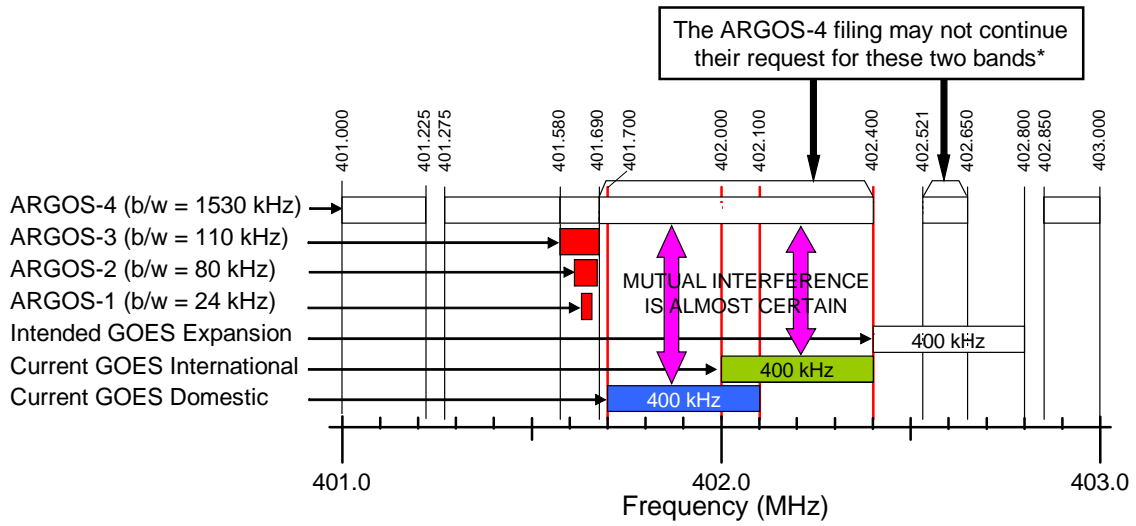
Currently there are 2 MHz of spectrum allocated in 401-403 MHz to Earth-to-space use by Earth-exploration and meteorological satellites (metsats). To date, the vast majority of DCPs transmit to metsats, both geostationary (GSO) and non-geostationary (NGSO). As with GOES satellites, there are plans to greatly expand the existing Argos DCP network that transmit to NGSO metsats as well as Earth exploration satellites. CNES (Centre National D'Etudes Spatiales or National Center for Space Studies) builds the Argos hardware and has existing contracts with NOAA and EUMETSAT to provide the Argos system for their existing and future NGSO satellite missions (for NOAA, POES and NPOESS; for EUMETSAT, Metop). The current Argos-3 system that uses 110 kHz of spectrum in a single channel will be replaced with Argos-4 designed to have 4 or 5 channels expected to be ready for implementation on satellites as early as 2011. Figure 1 presents the various Argos and GOES DCP spectrum use and shows the overlap of the Argos-4 channels 401.69-402.4 and 402.521-402.65 MHz with existing and proposed GOES DCP frequencies. Such overlap was noted by CNES and at the 42nd Argos operations committee meeting in June 2008, CNES stated that it would not pursue use of these two channels for the Argos-4 system. To compensate for this loss, a band from 401-401.225 MHz was added to the International Telecommunication Union satellite filing (see Figure 2).

Future Congestion in 401-403 MHz and Need for CGMS Guidance

Figure 1 indicates the spectrum limitations on expansion of DCP use, considering both GSO and NGSO applications from only Argos and GOES. Additionally, there are other metsat satellites using DCPs that have not been considered. Were these to be brought into consideration, the true congestion would be realized. Truly there is a need for CGMS to provide guidance to the metsat operators as was done in the past. Early intervention by CGMS is necessary for orderly development of the limited 2 MHz of spectrum resources.



401 – 403 MHz Existing and Requested Frequencies



*: Per CNES presentation to 42th Argos Operations Committee Meeting June 3 – 5, 2008
If this is confirmed, the total bandwidth requested for ARGOS-4 would be 691 kHz.

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Figure 1. Existing and proposed future spectrum use of various Argos systems and GOES DCPs

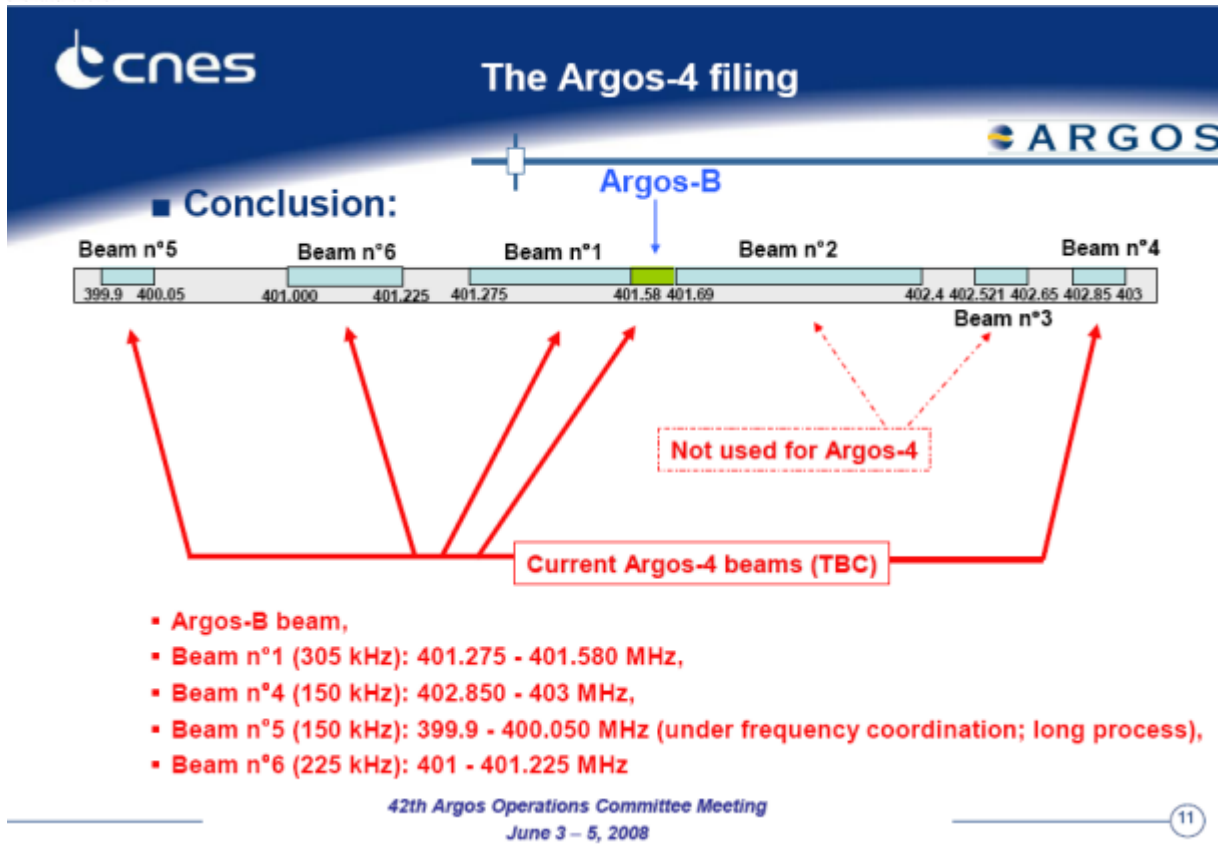


Figure 2. CNES slide from June 2008 Argos operations committee meeting showing changes to Argos-4 system based on coordination with EUMETSAT and NOAA



