



# CSNO-TARC: BDS Status Information Service

14<sup>th</sup> Meeting of the International Committee on  
Global Navigation Satellite Systems

Dr. Geng Changjiang  
Test and Assessment Research Center of China Satellite Navigation Office

2019-12,



# | CONTENT |

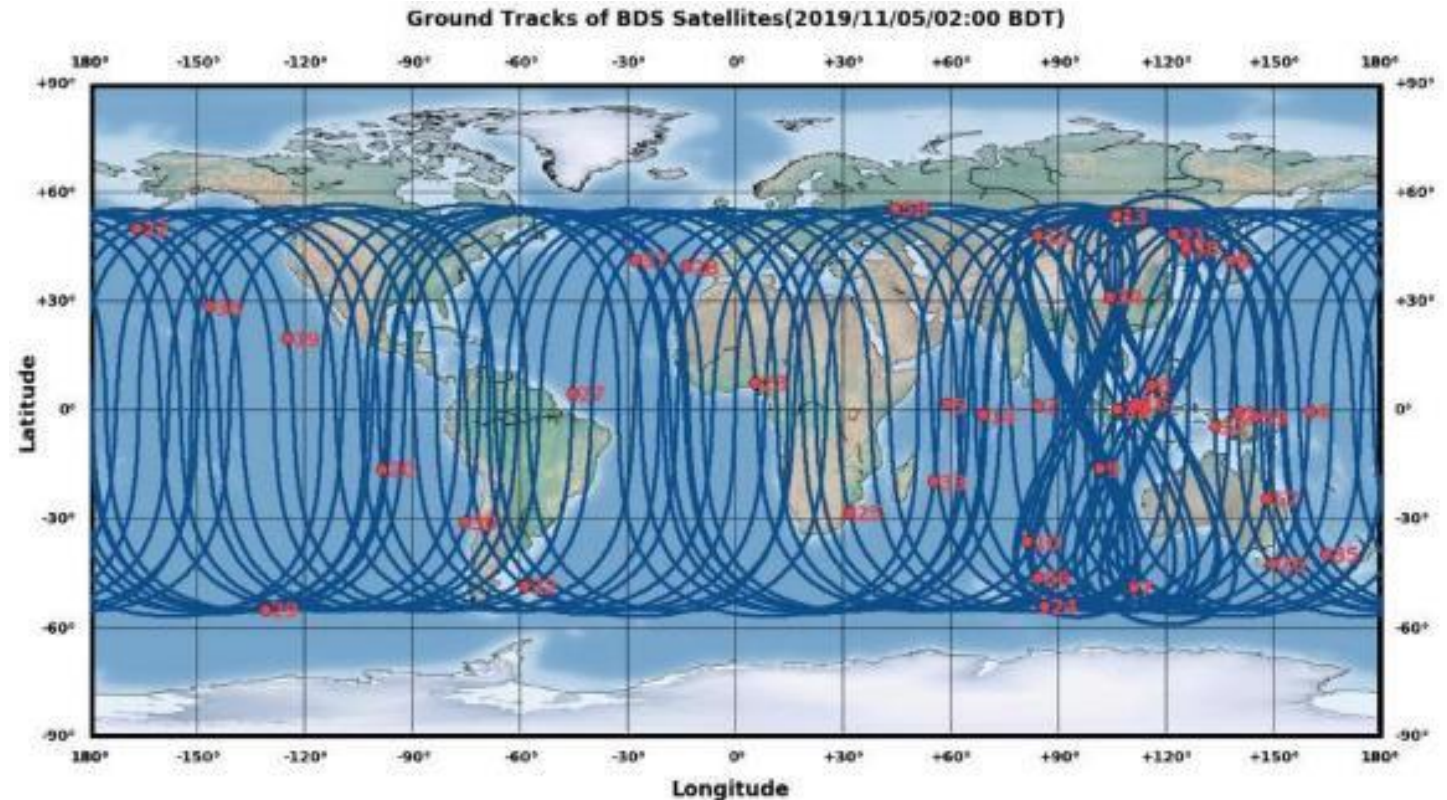
**01 Overview**

**02 Service**

**03 Cooperation**

## I. Two Generations of Satellites

- BDS-2
  - 8 years design life;
  - 3 open service signals;
- BDS-3
  - 12 years design life;
  - 4 open service signals;



- 4 open service signals - B1I, B1C, B2a and B3I, in which B1C and B2a is compatible with GPS L1/Galileo E1 and GPS L5/Galileo E5a with frequency 1575.42 MHz and 1176.45 MHz;
- New designed onboard hydrogen maser clock and rubidium clock;
- Crosslink between satellites for orbit determination and time synchronization;
- RDSS, SBAS ( regional) , PPP (regional) and SAR capability;

To promote BDS application worldwide, we have been working on user information support.



- System Status
- Service Performance
- User Support Data
- Feedback Loop

[www.csno-tarc.cn](http://www.csno-tarc.cn)

The screenshot displays the website for the Test and Assessment Research Center of China Satellite Navigation Office (CSNO-TARC). The header includes the center's name in Chinese and English, along with a navigation menu: Home, BDS System Status, BDS Service Performance, GLONASS, GPS, Cooperation, User Support, and About TARC. The main content area features a night cityscape background and several sections:

- BDS Service Performance:** Contains three charts:
  - Number of Visible Satellites:** A heatmap showing satellite visibility across a geographic area.
  - Position Dilution of Precision:** A heatmap showing the precision of satellite positioning.
  - Ground Tracks of Satellites:** A line chart showing the orbital paths of satellites over time.
- News and Views:** A list of recent news items:
  - CSNO-TARC & APSCO Successfully Co-organized the First "GNSS Monitoring & Assessment System" Training Sessions:** Dated 2018.03.27.
  - BDS into Saudi Arabia:** Dated 2017.06.30.
  - The Kickoff Meeting of Russia-China "One Belt One Road" Satellite Navigation Joint Testing Project Successfully Held in Beijing:** Dated 2017.06.30.
  - 10th Moscow International Navigation Forum was Held in Russia:** Dated 2017.06.29.
- Welcome to CSNO-TARC:** A text block describing the center's role in satellite navigation system monitoring and assessment.
- Major responsibilities:** A list of four key tasks, including system development, simulation, user support, and international cooperation.

# 02 System Status

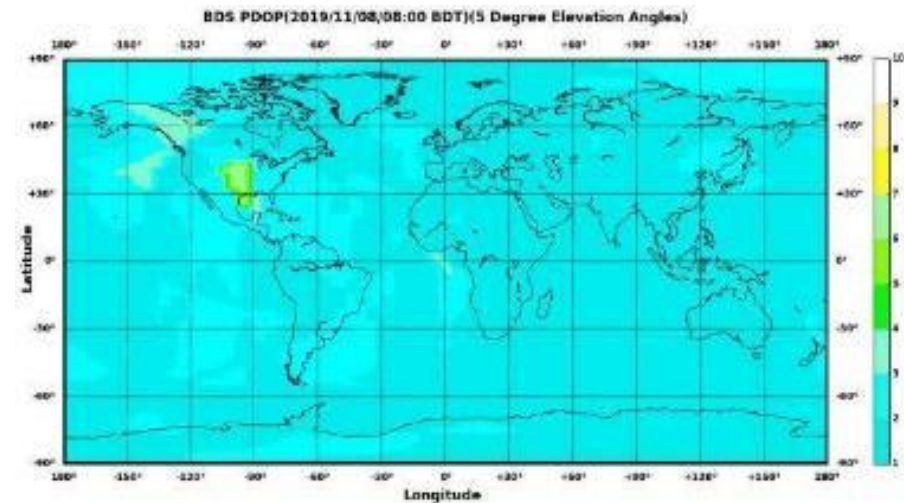
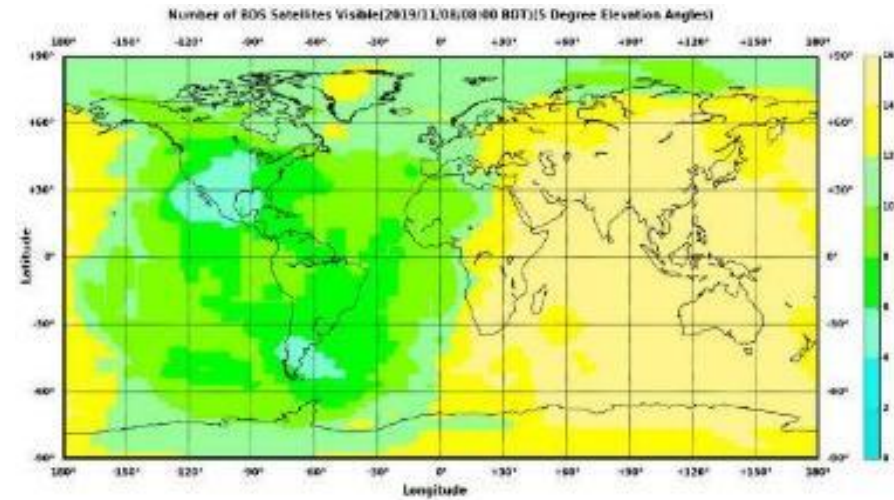
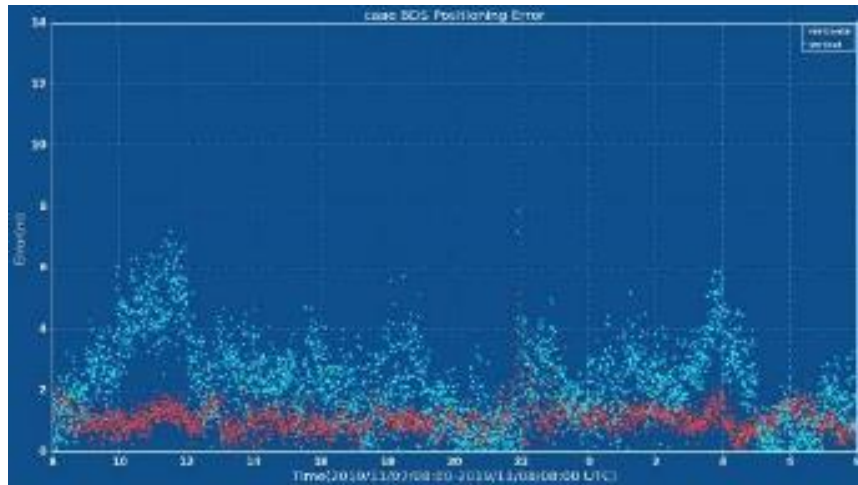
- System Introduction
- Constellation Status
- Satellites Almanac
- Satellites Health



PRN	IGS-SVN	NORADID	SVN	SatelliteType	ClockType	Manuf	LaunchDate	SatStatus	Healthy
01	C003	36287	GEO-1	BDS-2	Rubidium	CASC	2010-01-17	Operational	Healthy
02	C016	38953	GEO-6	BDS-2	Rubidium	CASC	2012-10-25	Operational	Healthy
03	C018	41586	GEO-7	BDS-2	Rubidium	CASC	2016-06-12	Operational	Healthy
04	C006	37210	GEO-4	BDS-2	Rubidium	CASC	2010-11-01	Operational	Healthy
05	C011	38091	GEO-5	BDS-2	Rubidium	CASC	2012-02-25	Operational	Healthy
06	C005	36828	IGSO-1	BDS-2	Rubidium	CASC	2010-08-01	Operational	Healthy
07	C007	37256	IGSO-2	BDS-2	Rubidium	CASC	2010-12-18	Operational	Healthy
08	C008	37384	IGSO-3	BDS-2	Rubidium	CASC	2011-04-10	Operational	Healthy
09	C009	37763	IGSO-4	BDS-2	Rubidium	CASC	2011-07-27	Operational	Healthy
10	C010	37948	IGSO-5	BDS-2	Rubidium	CASC	2011-12-02	Operational	Healthy
11	C012	38250	MEO-3	BDS-2	Rubidium	CASC	2012-04-30	Operational	Healthy
12	C013	38251	MEO-4	BDS-2	Rubidium	CASC	2012-04-30	Operational	Healthy
13	C017	38774	IGSO-6	BDS-2	Rubidium	CASC	2016-03-30	Operational	Healthy
14	C015	38775	MEO-6	BDS-2	Rubidium	CASC	2012-09-19	Operational	Healthy
16	C019	43539	IGSO-7	BDS-2	Rubidium	CASC	2018-07-10	Operational	Healthy
18	C020	44231	GEO-8	BDS-2	Rubidium	CASC	2019-05-17	Testing	--
19	C201	43001	MEO-1	BDS-3	Rubidium	CASC	2017-11-05	Operational	Healthy
20	C202	43002	MEO-2	BDS-3	Rubidium	CASC	2017-11-05	Operational	Healthy
21	C206	43208	MEO-3	BDS-3	Rubidium	CASC	2018-02-12	Operational	Healthy
22	C205	43207	MEO-4	BDS-3	Rubidium	CASC	2018-02-12	Operational	Healthy
23	C209	43581	MEO-5	BDS-3	Rubidium	CASC	2018-07-29	Operational	Healthy
24	C210	43582	MEO-6	BDS-3	Rubidium	CASC	2018-07-29	Operational	Healthy
25	C212	43603	MEO-11	BDS-3	Hydrogen	SECM	2018-08-25	Operational	Healthy

## 02 Service Performance

- Number of Visible Satellites
- Dilution of Precision
- SIS Ranging Error
- Positioning Accuracy





# 02


## User Support Data

- Technical Documents
- Data Download (Almanac & Ephemeris)
- Satellite Parameters (PCO et. al )


 Satellite Parameters


Tab. Satellite Antenna Phase Center (relative to mass center)

PRN	SVN	Mass(kg)	B1-X(m)	B1-Y(m)	B1-Z(m)	B2-X(m)	B2-Y(m)	B2-Z(m)	B3-X(m)	B3-Y(m)	B3-Z(m)
C19	MEO-1	924.9	-0.1993	0.0075	1.4638	-0.2038	0.0093	1.0731	-0.2006	0.0112	1.1894
C20	MEO-2	924.9	-0.2113	0.0088	1.4965	-0.2104	0.0094	1.0830	-0.2112	0.0119	1.1985
C21	MEO-3	924.9	-0.2089	0.0008	1.5033	-0.2140	0.0027	1.1037	-0.2132	0.0047	1.2158
C22	MEO-4	924.9	-0.2089	-0.0022	1.5034	-0.2136	0.0003	1.0939	-0.2128	0.0014	1.2357
C23	MEO-5	945.2	-0.2096	0.0034	1.4944	-0.2085	0.0050	1.1211	-0.2096	0.0064	1.2285
C24	MEO-6	946.0	-0.2090	0.0030	1.5173	-0.2088	0.0044	1.1245	-0.2091	0.0066	1.2448
C25	MEO-11	1043.3	0.0473	-0.0035	1.0927	0.0473	-0.0004	1.0838	0.0473	-0.0036	1.0850
C26	MEO-12	1041.8	0.0467	-0.0051	1.0938	0.0466	-0.0050	1.0827	0.0467	-0.0052	1.0817
C27	MEO-7	1018.0	0.0180	-0.0076	1.1082	0.0181	-0.0076	1.1000	0.0182	-0.0075	1.1020
C28	MEO-8	1014.4	0.0165	-0.0078	1.1062	0.0166	-0.0079	1.0987	0.0167	-0.0079	1.1007
C29	MEO-9	1010.4	0.0284	-0.0070	1.1043	0.0288	-0.0071	1.0920	0.0288	-0.0058	1.0911
C30	MEO-10	1008.6	0.0288	-0.0057	1.0930	0.0289	-0.0057	1.0921	0.0290	-0.0045	1.0919
C32	MEO-13	1006.9	-0.1850	-0.0018	1.4882	-0.1854	0.0006	1.0866	-0.1858	0.0022	1.1986
C33	MEO-14	1007.4	-0.1873	-0.0038	1.4700	-0.1853	-0.0024	1.0893	-0.1861	-0.0003	1.1786
C34	MEO-15	1046.6	0.0630	-0.0093	1.0975	0.0629	-0.0093	1.0890	0.0630	-0.0094	1.0899
C35	MEO-16	1035.0	0.0627	-0.0101	1.0917	0.0626	-0.0099	1.0848	0.0628	-0.0099	1.0852
C36	MEO-17	1060.8	-0.1952	-0.0097	1.3370	-0.1935	-0.0086	0.9565	-0.1941	-0.0067	1.0564
C37	MEO-18	1060.7	-0.1994	-0.0104	1.3381	-0.1994	-0.0100	0.9281	-0.1991	-0.0075	1.0662
C38	IGSO-1	2951.8	-0.0696	-0.3099	1.9999	-0.0721	-0.3056	1.5665	-0.0681	-0.3099	1.6641
C39	IGOS-2	2949.4	-0.0657	-0.3057	1.9726	-0.0651	-0.3043	1.5499	-0.0647	-0.3077	1.5862
C45	MEO-23	1059.0	-0.2824	-0.0074	1.3952	-0.2804	-0.0113	1.0114	-0.2787	-0.0069	1.1079
C46	MEO-24	1058.4	-0.2831	-0.0029	1.3856	-0.2802	-0.0061	1.0079	-0.2790	-0.0016	1.0848
C59	GEO-1	3003.9	-0.0554	-0.3101	2.0860	-0.0584	-0.3128	1.6432	-0.0538	-0.3054	1.7351


 BDS ICD


---

**NEW** BeiDou Navigation Satellite System Signal In Space Interface Control Document Open Service Signal B1C (Version 1.0) 


**NEW** BeiDou Navigation Satellite System Signal In Space Interface Control Document Open Service Signal B2a (Version 1.0) 

---


**NEW** Signal In Space Interface Control Document Open Service Signal B3I (Version 1.0) 


BeiDou Navigation Satellite System Signal In Space Interface Control Document Open Service Signal (Version 2.1) 

---

 BDS Service Performance Specification

---

**NEW** BeiDou Navigation Satellite System Open Service Performance Specification (Version 2.0) 

BeiDou Navigation Satellite System Open Service Performance Specification (Version 1.0) 

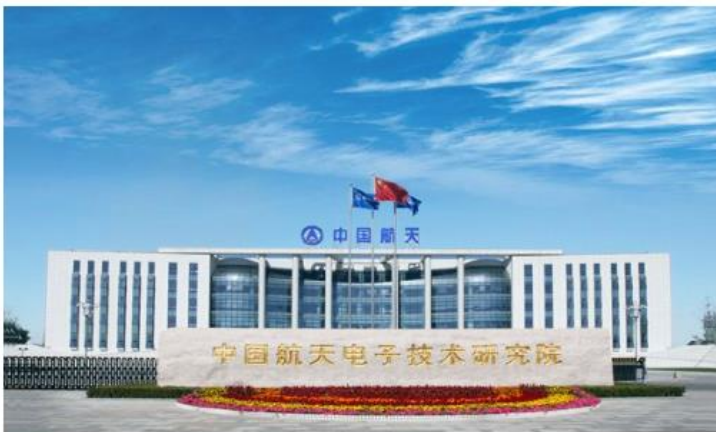


## 02

## Feedback Loop

<http://www.csno-tarc.cn/en/support/feedback>

Contact Us



Tel. : 010-88105949,010-88105950

E-mail. : cooperation@csno-tarc.cn, tarc@beidou.gov.cn

Add. : Fengqi East Road No.1, China Aerospace Electronics Technology Research Institute

Feedback

If you have any questions on civil service performance of BDS, please contact us promptly. Provide first-class service for global users is BDS's relentless pursuit. Phone number:010-88105942 or 010-88105943.

Full Name:

Region/Country:

\* Your Email:

Tel:

Interrupt start time: Date  Time

Interrupt end time: Date  Time

Interruption is continuous: Yes  No

Faulty location:

User equipment (manufacturer, model, antenna, etc.):

Equipment type:

Antenna elevation angle:

Receiver frequency:

Service performance:


Enter your question:




\* Problem Description:

Upload Image:

\* Enter the check code:

# 03 BDS - GLONASS


**INFORMATION AND ANALYSIS CENTER FOR POSITIONING, NAVIGATION AND TIMING**

MAIN GLONASS **BEIDOU** GPS NEWS ARCHIVE GUIDE FEEDBACK ABOUT IAC
 UTC+3: 10:16:22

---

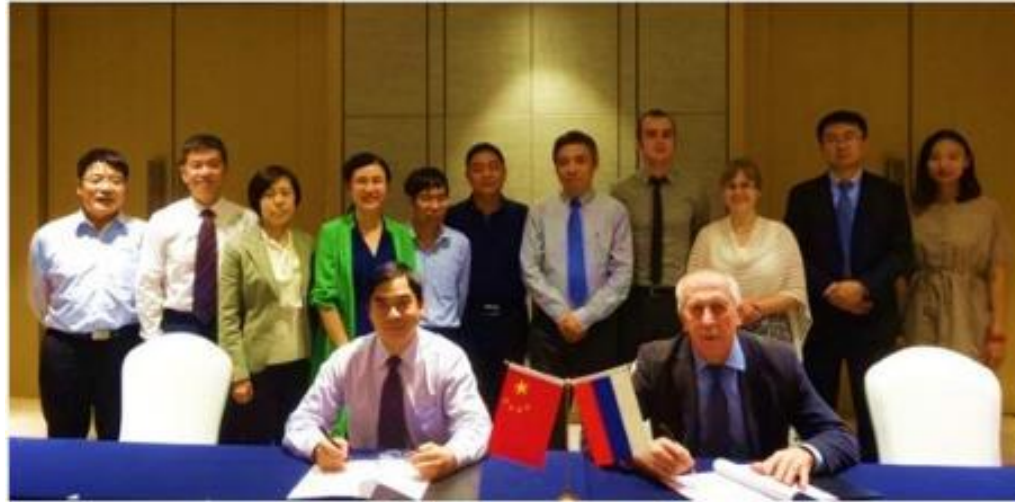
**BEIDOU STATUS**
**BEIDOU CONSTELLATION STATUS**

BEIDOU ALMANAC About BEIDOU

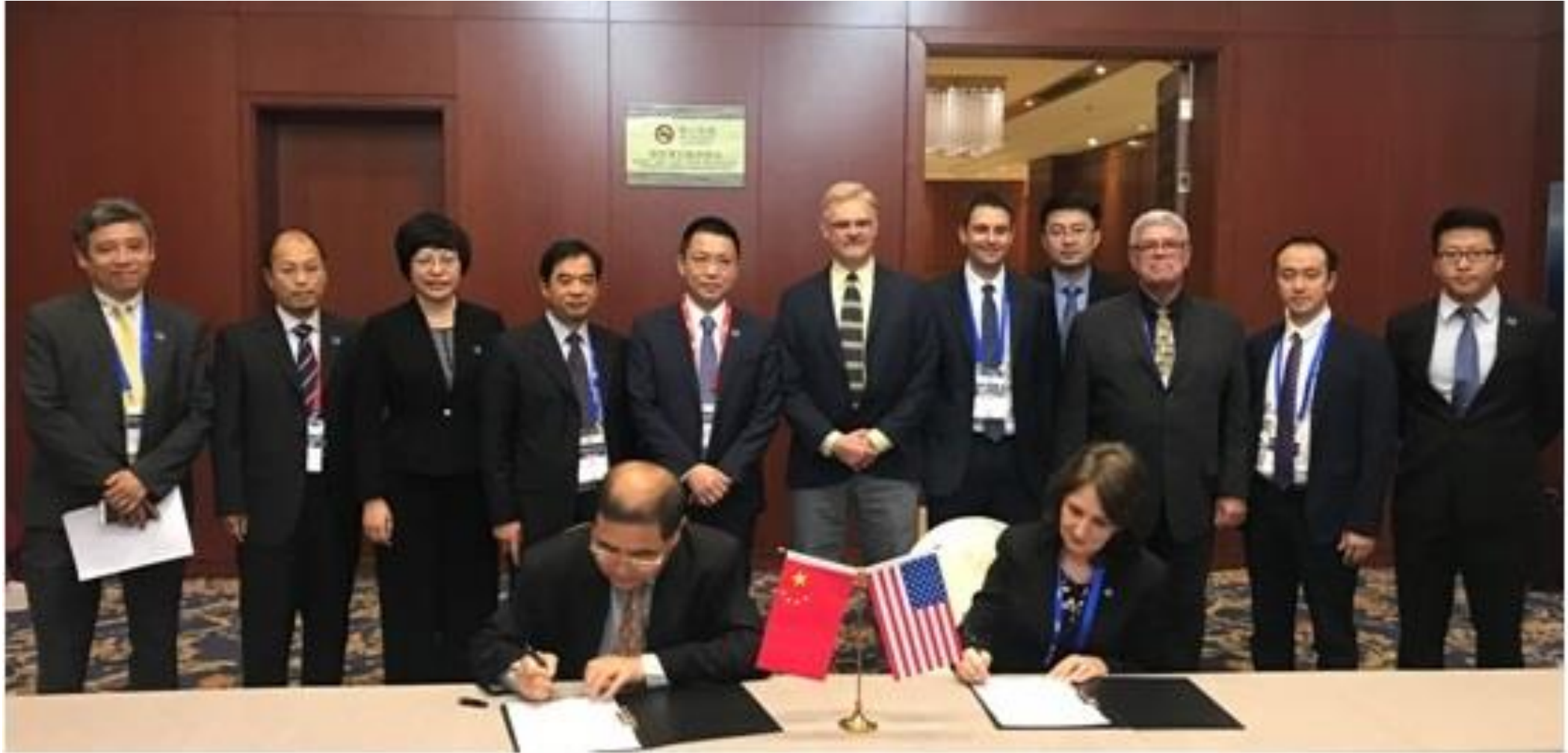
USER PERFORMANCE
 
**BEIDOU CONSTELLATION STATUS 12.11.19**  
 Total satellites in constellation 43  
 SV is included in operational orbital constellation 34  
 SV is not included in operational orbital constellation 9

RUSSIA-CHINA COMMITTEE
 
**BEIDOU CONSTELLATION STATUS 12.11.19**

Satellite Number	NORAD	Satellite Name	Type of system	Launch date	Life-time (days)	Notes
C01	36287	GE001	BeiDou-2	17.01.10	3586	In operation
C02	38953	GE006	BeiDou-2	25.10.12	2574	In operation
C04	37210	GE004	BeiDou-2	01.11.10	3298	In operation
C05	38091	GE005	BeiDou-2	25.02.12	2817	In operation
C06	36828	IGS001	BeiDou-2	01.08.10	3390	In operation
C07	37296	IGS002	BeiDou-2	18.12.10	3251	In operation
C08	37384	IGS003	BeiDou-2	10.04.11	3138	In operation
C09	37763	IGS004	BeiDou-2	27.07.11	3030	In operation
C10	37948	IGS005	BeiDou-2	02.12.11	2902	In operation
C11	38250	ME003	BeiDou-2	30.04.12	2752	In operation
C12	38251	ME004	BeiDou-2	30.04.12	2752	In operation
C13	38774	IGS006	BeiDou-2	30.03.16	1322	In operation
C14	38775	ME006	BeiDou-2	19.09.12	2610	In operation
C03	41586	GE007	BeiDou-2	12.06.16	1248	In operation
C19	43001	ME001	BeiDou-3	05.11.17	737	In operation
C20	43002	ME002	BeiDou-3	05.11.17	737	In operation
C21	43202	ME003	BeiDou-3	12.02.18	639	In operation



# 03 BDS - GPS





# Conclusion

- CSNO-TARC has been providing BDS information service for about 3 years, serving large number of users.
- Continue to improve the information service for global users in effectiveness and variety of information.
- Continue to promote the cooperation with other GNSS providers for keeping the transparency of GNSS operation and providing more reliable service.

# Thanks !

14<sup>th</sup> Meeting of the International Committee on  
Global Navigation Satellite Systems

