



BeiDou
Navigation Satellite System



BeiDou System SAR Application and Future Conception

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BDS's Interest in SAR



BDS is willing to respond actively to the appeal for international SAR (Search And Rescue) cooperation.

- ◆ SAR for persons as one of the most significant humanitarian actions
- ◆ Has been endeavoring to develop its application on SAR
- ◆ Continuing to strengthen its internal ability on SAR

BDS Short Message Service



Coverage of the short message service enclosed in the green lines

BDS is now a fully operated regional satellite system with functions of location report and short message communication.

Its performances:

- ◆ Coverage of $70^{\circ} \text{ E} \sim 140^{\circ} \text{ E}$, $5^{\circ} \text{ N} \sim 55^{\circ} \text{ N}$ (China and her adjacent area)
- ◆ Duplex communication all-day and all-weather
- ◆ 120 Chinese characters in a single message
- ◆ Utmost 540,000 times access per hour

Inherent Utility on SAR



Due to the short message function, BDS has a potential SAR utility:

- ◆ BDS lets its users know “where I am” and “where you are”.
- ◆ BDS lets others know “where I am”, “what my trouble is” and “what I need” .
- ◆ More and more pertinent applications and systems are being developed and promoted, especially in the desert, mountainous and oceanic zones.

Present Application: Geological Disaster

In the Wenchuan Great Earthquake occurred in 2008,

- ◆ Rescue party used BeiDou command system to succor the people in danger.
- ◆ Team leaders could find out the location of each team through monitors at any time, and send out instructions in form of short message if necessary.
- ◆ BeiDou user terminals helped rescue teams march conveniently.
- ◆ Geographical information collection aided by BDS helped to provide disaster relief and rebuild after disaster.

Present Application: Geological Disaster



Present Application: Oceanic Salvage

BDS has become a cheerful helper in oceanic salvage field:

- ◆ BDS integrated information network provides relevant services, such as boat location, navigation, emergency call , emergency aid, and short message communication among the fishers, their relatives and the onshore stations.
- ◆ BDS has raised the search efficiency by more than 30%.
- ◆ The salvage system advanced its management and dispatch ability, leading to a success rate of over 98% on life saving.
- ◆ Up to the end of 2015, loss of fortune caused by distress reduced by billions of Yuan for oceanic enterprises and individuals.



Salvage scene and apparatus onboard

Present Application: Travel Security

BDS has been attracting more and more travelers, especially in the long-distance hiking and driving, and even in the adventure across the no man's land. Some services for travel security are offered by some local governments and companies.

- ◆ BDS terminals have practical functions such as safety announcement through short message and calling for help using only one key.
- ◆ BDS terminals are connected with the wireless network, which connects the travelers and their families.
- ◆ The short messages and the location information can be stored for back up.

BDS SAR Future Conception: Regional SAR

BDS regional SAR function will be sustained and strengthened by continuing and reinforcing the regional capabilities of location report and short message communication.

- ◆ User capacity is scheduled to be enlarged, so as to ensure users in distress could access the system more freely.
- ◆ The service frequency will be raised to decrease the users' waiting time after requesting.
- ◆ The length of a single message will be designed to be much longer, in order to make the contents more detailed and specific.
- ◆ More and more regional SAR systems on BDS are expected to be established and improved.

BDS SAR Future Conception: Global SAR on Short Message

BDS is experiencing its growth from a regional satellite navigation system to a global satellite navigation system. Accordingly, the short message function is considered to extend from local area to global range.

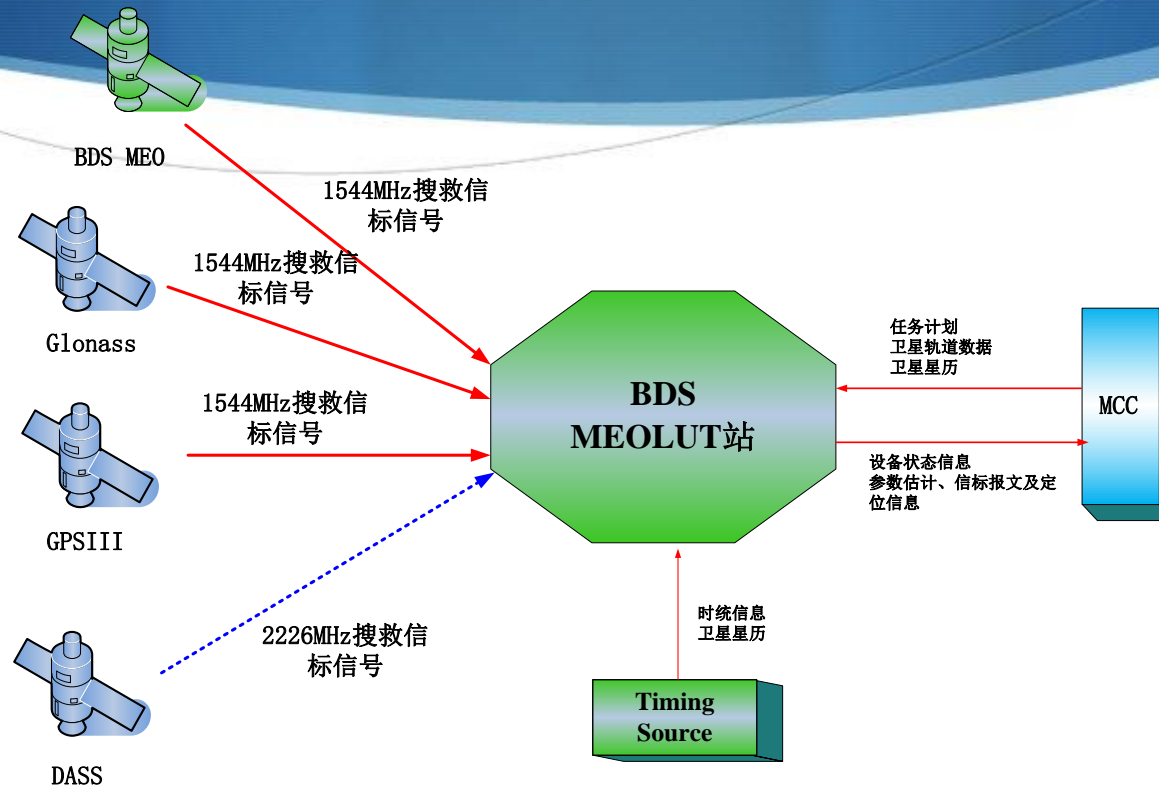
- ◆ Realized by MEO satellites
- ◆ Upload frequency 1671MHz, download frequency 2492MHz
- ◆ Signal power of a user terminal being less than 10W
- ◆ Information speed of 400bps supported
- ◆ Standing alone for search and rescue events all-day and all-location
- ◆ Offering an opportunity to supplement effectively the Cospas-Sarsat MEOSAR service

BDS SAR Future Conception: Global MEOSAR

MEOSAR function is now under initial consideration in the process of BDS globalization.

- ◆ BDS SAR should be enhanced and expanded to make a contribution to the international humanitarian career.
- ◆ BDS MEO satellites are scheduled to apply for joining in the Cospas-Sarsat MEOSAR Program.
- ◆ Frequency coordination and satellite parameter coordination are going to be undertaken.
- ◆ It will be promising for BDS MEO satellites to load the SART.
- ◆ The Beijing MEOLUT Prototype Station is expected to be upgraded and improved, and then to pass the demonstration test.

BDS SAR Future Conception: Global MEOSAR



BDS's future contribution to MEOSAR from earth to space

Calling for Proposals

Because SAR is a common career concerning the human race, we wish all parties:

- ◆ To discuss and investigate prospective ability of BDS SAR
- ◆ To discuss and analyze the relation between BDS and the MEOSAR system
- ◆ To offer proposals for the further development of BDS SAR



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Thank you for your attention !