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IAC 2013 – HIGHLIGHT LECTURE 2

China's BeiDou navigation satellite system

The second Highlight Lecture of the 64th International Astronautical Congress (IAC) in Beijing, China, focused on construction and development of China's BeiDou navigation satellite system.

The speaker Dr Ran Chengqi, Director of the China Satellite Navigation Office, was introduced by Jim Zimmerman, a former President of the International Astronautical Federation (IAF).

He described the Congress in Beijing as an opportunity to learn first-hand about many aspects of China's space activities, one of the exciting aspects of which was the BeiDou GNSS (Global Navigation Satellite System) programme.

Dr Ran provided a general introduction to the BeiDou system and its objectives before outlining its applications and associated international activities.

The system essentially consists of two separate satellite constellations – a more restricted test system that has been operating since 2000, and a full-scale global navigation system that is currently in the implementation stage.

The first BeiDou system, officially called the BeiDou Satellite Navigation Experimental System and also known as BeiDou-1, comprised of just three satellites, allowing limited coverage and applications.

The second generation of the system, officially called the BeiDou Satellite Navigation System (BDS) and also known as COMPASS or BeiDou-2, will be a fully-fledged global satellite navigation system consisting of 35 satellites.

It became operational in China in December 2011, with currently 14 in-orbit satellites - five in geostationary orbit, five in intermediate geostationary orbit and four in low Earth orbit.

The complete system will comprise the five geostationary orbit spacecraft and 30 in lower orbits, and it is planned to begin serving global customers upon final completion in 2020.

“The key technologies of BeiDou/GNSS and its fundamental products have achieved significant breakthrough, and now application verification has mainly been completed,” reported Dr Ran.

“The reliability and sensitivity of the BeiDou/GPS dual-mode chips have been further improved and are now in large-scale production,” he said.

Sales of dual-mode chips independently developed by China are expected to exceed 1.5 million by the end of 2013.

Dr Ran said China has always upheld and adhered to the concept of ‘BeiDou is of China and also of the world’ and that his country was willing to work with other nations, sharing the fruits of satellite navigation development, promoting multi-GNSS compatibility and improving the efficiency of satellite navigation services.

“In the next 10 years four core satellite navigation services will co-exist and there will be more than 100 navigation satellites in orbit. Users will enjoy lower cost, higher precision, as well as more reliable and diversified services,” he said.

The BeiDou system will play an important global role and Dr Ran urged the international community to “work together to create a shining development path for GNSS, improve resource sharing and international cooperation” - creating a win-win result.

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