



## Anti-Satellite (ASAT) Technology in Chinese Open-Source Publications

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### Summary

Americans are justifiably concerned about China's military space programs, particularly China's efforts to develop anti-satellite (ASAT) weapons. Unfortunately, U.S. assessments of these programs often lack credibility because they are based on limited information from a small set of poorly evaluated Chinese sources. U.S. government reports on Chinese ASAT programs, as well as non-governmental assessments, are typically not well documented and in some cases contain information that is demonstrably wrong.

Today there is a much larger set of Chinese-language articles available to scholars who have the language skills to use them. China has developed a large, online database of Chinese-language academic and professional journals, which can be accessed and searched from anywhere in the world.

Unfortunately, the limited Chinese language skills of many American analysts of Chinese military space programs restricts them to the small subset of articles that have been translated, and these are often press reports of uncertain credibility. Poor translation frequently compounds the problem. Inadequately trained analysts are often not careful enough in evaluating the credibility of sources or the knowledge, authority, and motivations of authors.

Analysis based on Chinese-language open sources can provide useful information if it used appropriately. Individual papers by authoritative authors can provide useful, specific information. Referencing a large cross-section of Chinese-language sources can expose trends that are often missed by analysts who base their conclusions on a handful of Chinese articles. Most importantly, placing individual articles in the context of broader historical, institutional, and cultural trends in the larger body of Chinese ASAT literature is necessary to assess whether a specific article or author conveys accurate and meaningful information about Chinese doctrine or policy.

We conducted a full-text search of the Chinese database to find articles that refer to ASAT weapons and technology. The search returned 1,486 articles published between 1971 and 2007 that contain the Chinese term for "anti-satellite" (the search was conducted prior to China's January 2007 destruction of its FengYun-1C satellite). These articles were written by 957 different lead authors from 328 different work units and were published in 292 different Chinese journals.

Our study does not attempt to detail or even summarize China's ASAT policy or assess ASAT technology. It does provide a very detailed description of how the question of ASAT technology has been discussed over a period of several decades in a large and comprehensive set of Chinese publications. Specifically, this paper:

- categorizes the types of articles available on this topic,
- details the history of China's internal discourse about ASAT technology,

- identifies some of the individuals and organizations involved in that discourse, and
- assesses the content and quality of publications in this area.

Some of the key findings of this study are:

1. Nearly half of the Chinese articles returned in our search are secondary sources that contain reviews of information, opinion, and analysis from other sources. Most of the information on ASAT technology contained in these articles, including information about Chinese technologies or policies, comes from foreign publications. However, influential U.S. governmental and non-governmental analyses of these materials frequently mis-characterize Chinese reviews of foreign-sourced information on ASAT technology as statements of domestic Chinese policy or doctrine.
2. The Reagan administration's missile defense initiative had a significant impact on Chinese social scientists who published articles during the 1980s referring to ASAT technology. Many argued that the emerging U.S. advantage in the Cold War competition between two technologically advanced powers demonstrated that particular weapon systems or military capabilities are less important to a nation's security than a dynamic economy driven by scientific and technological development. This conclusion supported decisions on Chinese funding and policy decisions related to space technology, particularly the decision to go forward with a human space flight program.
3. Chinese technical analysts working at research institutes with direct ties to the highest levels of China's military and political leadership were not surprised by the U.S. use of space-related technology in Operation Desert Storm in 1991, as some U.S. analysts suggest. Chinese technical articles published in journals owned by these institutes demonstrate that Chinese analysts had monitored the development of military technology closely and constantly, and were able to anticipate the development and application of technological breakthroughs enabling space-based battlefield awareness, precision-guided munitions, and missile defenses as early as the late 1970s.
4. The number of Chinese articles referring to ASAT technology increased from 198 in the 1980s to 328 in the 1990s to 780 during the period from 2000 to 2007. The number of journals publishing these articles rose from 30 in the 1980s to 155 in the 1990s to 207 by 2007. The dramatic rise in the number of articles since 2000 follows a general growth of the total number of articles and publications in the periodical database we used to conduct the search. It occurs in the context of an equally impressive rise in Chinese graduate school enrollments. Thus, a large part of the increase in articles mentioning ASAT technology since 2000 can be attributed to the increased intellectual output of a greater pool of Chinese authors writing for an increasing number of Chinese journals.

We hope this study will help U.S. analysts become more aware of the broad and diverse set of Chinese sources on ASAT technology. More generally, we hope it will encourage analysts to consult a much broader set of Chinese sources when studying Chinese programs, and provides insights into how analysts should better assess the purpose and credibility of these sources before they are used to make judgments about Chinese capabilities and intentions.