

A Strategy for Active Remote Sensing Amid Increased Demand for Spectrum

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Scientific users of the radio spectrum (such as earth scientists using remotely sensed data and radar astronomers) have an important stake in spectrum policy. To support the U.S. presidential initiative for Spectrum Management for the 21st Century, a presentation of current uses and future needs of scientific users of the spectrum was organized by the National Academy of Sciences. A committee of 16 experts in Earth remote sensing, ionospheric sensing, radar astronomy, and public policy met 4 times over one year to produce a report with consensus findings and recommendations.

In writing its report the committee presents the scientific and technical bases for the multiple applications of active remote sensing in separate chapters: the atmosphere; the oceans; the land surfaces; space physics; and radar astronomy. These chapters (Chapters 2-6) also summarize the spectrum usage for each remote sensing and radiofrequency interference environment for each application. A later chapter (Chapter 8) discusses in greater detail radiofrequency interference issues for active sensing instruments. Finally, Chapter 7 provides an overview of spectrum allocation policies and the frequency assignment process, and Chapter 9 knits the report together by recommending unilateral and cooperative strategies for enhanced usage of the spectrum by all parties, including commercial interests.

The report provides useful information and guidance to engineers who operate the current suite of spacecraft and those who will build future observatories; scientists who use the information gleaned by these spacecraft; policymakers who must balance multiple competing priorities; and the telecommunications industry which is facing ever-increasing demand. The forward-looking approach laid out in the report allows scientists to continue to provide the nation and world with an improving understanding of the Earth and the local solar system while working cooperatively alongside other spectrum users in an era of ever-increasing demand for bandwidth.

The report is anticipated to be released in May 2015 and its contents are not public until that time. Upon release the report will be delivered and communicated to the NASA sponsors, other U.S. government parties, and the technical communities. A concise summary of the report's discussion and recommendations will be presented at the 2015 IEEE AP-S Symposium on Antennas and Propagation and URSI CNC/USNC Joint Meeting in order to reach interested scientists and engineers.